AUTHORITY TO DRILL A WELL

CANADA

Exploratory ☒ Delineation ☐
Development ☐ Service ☐

AUTHORITY TO DRILL A WELL

APPLICATION

This application is submitted with Section 82 of the Canada Oil and Gas Drilling Regulations. When approved under Section 83 of the Regulations, it is the requisite authority for the commencement of drilling operations.

Well Name in Full: Ranger Fort Liard P-66A

Operator: Ranger Oil Limited — Drilling Program No.:

Contractor: Precision Drilling Corp. — Permit or Lease No.: EL 363

Drilling Rig or Unit: 426 TP — Estimated Well Cost: $7,000,000

Location-Unit: P Section: 66 Grid Area: 60° 40', 123° 30'

Coordinates: Lat.: 60° 35' 55.66" Long.: 123° 41' 25.31"

Area: Fort Liard NT — Field/Pool: Liard Exploration

Elevation-RT/KB: 460 m (ASL) — Seafloor: - (BRT)

Approx. Spud Date: July 14/97 begin redrill — Estimated Days on Location: 100

Anticipated Total Depth: 3220 — Target Horizon(s): Nahanni

EVALUATION PROGRAM

Ten-metre sample intervals: None

Five-metre sample intervals: KOP 1325 m to total depth, 3 vial & 1 bagged

Canned sample intervals: None

Conventional cores at: Possible 18 m oriented core in Nahanni

Logs and Tests: Logs as per program

CASING AND CEMENTING PROGRAM

O.D.	Weight:	Grade:	Setting Depth Below Seafloor:	Cementing Program (Volumes):
508	139.89	K-55	262.7	To surface, G + 2% CaCl2
339.7	101.2	K-55	1007	To 600 m, Class "G"
244.4	69.9	L-80	2940	2940 - 2540 m, 1250 - 800 m
177.8	38.6	L-80	3220	3220 - 2740, "G" Hi temp.

B.O.P. Equipment: 346 mm, 35 MPa, 2 pipe, blind ram, annular, nace trim

Other Information: Directionally drilled from 1325 m to an estimated total depth of 3220 m (2800 m TVD) offset 765 m S and 775 m W approximately.

Signed: [signature] Title: Drilling & Completions Superintendent

Date: July 14, 1997 Company: Ranger Oil Limited

APPROVAL

An approved copy of this notice is to be posted at each wellsite.

Signed: [signature] Chief Conservation Officer

Date: July 16/97

File: 9211-23L-1-2, WID 1823

UWI: 300P666040123301

Canada

APPROVAL TO ALTER CONDITION OF A WELL

National Energy Board — Office national de l'énergie

CANADA

APPROVAL TO ALTER CONDITION OF A WELL

This application is to be submitted to the Chief Conservation Officer at least 45 days before commencement of operations.

Well Name: Ranger Fort Liard P-66A — Area: Fort Liard

Operator: Ranger Oil Limited — Contractor: Precision Drilling Limited

Drilling Rig or Unit: Precision Rig #426E — Depth: 3500 m

Coordinates: Lat: 60° 35' 55.66" — Long: 123° 41' 25.31"

Date ADW Issued: December 24, 1996 — Date of last Operation: On-going

Elevation-KB/RT: 460 (ASL) — GL/Seafloor:

TYPE OF OPERATION

Initial Completion

SUMMARY OF PROPOSED OPERATIONS

See Attached Program for Completion Details

As part of this application, it is anticipated that a 4 point Isocronal test with 5 - 10 day extended flow will be required to properly evaluate this well. If a flow rate of 30 MMSCF/day is achieved on extended flow, Ranger would be required to flare approximately 300 MMSCF of gas.

Signed: J L Brown — Responsible Officer — Title: Senior Completions Engineer

Name: J. Leroy Brown — Company: Ranger Oil Limited

Date: February 17, 1998 — Phone: 232-5218

APPROVAL

An approved copy of this notice is to be posted at each wellsite.

Date: Feb 20/98 — Signed: J. Jerry Bakken — Chief Conservation Officer

File: 9211-R36-1-2

WID: 1823 UWI: 300P666040123301

Well Status

Suspended ☐

Completed ☐

Abandoned ☐

WELL TERMINATION RECORD (with attachment)

CANADA

WELL TERMINATION RECORD

This record is submitted in triplicate in compliance with Section 184 of the Canada Oil and Gas Drilling Regulations.

WELL DATA

Well Name: RANGER FORT LIARD P-66A Area: Fort Liard, NT

Grid Area: 60° 40', 123° 30' Field/Pool: New Exploration

Permit or Lease No.: EL 363 Final Coordinates: Lat.: 60° 35' 55.66" Long: 123° 41' 25.31"

Drilling Unit: Precision Rig #426E Elevations KB/KB: 459.89 GL: 449.49

Spud Date: 09:00 hrs 97-07-14 Rig Released: 16:00 hrs 98-03-09 Total Depth: 3500 m KB measured 3000 m TVD

CASING AND CEMENTING

O.D.:	Weight:	Grade:	Depth Set:	Cement and Additives:
508 mm	139.87 kg/m	K-55	262 m	80T + 2% $CaCl_2$ .5T "G" + 2% $CaCl_2$
339.7 mm	101.2 kg/m	K-55	1005 m	92T "G" + .2% D13 + .5% D65
244.5 mm	79.6 kg/m	L-80	3115 m	17T "G" + 35% D66 + 1.25% D160 + .5% D28 + .5% D65
244.5 mm	69.9 kg/m	L-80	2452 m	68T "G" + .3% B71 + .5% D65
177.8 mm liner	38.7 kg/m	L-80	3499 m	14.7T "G" + 35% D66 + .5% D65 + .3% D28 + .2% D121 + 100 L D135 + 1960 L D600 + 76 L D47

PLUGGING PROGRAM

Approval of the following program was obtained by (person) J. Leroy Brown, Ranger from (person) Andrew Graw, NEB by means of correspondence on March 27 19 98

Type of Plug:	Interval:	Felt:	Cement and Additives:
OTIS PX	3072.5 m	(in OTIS incoloy X nipple)	
		Tubing full of inhibited fresh water. Pressure	
		tested to 28 MPa. 88.9 mm backpressure valve in	
		tubing mandrell.	

Lost Circulation/Overpressure Zones: Partial loss circulation 1275 - 1290 m, 3292 - 3298 m. Overpressures 2023 m, 2973 m

Equipment left on Seafloor (Describe): N/A

Provision for Re-entry (Describe and attach sketch): Wellhead chained and locked, wellsign installed.

Cores: Type: No cores Intervals:

No DST's

Other Downhole Completion/Suspension Equipment: 244.5 mm stage cementer at 1300.4 mKB 177.8 mm liner hanger at 2909.4 m KB, See attached downhole well profile for tubing string details.

CERTIFICATION

I certify on the basis of personal knowledge of operations undertaken at the above named well that the above information is accurate.

Signed: [signature] Title: Drilling & Completions Superintendent

Name: Don Sorkilmo Date: April 2, 1998

Acknowledged by: [signature] Engineering Branch

Date: Apr. 29/98

File: 9211-R36-1-2, WID 1823

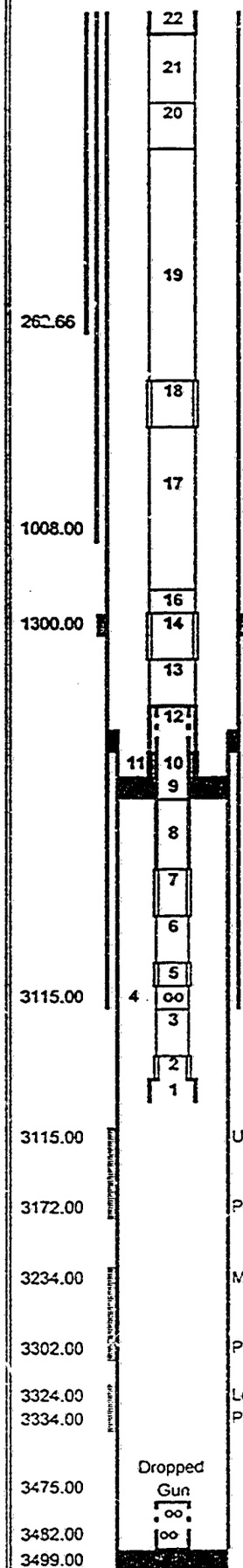
UWI 300P666040123307

Well Status
Suspended
Completed
Abandoned

Canada

RANGER OIL LIMITED

DOWNHOLE WELL PROFILE



Location: Ranger Fort Liard P-66A Date: 23-Mar-98

KB (m) 459.89 GL (m) 449.49 KB to CF: 10.35 KB to THF: 8.60

	No. Joints	Size OD mm	Weight kg/m	Thread Collar	Grade	Landed @ mKB	Top @ mKB
Conductor Casing:	22	508.00	139.87	BT & C	K-55	262.66	Surface
Cement: Stage 1	80t 0:1:0 'G' + $CaCl_2$ w/Lost circulation on displacement.						
Surface Casing:	79	339.70	101.20	BT & C	K-55	1008.00	Surface
Stage 1	92t 0:1:0 'G' + .2% D-13 + .5% D-69						
Intermediate Casing	51	244.50	79.62	BT & C	L-80	3115.00	2452.00
	180	244.50	69.94	BT & C	L-80	2452.00	Surface
Cement: Stage 1	17t 0:1:0 'G' + .35% D66 + 1.25% D160 + .5% D65 + .5% D28						
Stage 2	68t 0:1:0 'G' + .3% B71 + .5% D65 w/continuous returns. Est. Cement top @ 800m.						
Production Liner:	42	177.80	38.70	LT & C	L80	3499.00	2909.00
Cement: Stage 1	14.7t 0:1:0 'G' + 35% Silica + .5% D65 + .3% D28 + .2% D121 + 100l D135 + 1960l D600						
	+ 76l D47 displaced @ .6m3/min w/continuous returns throughout.						
Production Tubing:	215	88.90	13.84	NS-CT	L-80	3071.00	Surface

Perforations:				
	Upper Nihanni	3115.00	to	3172.00
	Middle Nihanni	3234.00	to	3302.00
	Lower Nihanni (w/TTG)	3324.00	to	3334.00

FINAL TUBING STRING (Bottom Up)

Item	Description	Length (m)	Top mKB
1	1 - 73mm x .10m Otis wireline re-entry guide w/EUE thread.	0.10	3082.44
2	1 - 73mm x .49m Otis 'RN' EUE nipple w/55.58 profile & 51.05mm No-Go.	0.59	3081.85
3	1 - 73mm x 3.04m L-80 EUE pup jt @ 9.67kg/m	3.04	3078.81
4	1 - 73mm x 1.24m L-80 EUE perforated nipple @ 9.67kg/m	1.24	3077.57
5	1 - 73mm x .31m Otis 'R' nipple w/55.58mm profile. EUE pin x NSCT box	0.31	3077.26
6	1 - 73mm x 2.99m L-80 NS-CT pup jt @ 9.67kg/m	2.99	3074.27
7	1 - 73mm x .30m INCOLOY 925 NSCT Otis 'X' nipple w/58.75mm profile.	0.30	3073.97
8	1 - 73mm x 1.06m INCOLOY 925 NSCT pup jt @ 9.67kg/m down.	1.06	3072.91
9	1 - 73mm x 177.8mm x 1.65 m INCOLOY 925 Halliburton 'BWB' perm packer	1.65	3071.26
10	1 - 73mm x .17m Otis mule shoe re-entry guide	0.17	3071.09
11	2 - 73mm x .43m (.86m total) Otis VTR Seal unit	0.43	3070.66
12	1 - 177.8mmx88.9mmx.46m Halliburton J-Slot latching head w/NSCT tread.	0.46	3070.20
13	1 - 88.9mm L-80 NSCT tubing jt @ 13.69kg/m	9.50	3060.70
14	1 - 88.9mm Otis 'XN' nipple w/69.85mm profile & 66.93mm No-Go.	0.31	3060.39
15	1 - 88.9mm x 3.03m L-80 NSCT pup jt @ 13.69kg/m	3.09	3057.30
16	166 - 88.9mm L-80 NSCT tubing jts @ 13.69kg/m	1559.17	1498.13
17	1 - 88.9mm Otis 'X' nipple w/71.45mm profile. (Landed 1500m @ 12.7°)	0.39	1497.74
18	1 - 88.9mm x 3.03m L-80 NSCT pup jt @ 13.69kg/m	3.03	1494.71
19	157 - 88.9mm L-80 NSCT tubing jts @ 13.69kg/m	1474.63	20.08
20	1 - 88.9mm x 1.73m L-80 NSCT pup jt @ 13.69kg/m	1.73	18.35
21	1 - 88.9mm L-80 NSCT tubing jt @ 13.69kg/m	9.50	8.85
22	1 - 88.9mm Tubing Hanger	0.25	8.60

Total String Length (m)	3073.94
KB to Tubing Hanger Flange	8.60
Packer Setting Depth (mKB)	3082.54

Tubing Weight	41718	daN	Wt. on Packer	10000	daN	Wt. on Hanger	31718	daN

Wellhead	Make:	Rector	W.P	35MPa	Type:	Flanged	
Dual Master Valve	Make:	Rector	W.P.	35MPa	Type:	Flanged	
	Size:	79.375mm	Trim	Stainless			
Casing Valves	Make:	Rector	W.P.	35MPa	Type:	Flanged	
	Size:	79.375mm	Trim	Stainless			
Choke	Make:	N/A					

Surf. Casing Status:

Remarks:

APPROVAL TO ALTER CONDITION OF A WELL

National Energy Board | Office national de l'énergie

CANADA

APPROVAL TO ALTER CONDITION OF A WELL

The application is to be submitted to the Chief Conservation Officer at least 45 days before commencement of operations.

Well Name: Ranger Fort Liard P-66A Area: Fort Liard

Operator: Ranger Oil Limited Contractor:

Drilling Rig or Unit: Depth: 3500 m

Coordinates: Lat: 60° 35' 55.66" Long: 123° 41'25.31"

Date ADW Issued: December 2 1996 Date of last Operation: On-going

Elevation-KB/RT: 460 (ASL) GL/Seafloor:

TYPE OF OPERATION

Testing & Workover

SUMMARY OF PROPOSED OPERATIONS

See attached program for testing/workover details.

Signed: J L Brown Title: Sr. Completions Engineer

Responsible Officer

Name: J. Leroy Brown Company: Ranger Oil Limited

Date: June 12, 1998 Phone: 232-5218

APPROVAL

An approved copy of this notice is to be posted at each wellsite.

Date: June 26/98 Signed: Jerry Baker

Chief Conservation Officer

File: 9211-R36-1-2

WID: 1823

UWI 300P660040123302

Well Status

Suspended ☐

Completed ☒

Abandoned ☐

WELL TERMINATION RECORD (with attachment)

CANADA

WELL TERMINATION RECORD

This record is submitted in triplicate in compliance with Section 184 of the Canada Oil and Gas Drilling Regulations.

WELL DATA

Well Name: Ranger Fort Liard P-66A Area: Fort Liard, NT

Gnd Area: 60° 40', 123° 30' Field/Pool: New Exploration

Permit or Lease No.: EL 363 Final Coordinates: Lat.: 60° 35' 55.66" Long: 123° 41' 25.31"

Drilling Unit: Precision Rig #426E Elevations-RT/KB: 459.89 SF/GL: 449.49

Spud Date: July 14, 1997 Rig Released: March 9, 1998 Total Depth: 3500 mKB measured
RE Date July 5, 1998 Termination Sept. 2, 1998 3000 m TVD

CASING AND CEMENTING

O.D.:	Weight:	Grade:	Depth Set:	Cement and Additives:
508 mm	139.87 kg/m	K-55	262 m	80t + 2% $CaCl_2$, 5t "G" + 2% $CaCl_2$
339.7 mm	101.2 kg/m	K-55	1005 m	92t "G" + .2% D13 + .5% D65
244.5 mm	79.6 kg/m	L-80	3115 m	17t "G"+35% D66+1.25%D160+.5%D28+.5%D65
244.5 mm	69.9 kg/m	L-80	2452 m	68t "G" + .3% B71 + .5% D65
177.8 mm liner	38.7 kg/m	L-80	3499 m	14t "G"+35%D66+.5%D65+.3%D28+.2%D121+ 100L D135 + 1960 L D600 + 76L D47

PLUGGING PROGRAM

Approval of the following program was obtained by (person) J. Leroy Brown, Ranger from (person) Andrew Gray, NEB by means of correspondence on September 4 19 98

Type of Plug:	Interval:	Felt:	Cement and Additives:
OTIS "XN"	3060.39 m	(in OTIS 88.9 mm "XN" nipple)	
		Tubing full of inhibited fresh water. Pressure	
		tested to 28 MPa. 88.9 mm backpressure valve in	
		tubing mandrell.	

Lost Circulation/Overpressure Zones: Partial loss circulation 1275 - 1290 m, 3292 - 3298 m. Overpressures 2023 m, 2973 m

Equipment left on Seafloor (Describe): N/A

Provision for Re-entry (Describe and attach sketch): Wellhead chained and locked, wellsign installed.

Cores: Type: No cores Intervals:

No DST's

Other Downhole Completion/Suspension Equipment: 244.5 mm stage cementer at 1300.4 mKB, 177.8 mm liner hanger at 2909.4 mKB, see attached downhole well profile for tubing string details.

CERTIFICATION

I certify on the basis of personal knowledge of operations undertaken at the above named well that the above information is accurate.

Signed: J L Brown P. Eng. Title: Sr. Completions Engineer

Name: J. Leroy Brown Date: September 28, 1998

Acknowledged by: T M Baker Engineering Branch

Date: Oct 16/98

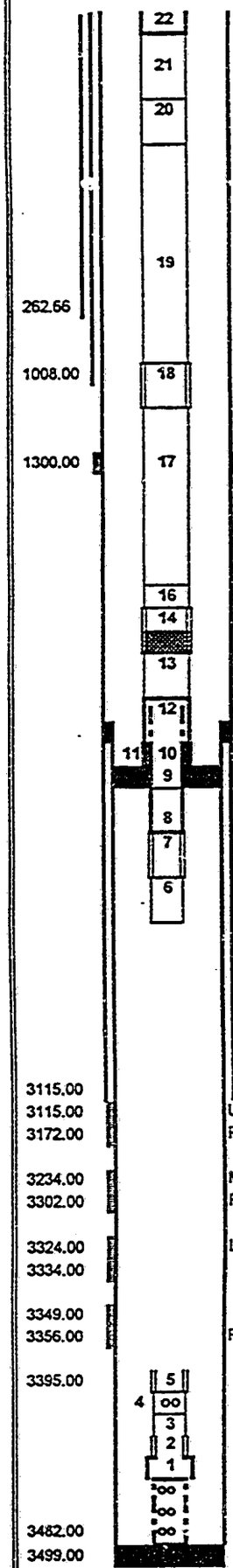
Well Status
Suspended ☒
Completed ☐
Abandoned ☐

File: 9211-R36-1-2RE, WID 1823
UWI 300P666040123302

Canada

RANGER OIL LIMITED

EXISTING DOWNHOLE WELL PROFILE



Location: Ranger Fort Liard P-56A — Date: 4-Sep-98

KB (m): 459.89 — GL (m): 449.49 — KB to CF: 10.35 — KB to THF: 8.60

	No. Joints	Size OD mm	Weight kg/m	Thread Collar	Grade	Landed @ mKB	Top @ mKB
Conductor Casing:	22	508.00	139.87	BT & C	K-55	262.66	Surface
Cement: Stage 1	80t 0:1:0 'G' + $CaCl_2$ w/Lost circulation on displacement.						
Surface Casing:	79	339.70	101.20	BT & C	K-55	1008.00	Surface
Stage 1	92t 0:1:0 'G' + .2% D-13 + .5% D-69						
Intermediate Casing	51	244.50	79.62	BT & C	L-80	3115.00	2452.00
	180	244.50	69.94	BT & C	L-80	2452.00	Surface
Cement: Stage 1	17t 0:1:0 'G' + .35% D66 + 1.25% D160 + .5% D65 + .5% D28						
Stage 2	68t 0:1:0 'G' + .3% B71 + .5% D65 w/continuous returns. Est. Cement top @ 800m.						
Production Liner:	42	177.80	38.70	LT & C	L80	3499.00	2909.00
Cement: Stage 1	14.7t 0:1:0 'G' + 35% Silica + .5% D65 + .3% D28 + .2% D121 + 100l D135 + 1960l D600						
	+ 76l D47 displaced @ .6m3/min w/continuous returns throughout.						
Production Tubing:	215	88.90	13.84	NS-CT	L-80	3071.00	Surface

Perforations:			
Upper Nihanni (gross interval)	3115.00	to	3172.00
Middle Nihanni (gross interval)	3234.00	to	3302.00
Lower Nihanni (w/TTG, net interval)	3324.00	to	3334.00
Lower Nihanni (w/TTG, net interval)	3349.00	to	3356.00

FINAL TUBING STRING (Bottom Up)

Item	Description	Length (m)	Top mKB
1	1 - 73mm x .10m Otis wireline re-entry guide w/EUE thread.	0.10	3082.44
2	1 - 73mm x .49m Otis 'RN' EUE nipple w/55.58 profile & 51.05mm No-Go.	0.59	3081.85
3	1 - 73mm x 3.04m L-80 EUE pup jt @ 9.67kg/m	3.04	3078.81
4	1 - 73mm x 1.24m L-80 EUE perforated nipple @ 9.67kg/m	1.24	3077.57
5	1 - 73mm x .31m Otis 'R' nipple w/55.58mm profile. EUE pin x NSCT box	0.31	3077.26
6	1 - 73mm x 2.99m L-80 NS-CT pup jt @ 9.67kg/m	2.99	3074.27
7	1 - 73mm x .30m INCOLOY 925 NSCT Otis 'X' nipple w/58.75mm profile.	0.30	3073.97
8	1 - 73mm x 1.06m INCOLOY 925 NSCT pup jt @ 9.67kg/m down.	1.06	3072.91
9	1 - 73mm x 177.8mm x 1.65 m INCOLOY 925 Halliburton 'BWB' perm packer	1.65	3071.26
10	1 - 73mm x .17m Otis mule shoe re-entry guide	0.17	3071.09
11	2 - 73mm x .43m (.86m total) Otis VTR Seal unit	0.43	3070.66
12	1 - 177.8mmx88.9mmx.46m Halliburton J-Slot latching head w/NSCT tread.	0.46	3070.20
13	1 - 88.9mm L-80 NSCT tubing jt @ 13.69kg/m	9.50	3060.70
14	1 - 88.9mm Otis 'XN' nipple w/69.85mm profile & 66.93mm No-Go.	0.31	3060.39
15	1 - 88.9mm x 3.03m L-80 NSCT pup jt @ 13.69kg/m	3.09	3057.30
16	166 - 88.9mm L-80 NSCT tubing jts @ 13.69kg/m	1559.17	1498.13
17	1 - 88.9mm Otis 'X' nipple w/71.45mm profile. (Landed 1500m @ 12.7°)	0.39	1497.74
18	1 - 88.9mm x 3.03m L-80 NSCT pup jt @ 13.69kg/m	3.03	1494.71
19	157 - 88.9mm L-80 NSCT tubing jts @ 13.69kg/m	1474.63	20.08
20	1 - 88.9mm x 1.73m L-80 NSCT pup jt @ 13.69kg/m	1.73	18.35
21	1 - 88.9mm L-80 NSCT tubing jt @ 13.69kg/m	9.50	8.85
22	1 - 88.9mm Tubing Hanger	0.25	8.60

Total String Length (m)	3073.94
KB to Tubing Hanger Flange	8.60
Packer Setting Depth (mKB)	3082.54

Tubing Weight	41718 daN	Wt. on Packer	9000 daN	Wt. on Hanger	32718 daN

Wellhead	Make:	Rector	W.P	35MPa	Type:	Flanged
Dual Master Valve	Make:	Rector	W.P.	35MPa	Type:	Flanged
	Size:	79.375mm	Trim	A487		
Casing Valves	Make:	Rector	W.P.	35MPa	Type:	Flanged
	Size:	79.375mm	Trim	A487		
Choke	Make:	N/A				
Surf. Casing Status:						

Well Status: Temporary well suspension effective Sept. 2, 1998.

The tubing is suspended w/an Otis 'XN' plug landed in the 'XN' nipple @ 3060.39. The tubing was filled w/inhibited water, topped w/methanol & pressure tested to 28MPa. Installed a backpressure valve in the dognut. Secured.

The 88.9/244.5/177.8mm annulus is filled w/inhibited water, topped w/diesel and pressure tested to 21MPa.

APPROVAL TO ALTER CONDITION OF A WELL

National Energy Board | Office national de l'énergie

CANADA

APPROVAL TO ALTER CONDITION OF A WELL

The application is to be submitted to the Chief Conservation Officer at least 45 days before commencement of operations.

Well Name: Ranger Fort Liard P-66 A | Area: Liard

Operator: Ranger Oil Limited | Contractor: Dowell Schlumberger

Drilling Rig or Unit: Precision Rig #416E | Depth: 3499m KB MD

Coordinates: Lat: 60° 35' 55.66" | Long: 123° 41' 25.31"

Date ADW Issued: December 24, 1996 | Date of last Operation: September 5, 1998

Elevation-KB/RT: 459.89 m (ASL) | GL/Seafloor: 449.49 m

TYPE OF OPERATION

Workover

SUMMARY OF PROPOSED OPERATIONS

See attached program

As part of this application, it is anticipated that a flow and clean-up test will be required, followed by a single point AOF test to a maximum rate of 710 x $10^3 m^3$/day. Ranger would be required to flow the well for up to eight (8) days with an extended shut-in. Under these testing conditions, it is expected we would flow a total of 5680 x $10^3 m^3$ gas.

Signed: J.L. Brown — Responsible Officer | Title: Senior Completions Engineer

Name: J.L. Brown | Company: Ranger Oil Limited

Date: February 3, 1999 | Phone: (403) 303-7329

APPROVAL

An approved copy of this notice is to be posted at each wellsite.

Date: February 12, 1999 | Signed: Chief Conservation Officer

File: 9211-R36-1-2RP

WID: 1823, UWI 300P666040123303

Well Status

Suspended ☒

Completed ☐

Abandoned ☐

WELL TERMINATION RECORD (with attachment)

CANADA

WELL TERMINATION RECORD

This record is submitted in triplicate in compliance with Section 184 of the Canada Oil and Gas Drilling Regulations.

WELL DATA

Well Name: RANGER FORT LIARD P-66A Area: Fort Liard, NT

Grid Area: 60° 40', 123° 30' Field/Pool: Exploration

Permit or Lease No.: EL 363 Final Coordinates: Lat.: 60°35' 55.66" Long: 123°41' 25.31"

Drilling Unit: Precision Rig 426E Elevations-RT/KB: 459.89 SF/GL: 449.49

Spud Date: July 14, 1997 Rig Released: March 9, 1998 Total Depth: 3500 mKB measured
3000 m TVD

CASING AND CEMENTING

O.D.:	Weight:	Grade:	Depth Set:	Cement and Additives:
508 mm	139.7 kg/m	K-55	262 m	80t + 2% $CaCl_2$ 5t "G" + 2% $CaCl_2$
339.7 mm	101.2 kg/m	K-55	1005 m	92t "G"+.2% D13 + .5% D65
244.5 mm	79.6 kg/m	L-80	3115 m	17t "G"+35% D66+1.25%D160+.5%D28+.5%D65
244.5 mm	69.9 kg/m	L-80	2452 m	68t "G" + .3% B71 + .5% D65
177.8mm liner	38.7 kg/m	L-80	3499 m	14t "G"+35%D66+.5%D65+.3%D28+.2%D121+ 100L D135 + 1960 + 76L D47

PLUGGING PROGRAM

Approval of the following program was obtained by (person) J. Leroy Brown, Ranger from

(person) Andrew Graw, NEB by means of

correspondence on March 4 19 99

Type of Plug:	Interval:	Felt:	Cement and Additives:
OTIS "XN"	3060.39 m	(in OTIS 88.9 mm "XN" nipple)	
		Tubing full of inhibited fresh water.	
		Pressure Tested to 21 MPa, 88.9 mm backpressure	
		valve in tubing mandrell.	

Lost Circulation/Overpressure Zones: Partial loss circulation 1275 - 1290 m, 3292-3298 m.
Overpressures 2023 m, 2973 m

Equipment left on Seafloor (Describe): N/A

Provision for Re-entry (Describe and attach sketch): Wellhead chained and locked, wellsign installed.

Cores: Type: No cores Intervals:

No DST's

Other Downhole Completion/Suspension Equipment: 244.5 mm stage cementer at 1300.4 mKB
177.8 mm liner hanger at 2909.4 mKB, see attached downhole well profile for tubing string details.

CERTIFICATION

I certify on the basis of personal knowledge of operations undertaken at the above named well that the above information is accurate.

Signed: J.L. Brown P. Eng. Title: Sr. Completions Engineer

Name: J.L. Brown Date: March 17, 1999

Acknowledged by: T. Baker
Engineering Branch

Date: Mar. 25/99

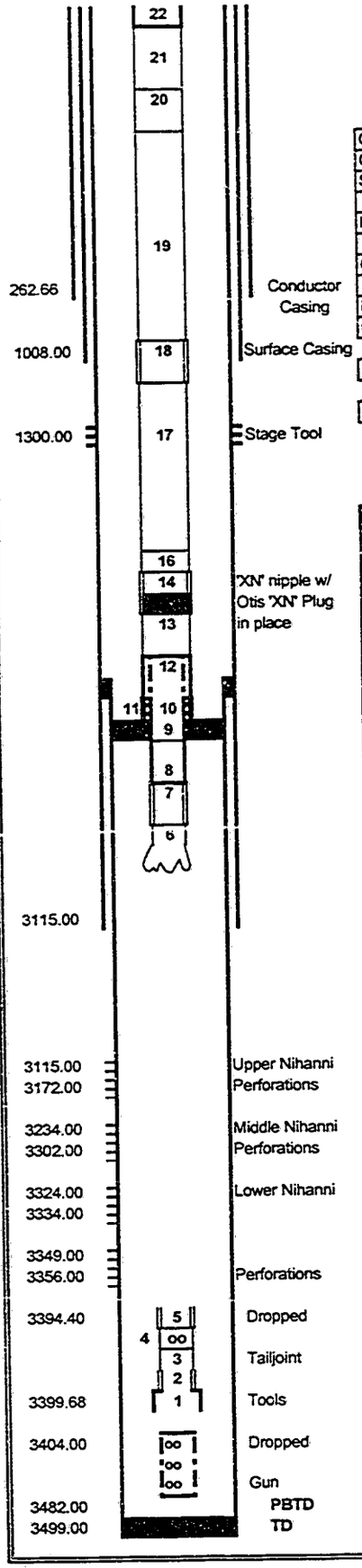
Well Status
Suspended ☒
Completed ☐
Abandoned ☐

File: 9211-R36-1-2RE, WID 1823
UWI 300P666040123303

Canada

RANGER OIL LIMITED

EXISTING DOWNHOLE WELL PROFILE



Location: Ranger Fort Liard P-66A **Date:** 3-Feb-99

KB (m) 459.89 **GL (m)** 449.49 **KB to CF:** 10.35 **KB to THF:** 8.60

	No. Joints	Size OD mm	Weight kg/m	Thread Collar	Grade	Landed @ mKB	Top @ mKB
Conductor Casing:	22	508.00	139.87	BT & C	K-55	262.66	Surface
Cement: Stage 1	80t 0:1:0 'G' + $CaCl_2$ w/Lost circulation on displacement.						
Surface Casing:	79	339.70	101.20	BT & C	K-55	1008.00	Surface
Stage 1	92t 0:1:0 'G' + .2% D-13 + .5% D-69						
Intermediate Casing	51	244.50	79.62	BT & C	L-80	3115.00	2452.00
	180	244.50	69.94	BT & C	L-80	2452.00	Surface
Cement: Stage 1	17t 0:1:0 'G' + .35% D66 + 1.25% D160 + .5% D65 + .5% D28						
Stage 2	68t 0:1:0 'G' + .3% B71 + .5% D55 w/continuous returns. Est. Cement top @ 800m.						
Production Liner:	42	177.80	38.70	LT & C	L80	3499.00	2909.00
Cement: Stage 1	14.7t 0:1:0 'G' + 35% Silica + .5% D65 + .3% D28 + .2% D121 + 100l D135 + 1960l D600						
	+ 76l D47 displaced @ .6m3/min w/continuous returns throughout.						
Production Tubing:	215	88.90	13.84	NS-CT	L-80	3071.00	Surface

Perforations:			
Upper Nihanni (gross interval)	3115.00	to	3172.00
Middle Nihanni (gross interval)	3234.00	to	3302.00
Lower Nihanni (w/TTG, net interval)	3324.00	to	3334.00
Lower Nihanni (w/TTG, net interval)	3349.00	to	3356.00

FINAL TUBING STRING (Bottom Up)			**Top**
Item	**Description**	**Length (m)**	**mKB**
6	1 - 73mm x 2.99m L-80 NS-CT pup jt @ 9.67kg/m	2.99	3074.27
7	1 - 73mm x .30m INCOLOY 925 NSCT Otis 'X' nipple 'w/58.75mm profile.	0.30	3073.97
8	1 - 73mm x 1.06m INCOLOY 925 NSCT pup jt @ 9.67kg/m down.	1.06	3072.91
9	1 - 73mm x 177.8mm x 1.65 m INCOLOY 925 Halliburton 'BWB' perm packer	1.65	3071.26
10	1 - 73mm x .17m Otis mule shoe re-entry guide	0.17	3071.09
11	2 - 73mm x .43m (.86m total) Otis VTR Seal unit	0.43	3070.66
12	1 - 177.8mmx88.9mmx.46m Halliburton J-Slot latching head w/NSCT tread.	0.46	3070.20
13	1 - 88.9mm L-80 NSCT tubing jt @ 13.69kg/m	9.50	3060.70
14	1 - 88.9mm Otis 'XN' nipple w/69.85mm profile & 66.93mm No-Go.	0.31	3060.39
15	1 - 88.9mm x 3.03m L-80 NSCT pup jt @ 13.69kg/m	3.09	3057.30
16	166 - 88.9mm L-80 NSCT tubing jts @ 13.69kg/m	1559.17	1498.13
17	1 - 88.9mm Otis 'X' nipple w/71.45mm profile. (Landed 1500m @ 12.7°)	0.39	1497.74
18	1 - 88.9mm x 3.03m L-80 NSCT pup jt @ 13.69kg/m	3.03	1494.71
19	157 - 88.9mm L-80 NSCT tubing jts @ 13.69kg/m	1474.63	20.08
20	1 - 88.9mm x 1.73m L-80 NSCT pup jt @ 13.69kg/m	1.73	18.35
21	1 - 88.9mm L-80 NSCT tubing jt @ 13.69kg/m	9.50	8.85
22	1 - 88.9mm Tubing Hanger	0.25	8.60
	Dropped tools - Top Down		**Top @**
5	1 - 73mm x .31m Otis 'R' nipple w/55.58mm profile. EUE pin x NSCT box	0.31	3394.40
4	1 - 73mm x 1.24m L-80 EUE perforated nipple @ 9.67kg/m	1.24	3394.71
3	1 - 73mm x 3.04m L-80 EUE pup jt @ 9.67kg/m	3.04	3395.95
2	1 - 73mm x .49m Otis 'RN' EUE nipple w/55.58 profile & 51.05mm No-Go.	0.59	3398.99
1	1 - 73mm x .10m Otis wireline re-entry guide w/EUE thread.	0.10	3399.58

Total String Length (m) (Item 6 to 22)	3068.66
KB to Tubing Hanger Flange	8.60
Tubing Landed Depth (mKB)	**3077.26**

Tubing Weight	41646 daN	**Wt. on Packer**	9000 daN	**Wt. on Hanger**	32646 daN

Wellhead	**Make:**	Rector	**W.P**	35MPa	**Type:**	Flanged
Dual Master Valve	**Make:**	Rector	**W.P.**	35MPa	**Type:**	Flanged
	Size:	79.375mm	**Trim**	A487		
Casing Valves	**Make:**	Rector	**W.P.**	35MPa	**Type:**	Flanged
	Size:	79.375mm	**Trim**	A487		
Choke	**Make:**	N/A				

Surf. Casing Status:

Well Status: Temporary well suspension effective Sept. 2, 1998.
The tubing is suspended w/an Otis 'XN' plug landed in the 'XN' nipple @ 3060.39. The tubing was filled w/inhibited water, topped w/methanol & pressure tested to 28MPa. Installed a backpressure valve in the dognut. Secured.
The 88.9/244.5/177.8mm annulus is filled w/inhibited water, topped w/diesel and pressure tested to 21MPa.
NOTE: ***Dropped tools were*** Temporary well suspension effective Feb. 19, 1999.
Net Perforations: 3115-3122; 3125-3130; 3134-3148; 3152-3159; 3165-3172; 3234-3248; 3260-3272; water, 3276-3280; 3285-3292; 3295-3302; 3324-3334 and 3349-3356mKB

FINAL
WELL
REPORT

FINAL WELL REPORT

RANGER NORTH LIARD P-66A

Mount Flett Area, NT

1823

Prepared by Ken Kindjerski
November 1998

INTRODUCTION

1. Program Summary

Ranger Oil Limited programmed to drill a 3489 m deep exploration well to evaluate hydrocarbon production potential from the Nahanni formation. The well had to be directionally drilled due to logistical constraints.

Cactus Drilling Rig # 26E was contracted to drill the well.

2. Location Map

Attached is a topographic map (1:50,000) showing the P-66 & P-66A well location and its relationship to geographic features, the winter road and the IPL pipeline.

GENERAL DATA

Well Name:	Ranger et al Fort Liard P-66A
Exploration Licence:	EL 363
Location:	Unit P, Section 66 Grid Area: 60 ° 35' 55.65", 123° 41' 25.31"
Well Location:	See attached well plan.
Unique Well Identifier:	300P66040123300
Operator:	Ranger Oil Limited 1600, 321 – 6th Avenue S.W. Calgary, Alberta T2P 3H3
Drilling Contractor:	Cactus Drilling Limited Suite 3200, 715 – 5 Avenue S.W. Calgary, Alberta T2P 2X6
Drilling Rig:	Continental Emsco D – 3 rated for 5000 m
Position Keeping /Support Craft:	N/A.

Difficulties & Delays:

The original surface location constructed slumped and became unstable to conduct any drilling operations. The site was moved and rebuilt to accommodate drilling operations. The original well was planned to be directionally drilled to the bottom hole target, moving the drilling site further away made the drilling operation very difficult due to the extra off set displacement. The majority of the well had to be directionally drilled, which significantly increased the drilling costs and time to complete the operation.

Logistics to the wellsite created problems for access and costly delays. An ice bridge had to be constructed to continue safe drilling operations. This operation resulted in approximately 30 day shut down period. The well was drilled to a total depth of 3121 m MD, and evaluated. A new bottom hole target was established and the well was plugged back to 1246 m MD. A second leg was drilled to a total depth of 3500 m MD, and production casing ran in the well.

SUMMARY OF DRILLING OPERATIONS

Total Well Costs:	$14,056,647 for P-66 wellbore section $24,720,719 for P-66A new bottom hole target
Elevations:	GL ~~489.2~~ m 449.49 KB ~~499.8~~ m 459.89 CB – KB 10.55 m
Total Depth:	P-66 TD @ 3121 m MD; P-66A TD @ 3500 m MD
Spud Date:	~~1997-01-12 @~~ 0900 Hours July 14, 1997
Rig Release Date:	~~98/02/19 24~~00 Hours March 9, 1998
Well Status:	Standing Cased
Hole Sizes:	660.4 mm to 265 m KB 444.5 mm to 1008 m KB 311.1 mm to 3121 m KB plug back & redrill 311.1 mm to 3500 m KB

Casing Strings:

Conductor - 3 joints, 762 mm, A252 Grade B landed at 23.5 m GL.

Surface - 21 joints, 508 mm, 139.87 kg/m, K55, BT&C landed at 262.77 m KB

Cemented with 85.0 tonnes 0-1-0 "G"+ 2% $CaCl_2$ + 10 cellophane
Top job 5.0 tonnes 0-1-0 "G" + 2% $CaCl_2$

Intermediate - 51 joints, 244.5 mm, 79.62 kg/m, L-80, 662.42 m Buttress thread
180 joints, 244.5 mm, 69.94 kg/m, L-80, 2460.04 m, Buttress thread
Landed at 3114.80 m KB
Stage tool at 1300.40 m KB

1st Stage Cement
17 tonnes "G" + 35% D66 + 1.25% D160 +. 5% D65 + .5%D28
2nd Stage Cement
68 tonnes "G" + .3% B71 + .5% D65

Production - Liner: 42 joints;177.8 mm; N-80; 38.69 kg/m; LT&C; Algoma Rge 3; 589.57 m
Set liner @ 3499 m top of liner at 2910 m

Cemented with 14.7 tonnes "G" + 35 % Silica + .5% D65 + .3%D28 + .2% D121 + 100 litres D135 +1960 litres D600 + 76 litres D47

Casing Bowl: Walker EGL – 22; 508 mm x 339.7 mm; 21 MPa, flanged side outlets

Drilling Fluid: see attached fluid summary for details.

Sidetracks/Fishing:

Drilled 311 mm hole on the P-66 well section down to 1350 m, and became stuck in the hole. Tried fishing the drill string out, and left 53 m of drilling assembly in the hole. The bit is at 1336 m top of drilling assembly left in the hole is at 1283 m. A whipstock plug was set from 1261 to 1161 m with 3.8 tonnes of 0-1-0 "G" + 1% D65 + .3% B71. Tag the top of the plug at 1098 m, polish plug down and kick off around fish.

Drilled 311 mm hole down to 1398 m, and became stuck in the hole. Rigged in Tesco top drive unit and successfully pulled free. Drilled down to total depth of 3121 m. Evaluated the open hole section and ran a VSP survey to determine a new bottom hole target. Plug back the well as outlined below:

Plug 1). 2825 - 2750 m
9.5 tonnes G-35%, D66 +. 5%D65 + .35%D28 with 30 % excess
Felt plug top @ 2734 m

Plug 2). 1840 - 1765 m
13.9 tonnes G-35%, D66 +. 5%D65 + .5%D800 with 30 % excess
Felt plug top @ 1784 m

Plug 3). 1784 - 1765 m
5.5 tonnes G-35%, D66 +1%D65 + .6%D800 with 30 % excess
No feel

Plug 4). 1500 - 1375 m
16.7 tonnes G + 1%D65 + .6%D800 with 30 % excess
Felt plug top @ 1410 m

Kick off well at 1246 m and drill to the new bottom hole target reach total depth of 3115 m to run intermediate casing.

Well Kicks:

Finished drilling P-66A to a total depth of 3500 m MD, pulled a wiper trip to log the well and took a gas kick. A fracture system had taken fluid, which resulted in a gas kick. Initial SIDPP 7900 kPa, SICP 11,300 kPa and the mud density of 1045 kg/m^3. Circulated the gas out and the well was dead.

Lost Circulation:

Directionally drilled into a fracture system while drilling the P-66A leg at 3292 – 3309 m and lost 29 m^3, circulate and mix a calcium carbonate pill spot over 3280 – 3309 m. Regain full circulation. Reached total depth of 3500 m MD, pulled a wiper trip prior to logging the well and lost 25 m^3.

Formation Fluids/Gas:

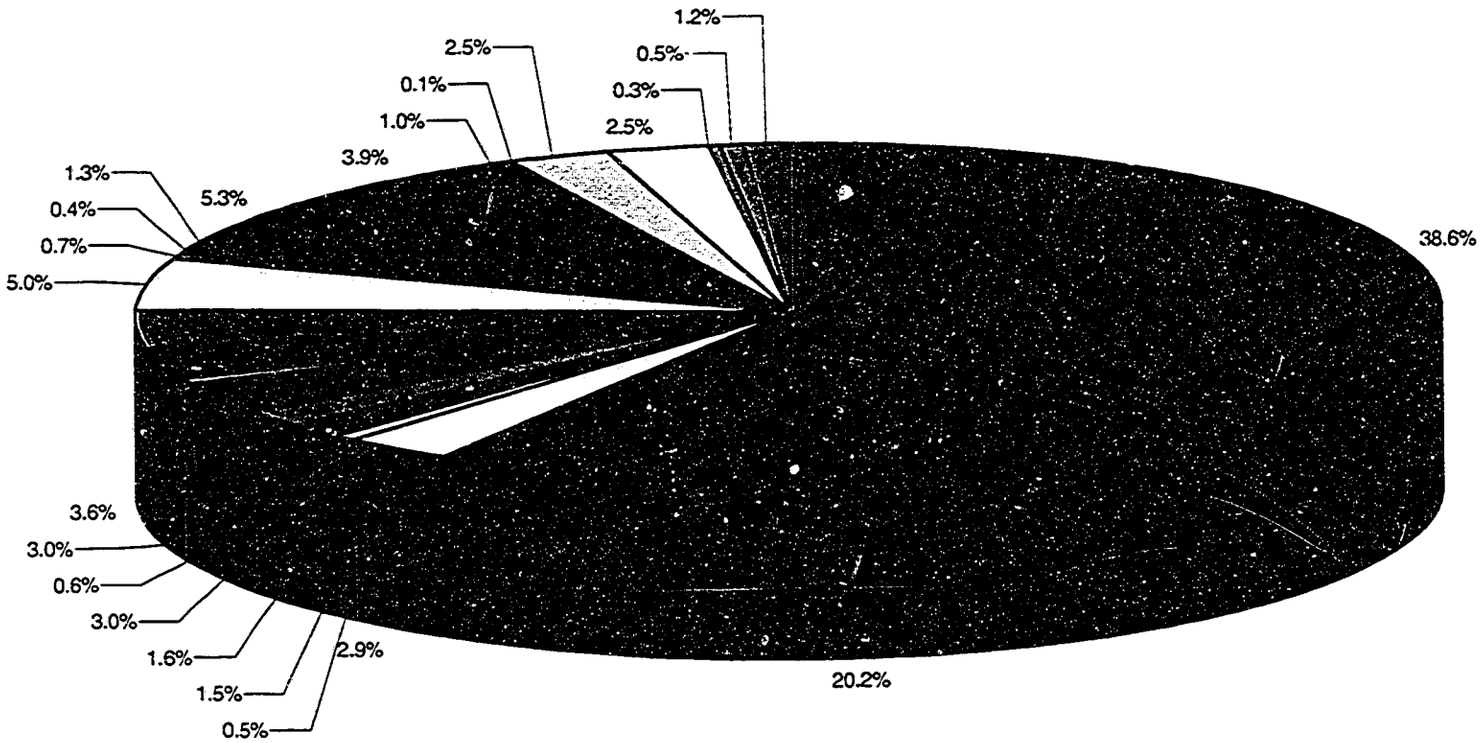
Slightly gas cut mud occurred while directionally drilling P-66A at 2976m, background gas was 1250 units. The gas was coming from a fracture at 2973.6 m; mud density for this section was 1425 kg/m^3.

Formation Leak-off Test:	Leak off test was run at 265 m KB. The leak off test was resulted in a gradient of 12.16 kPa/m.
Deviation Surveys:	Directional surveys were taken see attached for deviation surveys.
Abandonment Plugs:	N/A.

Time Distribution:

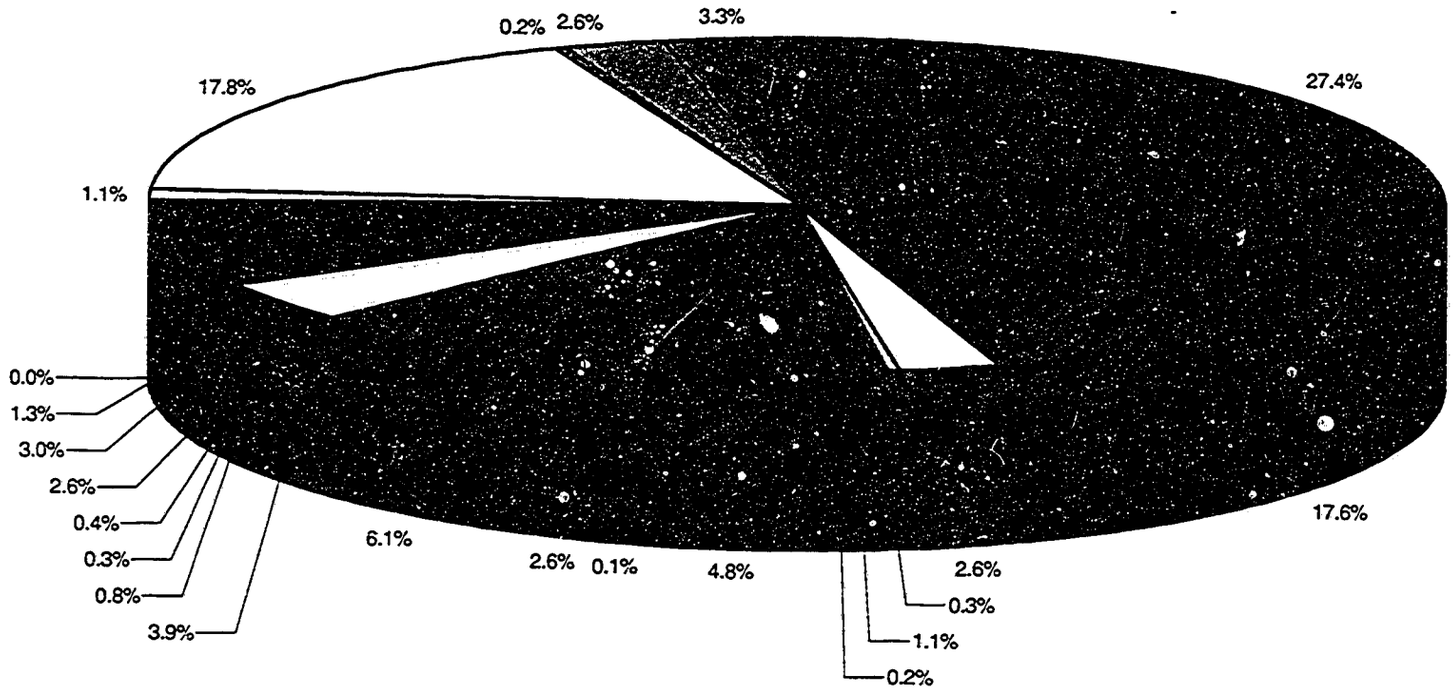
Operation	P-66 (hours)	P-66A (hours)	Total (hours)
Drilling	1671.25	1512.25	**3183.5**
Tripping	874.3	969	**1843.3**
Rig Service	124.5	141.25	**265.75**
Slip & Cut Drilling Line	21.3	18.8	**40.1**
Surveys	65.5	61.25	**126.75**
Fishing Operations	69.25	10.25	**79.5**
Circulate	131.5	264.5	**396**
Lost Circulation	26	6.75	**32.75**
Condition Mud	130.5	143.5	**274**
Handle Tools	156	337.75	**493.75**
Reaming Hole Clean	215.75	212.75	**428.5**
Running Casing	29.75	45.75	**75.5**
Cementing	17	17	**34**
Waiting on Cement	56	24	**80**
Nipple Up/Pressure Test	230.5	144.5	**375**
Rig Repairs	167.5	163	**330.5**
Logging (Wireline Work)	42	70	**112**
Leak Off Test	4	0	**4**
Waiting on Services	109.25	58.75	**168**
Waiting on Orders	106.3	981.8	**1088.1**
Rig Move	12	12	**24**
Rig up/out	21.25	145	**166.25**
Miscellaneous	50.5	180	**230.5**
Total Time (hours)	**4185.65**	**5519.85**	**9705.5**

Time Break Down to Drill P-66



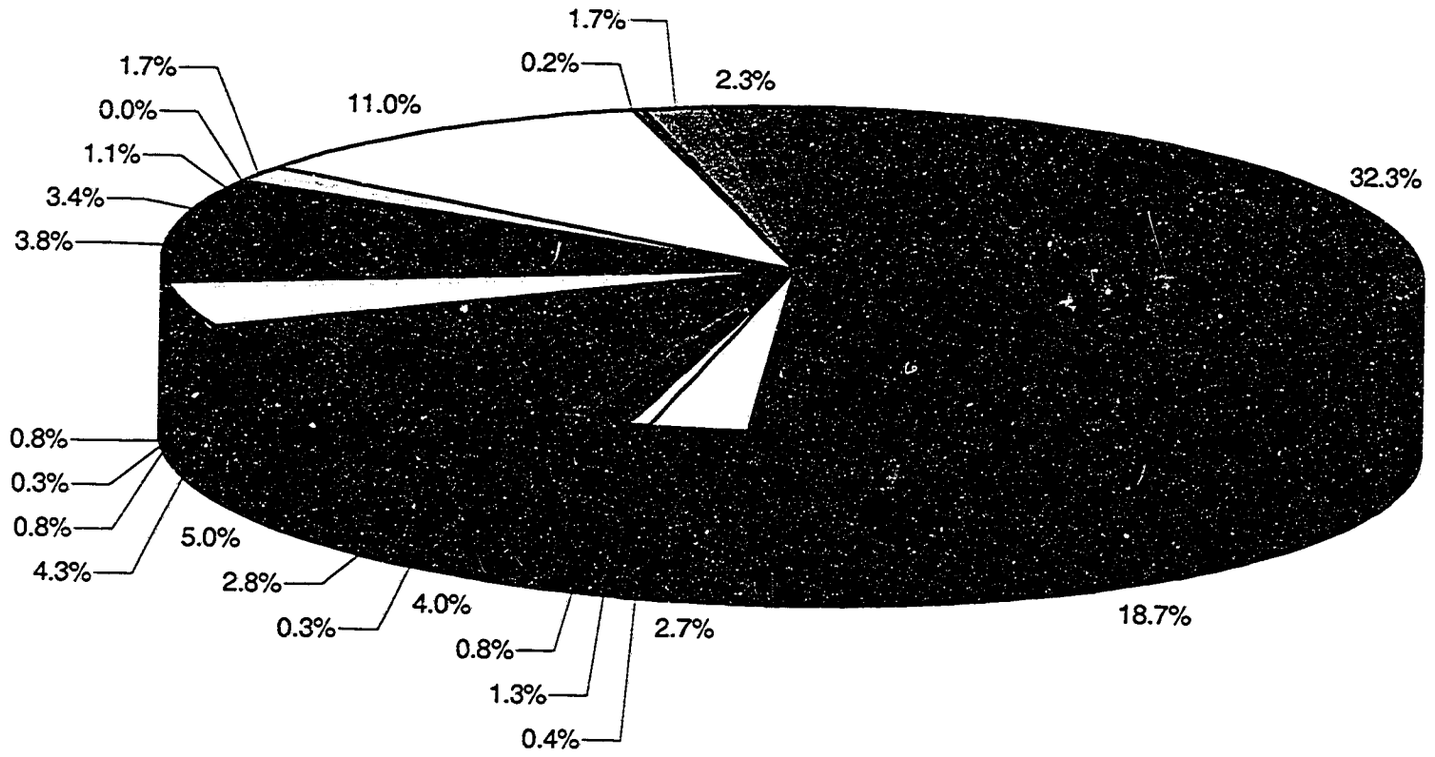
Drilling	Tripping	Rig Service	Slip & Cut Drilling Line	Surveys
Fishing Operations	Circulate	Lost Circulation	Condition Mud	Handle Tools
Reaming Hole Clean	Running Casing	Cementing	Waiting on Cement	Nipple Up/Pressure Test
Rig Repairs	Logging (Wireline Work)	Leak Off Test	Waiting on Services	Waiting on Orders
Rig Move	Rig up/out	Miscellaneous		

Time Break Down to Drill P-66A



Drilling	Tripping	Rig Service	Slip & Cut Drilling Line	Surveys
Fishing Operations	Circulate	Lost Circulation	Condition Mud	Handle Tools
Reaming Hole Clean	Running Casing	Cementing	Waiting on Cement	Nipple Up/Pressure Test
Rig Repairs	Logging (Wireline Work)	Leak Off Test	Waiting on Services	Waiting on Orders
Rig Move	Rig up/out	Miscellaneous		

Total Time Break Down to Drill Liard P-66 & P-66A



Drilling	Tripping	Rig Service	Slip & Cut Drilling Line	Surveys
Fishing Operations	Circulate	Lost Circulation	Condition Mud	Handle Tools
Reaming Hole Clean	Running Casing	Cementing	Waiting on Cement	Nipple Up/Pressure Test
Rig Repairs	Logging (Wireline Work)	Leak Off Test	Waiting on Services	Waiting on Orders
Rig Move	Rig up/out	Miscellaneous		

GEOLOGY

Drill Cuttings: Five-meter drill samples were taken from 1010 m to 3121m KB for P-66 wellbore. Five-meter drill samples obtained from 1325 to 3500 m KB for the P-66A section.

Vial samples from the above were sent to Ranger Oil Limited Calgary office.

Bagged samples were sent to the Institute of Sedimentary and Petroleum Geology, Core & Sample Lab in Calgary, Alberta.

Formation Tops: See the attached summary.

Lithology: See the attached lithology report for sample description.

Cores: No cores were taken.

Open Hole Logs:

P-66 section of the hole:

Open hole logs:

1.) STI – GR/SED –BCS	1005 – 3121 m MD
2.) Dipmeter	1005 – 3121 m MD

P-66A section of the well:

Open hole logs:

1.) XY – GR	1005 – 3118.0 m MD
2.) STI – BCS – RG	1006 – 3116.4 m MD

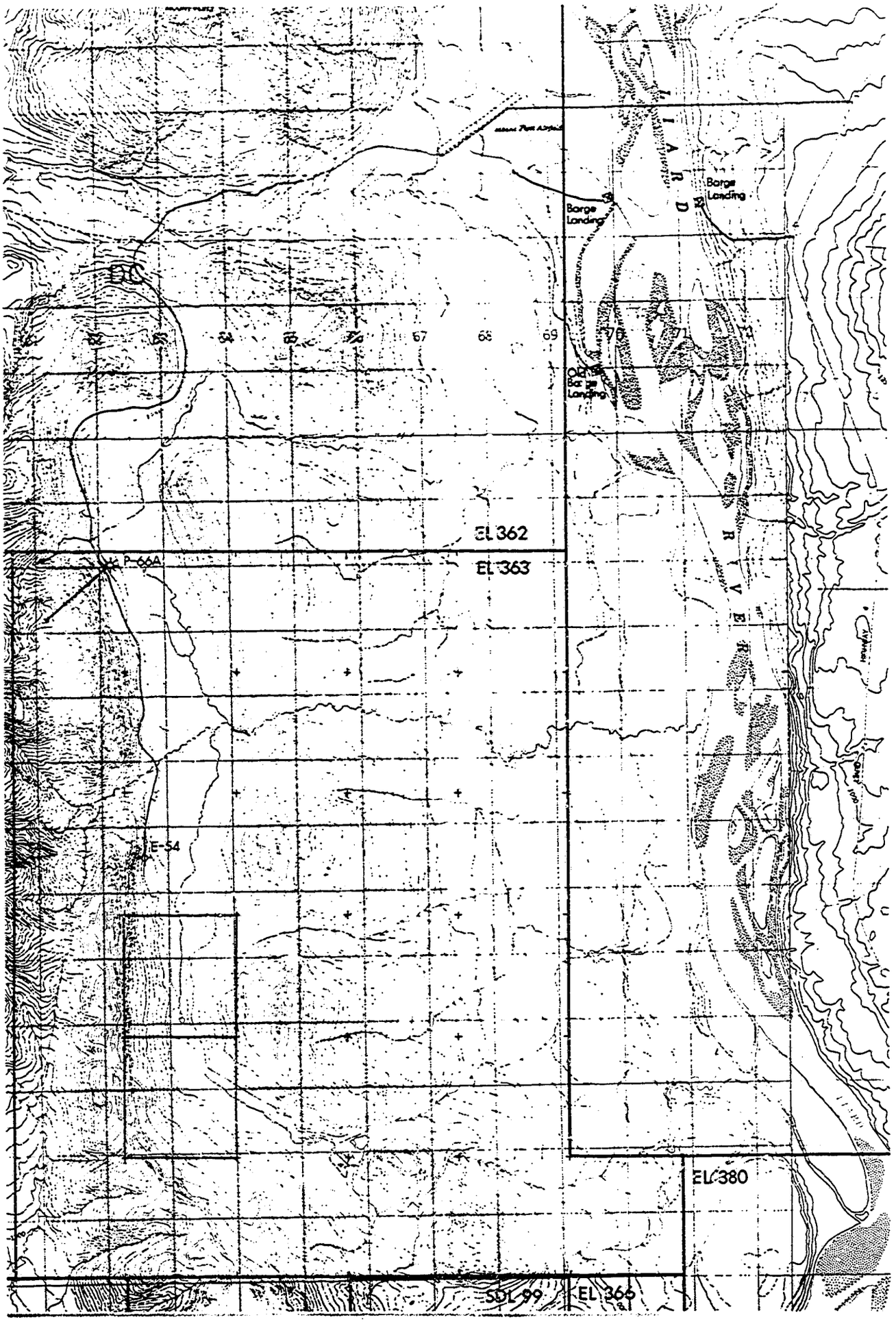
Cased hole logs:

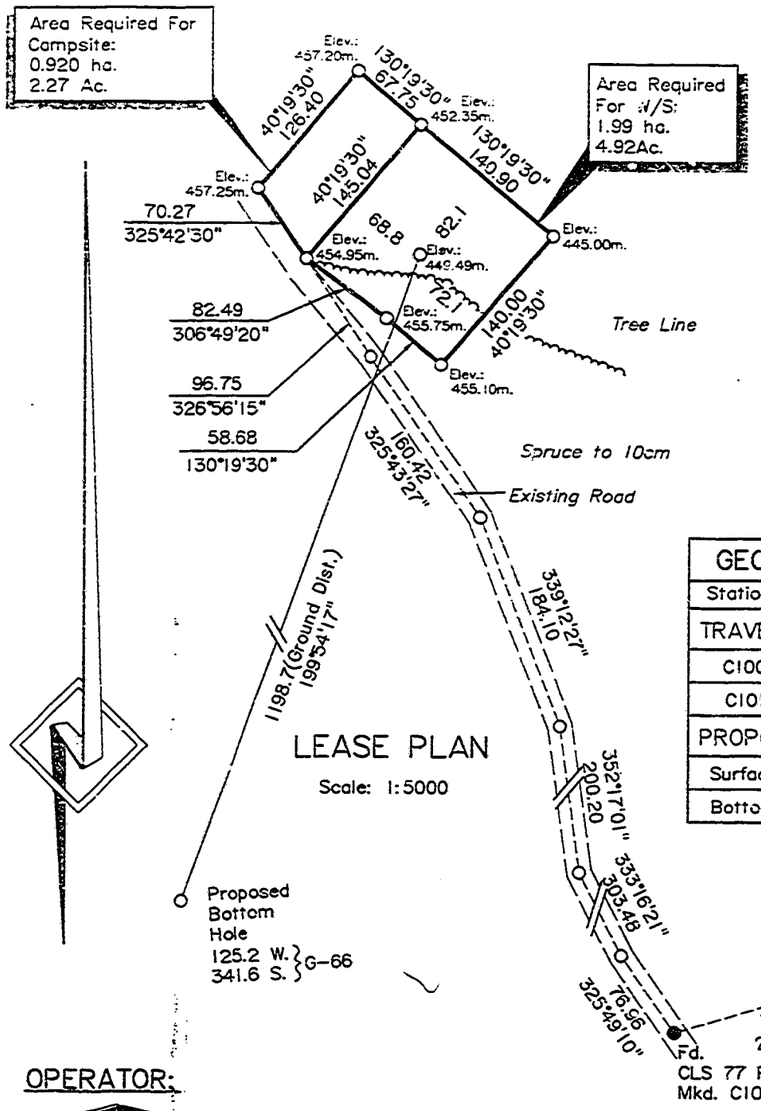
1.) STI – Sonic	3112 – 3500 m MD cased hole
2.) Density	3112 – 3500 m MD cased hole
3.) Neutron	3112 – 3500 m MD cased hole
4.) EMI	3112 – 3500 m MD cased hole

Formation Tests: No drill stem tests were run.

APPENDICIES TO WELL HISTORY REPORT

1. Area Topographic Map
2. Well Survey Plan
3. Drilling Fluid Summary
4. Composite Well Record
5. Directional Surveys
6. Formation Tops; Lithology Report; Geological Sample Report


Barge Landing
Barge Landing
Old Barge Landing
62
63
64
65
66
67
68
69
70
71
EL 362
EL 363
P-66A
E-54
EL 380
SOL 99
EL 366
RIVER



LEASE PLAN

Scale: 1:5000

Elevations:

LEASE: 449.49 W/C

Corners:

N.: 452.35 E.: 445.00

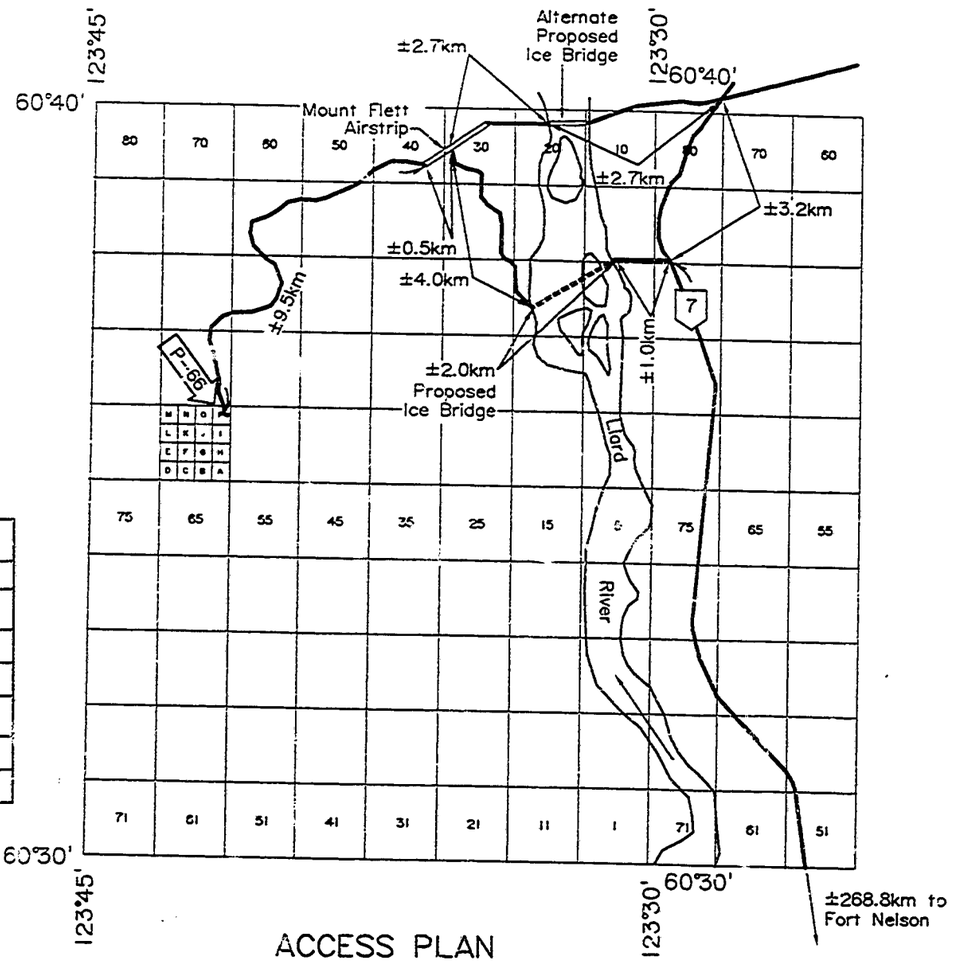
S.: 455.10 W.: 454.95

CAMPSITE:

N.: 457.20 W.: 457.25

GEODETIC AND UTM COORDINATES, (1927 NAD)

Station	Latitude	Longitude	Northings	Eastings
TRAVERSE STATIONS				
C100	60°35'27.711"	123°40'52.252"	6717223.94	462684.04
C101	60°35'25.980"	123°41'03.554"	6717172.17	462511.50
PROPOSED WELL				
Surface	60°35'55.664"	123°41'25.316"	6718093.96	462189.98
Bottom	60°35'19.098"	123°41'51.353"	6716966.91	461781.89



ACCESS PLAN

Scale: 1:150,000

NOTE:
DISTANCES ARE GROUND AND ARE IN METRES
THIS WELL IS DIRECTIONALLY DRILLED TO G-66
FROM THIS SURFACE LOCATION IN P-66 (OPTION W/C #2)

OPERATOR:

RANGER OIL

RANGER OIL LIMITED

ALBERTA LAND SURVEYORS' ASSOCIATION
PERMIT NUMBER
P042
J. Stuart Engineering & Surveying Ltd.

I CURTIS E. HENRIE, CERTIFY THAT THE SURVEY REPRESENTED BY THIS PLAN IS CORRECT AND TRUE TO THE BEST OF MY KNOWLEDGE AND WAS COMPLETED ON THE 19th DAY OF NOVEMBER, 1996.

CANADA LANDS SURVEYOR

RANGER FORT LIARD P--66
IN UNIT P SECTION 66
GRID AREA 60°40', 123°30'

SESL

Surveyor: BL Calculator: CH
Draftsperson: DB

Job No.: 96K048

No.	Revision	Date
4.	Moved Bottom Hole	96/12/2
3.	Lease Moved	96/11/19
2	Well Name	96/08/14
1.	Revised A/R & Access Plan	96/06/2

STUART ENGINEERING & SURVEYING LTD. 200, 517 - 10TH AVENUE S.W. CALGARY, ALBERTA, CANADA T2R 0A8 (403) 234-9018 FAX. (403) 266-2919

WF P-66

Schlumberger | Dowell

Dowell Division of Schlumberger Canada Limited
2450 Monenco Place
801 - 6th Avenue S.W.
Calgary, Alberta T2P 3W2
(403) 261-2051
(403) 262-4092 (Fax)

WELL SUMMARY

FOR

RANGER OIL LTD.

RANGER FT. LIARD P-66 LAT 60 40' LONG 123 30'

(660mm HOLE and 444.5mm HOLE)

WELL SUMMARY

FOR

RANGER OIL LTD.

RANGER FT. LIARD P-66 LAT 60 40' LONG 123 30'

(660mm HOLE and 444.5mm HOLE)

CONTENTS

1. WELL DATA
2. INTERVAL/TOTAL CONSUMPTION & COST
3. DISCUSSION BY INTERVAL
4. CONCLUSIONS & RECOMMENDATIONS
5. ION ADDITIONS
6. DRILLING MUD PROPERTIES SUMMARY
7. MUD REPORTS

PREPARED BY

DOWELL DRILLING FLUIDS

TECHNICAL SERVICES DEPARTMENT

FEBRUARY 1997

Schlumberger | Dowell

RANGER OIL LTD.

RANGER FT. LIARD P-66 LAT 60 40' LONG 123 30'

(660mm HOLE and 444.5mm HOLE)

WELL DATA

RIG: CACTUS # 26 E
DATE SPUDDED: January 12, 1997
DATE CASED TO 1007m: February 19, 1997

HOLE (mm)	CASING (mm)	DEPTH (m)	FLUID TYPE	DAYS	INTERVAL COST PROPOSAL	ACTUAL
660	508	263	VISPLEX Gel/Chemical	13	$ 15,070.00	$ 71,992.53
444.5	339.7	1007	VISPLEX	26	31,887.50	205,581.27
			WELL TOTAL		**$ 46,957.50**	**$ 277,573.80**

OPERATOR REPRESENTATIVES: Mr. Art Schritt
Mr. John Faulkner

CONTRACTOR REPRESENTATIVES: Mr. Terry Gorgichuck
Mr. Dennis Brown

DOWELL ENGINEERS: Mr. Dan Majocha
Mr. Ross Kovacs

RANGER OIL LTD.

RANGER FT. LIARD P-66 LAT 60 40' LONG 123 30'

(660mm HOLE and 444.5mm HOLE)

MATERIAL CONSUMPTION BY INTERVAL

HOLE SIZE: 660mm

FLUID TYPE: VISPLEX

PRODUCT	UNIT SIZE	QUANTITY	UNIT PRICE	TOTAL COST
Bentonite, Natural	100 lb	1533	$ 15.91	$ 24,390.03
Bicarbonate	100 lb	10	79.00	790.00
Calcium Carbonate '325'	25 kg	10	10.00	100.00
Calcium Carbonate 'SC'	25 kg	23	10.00	230.00
Caustic Soda	50 lb	32	58.00	1,856.00
Cellophane	18 kg	31	42.00	1,302.00
Lignite	25 kg	11	20.00	220.00
Magna Fiber	50 lb	8	128.00	1,024.00
Mica Coarse	25 kg	30	37.00	1,110.00
Primaseal 'M'	18 kg	24	38.00	912.00
Sawdust	sack	551	6.50	3,581.50
Soda Ash	40 kg	4	36.00	144.00
VISPLEX	11 kg	99	367.00	36,333.00

INTERVAL TOTAL	$	71,992.53
DISCOUNTED 50%		35,996.27
INTERVAL TOTAL	$	35,996.26
COST/METER	$	136.87

RANGER OIL LTD.

RANGER FT. LIARD P-66 LAT 60 40' LONG 123 30'

(660mm HOLE and 444.5mm HOLE)

MATERIAL CONSUMPTION BY INTERVAL

HOLE SIZE: 444.5mm

FLUID TYPE: VISPLEX

PRODUCT	UNIT SIZE	QUANTITY	UNIT PRICE	TOTAL COST
Bentonite, Natural	100 lb	257	$ 15.91	$ 4,088.87
Bentonite, Natural	40 kg	240	18.06	4,334.40
Bicarbonate	100 lb.	6	79.00	474.00
Caustic Soda	50 lb	145	58.00	8,410.00
FLOPLEX	25 kg	135	192.00	25,920.00
Lignite	25 kg	7	20.00	140.00
VISPLEX	11 kg	442	367.00	162,214.00

INTERVAL TOTAL	$	205,581.27
DISCOUNTED 50% INTERVAL TOTAL	$	102,790.63
COST/METER	$	138.16

RANGER OIL LTD.

RANGER FT. LIARD P-66 LAT 60 40' LONG 123 30'

(660mm HOLE and 444.5mm HOLE)

DISCUSSION BY INTERVALS

HOLE SIZE: 660mm

MUD TYPE: VISPLEX

The **VISPLEX** system was premixed in the mud tanks prior to drilling out the conductor pipe. After drilling 4 metres of cement, the viscosity increased significantly, as the pH climbed to 12. The mud was treated with Sodium Bicarbonate and Lignite to reduce the rheology to reasonable values for drilling. At 33 metres the rig was down for major repairs for three days.

Bentonitic shales were drilled from 33 to 54 metres, which steadily increased the viscosity and rheology. Strong and continuous additions of water were used to obtain **VISPLEX** properties as the **VISPLEX** continued to interact with the native clays. Soda Ash was added in an effort to drop the Calcium level, but this caused a sudden drop in the funnel viscosity to 37 s/L, and a drop in the rheology.

High seepage losses occured when drilling Gumbo shale, layered with sand and gravel sections from 54 to 160 meters. At 160 meters, total lost circulation was encountered and Bentonite and **VISPLEX** were added directly through the hopper in an effort to quickly build active volume in the mud tanks. At this point the rheology began to transform from high low-end **VISPLEX** properties to more conventional mud properties due to lack of prehydration of the Bentonite. An LCM pill consisting of Magna Fibre, Calcium Carbonate '325', 'Supercal' and Mica Coarse was pumped around while drilling ahead. The mud system was then maintained as a Gel/Chemical system, and a second LCM pill was mixed with Sawdust, Primaseal Medium, Cellophane and Mica. Drilling continued with a viscosity of 100 s/L.

At 254, metres circulation was again lost. Lost circulation material was mixed, and the bit was run in and reamed to bottom. The hole was then begun to be opened to 660mm and the viscosity was raised to 150 s/L.

At 152, metres while drilling with the 660mm hole opener, the mud volume in the tanks and the mud viscosity were increased to 135 s/L in order to prepare for the lost circulation zone at 160m. However, the lost circulation zone was drilled with continuous seepage losses and the total losses were recorded to be only $50m^3$.

The hole became tight at 245 metres, and a wiper trip was made. Twelve sacks of **VISPLEX** were added to raise the rheology while opening to TD, and another wiper trip was made. The viscosity was 90 s/L prior to pulling out to run the casing. The casing was run and the viscosity was reduced to 45 s/L prior to cementing. This reduction in viscosity was a natural thinning by the coal seams. No cement returns were observed while pumping the job, and a top up job was necessary to complete the cementing.

RANGER OIL LTD.

RANGER FT. LIARD P-66 LAT 60 40' LONG 123 30'

(660mm HOLE and 444.5mm HOLE)

DISCUSSION BY INTERVALS (Continued)

HOLE SIZE: 444mm

MUD TYPE: VISPLEX

On January 25th, the shoe was drilled out with the **VISPLEX** system. Cement contamination increased the rheology of the mud and treatment with Sodium Bicarbonate and Lignite was necessary. As drilling continued, the viscosity and yield point were reduced with additions of water. Tight hole began to occur and the viscosity was raised to 49 s/L and the corresponding yield point was 5 Pa. During the bit trip at 356m, tight hole was still occurring on the trip out and reaming was necessary through tight sections while tripping in. Once back on bottom the viscosity was raised again to improve hole cleaning.

At 466m, the inclination climbed to 4.5 degrees and drilling was halted to wait on directional drilling equipment. After wiper trips were performed, drilling resumed with tight hole still occurring, especially on connections. The rheology was increased with additions of **VISPLEX** and the fluid loss was reduced to 8cc/30 min with additions of **FLOPLEX** in an effort to improve hole conditions.

The hole began to slough in during a bit trip at 662m. As the stands were pulled during the trip out, circulation was sometimes necessary to clean the hole. While tripping in, bridges were reamed from 446m to 510m and from 624 to 662m. At one point the hole packed off causing stuck pipe.

Once drilling resumed, the yield point was increased to 15 Pa and the fluid loss was reduced to 6cc. A wiper trip was performed at 720m to help stabilize the wellbore. The active mud volume was increased and typical **VISPLEX** system properties became more prominent with additions of Bentonite and **VISPLEX**. Flatter rheology was evident with a Pv of 22cp and a Yp of 17 Pa, and gel strengths of 10 Pa (10 s.) and 60 Pa (10 min) and corresponding funnel viscosities of 80 - 140 s/L. The deviation decreased to 0.4 degrees by 750m.

At 827 meters a bit trip was made without any problems and no fill was found on the trip in. The temperature began to climb and at 947m the temperature recorded at the flow line was 72 ° C. Water addition rates of 40 LPM were required to prevent dehydration of the **VISPLEX** system, however in comparison to a Gel/Chemical system, the **VISPLEX** system had excellent temperature stability.

Intermediate point was reached on February 9th at 1008m. A reaming assembly was then run to correct the deviation encountered earlier in the interval and the bit was re-run to bottom to clean out the hole. After circulating for four hours, logs were run successfully. A clean out trip after the logs encountered bridges and a ledge which required a total of eight hours of working the pipe and conditioning the hole. The rheology was increased to a yield point value of 21 Pa; Pv of 21cp and a funnel viscosity over 150 s/L, prior to conducting a wiper trip. After the wiper trip went well, the production casing was run and cemented without any problems.

RANGER OIL LTD.

RANGER FT. LIARD P-66 LAT 60 40' LONG 123 30'

(660mm HOLE and 444.5mm HOLE)

CONCLUSIONS AND RECOMMENDATIONS

HOLE SIZE: 660mm

MUD TYPE: VISPLEX

Lost circulation was the prominent problem during the drilling of this interval. Some gravel, coal and bentonitic shale were encountered and significant interaction between the drilling fluid and these formations took place. Some tight hole did occur during the opening to 660mm.

It is recommended to drill out cement with water when possible. Cement will tend to increase the rheology and contaminate the **VISPLEX** system with Ca^{++} and OH^{-}, especially when the drilling fluid has been freshly built and does not contain solids. Once the shoe has been drilled out with water, the water can then be displaced by the **VISPLEX** system. If a large amount of cement is to be drilled and hole cleaning is a concern due to low annular velocities, viscous sweeps of **VISPLEX**, 5 m3 in volume can be pumped as required to clean the annulus.

Adequate "premix" volume on location is essential for prehydrating Bentonite if the **VISPLEX** system is to be formulated. The rig tanks volume was insufficient to have prehyrated Bentonite on standby and when lost circulation occurred, dry Bentonite was added to the active system to maintain volume requirements. This generally causes the rheology to have lower progressive gels at low shear values and also lowers the PV to YP ratio. These properties make it difficult for the drilling fluid to help reduce lost circulation, reduce seepage losses and improve hole cleaning.

As always with large holes, it is recommended to maintain high yield points due to the low annular velocities. Yield points up to 20 - 25 Pa were required during the drilling of the 660mm hole to clean the cuttings, gravel and shale from the hole.

Lost circulation increased the drilling fluid cost significantly for this interval. To maintain drilling fluid volume, an extra $11,000 in Bentonite was required and a total of $4000 in lost circulation material was used to help seal the hole.

In summary, the **VISPLEX** system was programmed for this interval to permit maximum hole cleaning while drilling large hole through potentially sloughing, faulted lithology. More of an effort needs to be developed to ensure that proper procedures are followed and the needed equipment be supplied for mixing this system in order to gain the full benefits of the unique rheological properties of **VISPLEX**.

RANGER OIL LTD.

RANGER FT. LIARD P-66 LAT 60 40' LONG 123 30'

(660mm HOLE and 444.5mm HOLE)

CONCLUSIONS AND RECOMMENDATIONS (Continued)

HOLE SIZE: 444mm

MUD TYPE: VISPLEX

The problems encountered on this interval included wellbore instability, deviation and washout. Most of these problems occurred prior to reaching 720 metres and consisted of reaming and cleaning to bottom on trips, tight hole and stuck pipe. Flowline temperatures of 72°C did not degrade or present any dehydration problems to the **VISPLEX** system.

Properties, characteristic of the **VISPLEX** system did not reach their full potential until approximately 700 metres. From this point, good hole cleaning was evident as trips went well and little tight hole occurred. Yield points of 15-20 Pa were sufficient for cleaning the hole while drilling ahead. As in the previous section, formulation of the **VISPLEX** system requires prehydrated Bentonite. For this reason an adequate premix tank is essential for success. It is also worth while to note that the **VISPLEX** content will decrease in very reactive formations and additions up to 8.0-9.0kg/m^3 may be necessary while drilling these formations.

It is not recommended to drill out cement with the **VISPLEX** system. Although the initial viscosity was low prior to drilling out, severe thickening to the rheology occurred. Drill out the shoe with water whenever rig logistics will allow.

It is also recommended to maintain tighter fluid loss fluid loss control with additions of **FLOPLEX**. By maintaining fluid loss less than 6 cc/30min, downhole conditions improved. Additions of **FLOPLEX** in low concentrations may actually thin the **VISPLEX** system. Therefore, **FLOPLEX** is added to the system and thinning is not desired, ensure the final concentration is in excess of 9kg/m^3.

Coal will tend to thin the **VISPLEX** system, especially inferior coal which has not been exposed to heat or pressure during consolidation. If a large amount of this coal is suspect to be drilled, it is recommended to formulate the **VISPLEX** system with 43kg/m^3 of NaCl Brine. With Brine concentrations in the **VISPLEX** system, Lignite will have little or no thinning effect.

Overall it must be stated that without the tremendous rheological properties which were available with the **VISPLEX** system, it is unlikely that the hole could have been stabilized sufficiently to run the 240mm casing to bottom.

Schlumberger Dowell

DRILLING MUD PROPERTIES RECORD

WELLNAME RANGER FORT LIARD P-66 LAT60.40' LONG123. 30'
STOCK POINT GRANDE PRAIRIE
AREA FORT LIARD
CONTRACTOR CACTUS # 26E
ENGINEERS DAN MAJOCHA

MUD SYSTEM VISPLEX II
TREATMENT # 2911-0721

REPORT No.	DATE	DEPTH (m)	DENSITY (kg/m3)	VISCOSITY (s/L)	A.V. (mPa.s)	P.V. (mPa.s)	Y.P. (Pa.)	GELS (Pa.)	pH	HTHP FILTRATE (cm3)	API FILTRATE (cm3)	FILTERCAKE (mm)	Pf	Mf	Pm	TOT. HARDNESS (mg/l	Ca (mg/L)	CL (mg/L)	SAND CONTENT	SOLIDS CONTENT	OIL/WATER CONTENT	MBT (Kg/m3)	ELECTRICAL STABILIT	OIL WATER RATIO	E.C.D. kg/m^3	"n"	"k"
1	10-Jan-97	SPUD REPORT																									
2	12-Jan-97	33	1020	0	35	20	15	14//13	12.0		0.0	0.0	2.90	3.10	0.00	120		100	0.00	1.22	0	30		0.0	1023.5	0.01	3.08
3	16-Jan-97	54	1030	57	35	10	25	12//12	11.7		0.0	0.0	2.50	3.00	0.00	30		100	0.30	1.83	0	34		0.0	1032.3	0.17	0.71
3A	16-Jan-97	158	1090	44	17	10	7	10//17	11.2		0.0	0.0	1.40	1.60	0.00		0	100	0.30	5.49	0	30		0.0	1094.5	0.02	2.16
4	17-Jan-97	160	1090	35	8	7	1	0	11.0		0.0	0.0	1.00	1.20	0.00		0	100	0.50	5.49	0	20		0.0	1092.1	0.37	0.34
4A	17-Jan-97	160	1090	0	34	23	11	5//22	11.0		0.0	0.0	0.50	0.90	0.00		0	100	0.50	5.49	0	30		0.0	1095.2	0.31	0.88
4b	17-Jan-97	181	1065	115	54	38	16	5//	10.5		0.0	0.0	0.30	0.45	0.00		0	100	0.50	3.96	0	0		0.0	1071.9	0.36	0.96
5	18-Jan-97	255	1075	105	69	47	22	2.5//9	10.0		0.0	0.0	0.35	0.50	0.00		0	100	0.50	4.57	0	58		0.0	1078.8	0.59	0.32
6	19-Jan-97	267	1075	150	73	53	20	3//20	9.8		0.0	0.0	0.20	0.40	0.00	20		100	0.50	4.57	0	60		0.0	1079.2	0.57	0.43

35440 ARRIVE ON LOCATION 22:30 JAN 09/97 SPOT PRODUCTS
35441 MUD TANKS CLEAN FILLED W/ WATER
35442 SPUD @ 09:00 W/ VISPLEX SYSTEM DRILLED 4 m OF CEMENT, MUD BECAME UNPUMPABLE TREATED W/ BICARB AND LIGNITE
FUTURE HOLES SHOULD SPUD W/ VISPLEX W/ LOW pH OR DRILL W/ WATER AND DISPLACE TO VISPLEX
Drilled to 33 m table bearings siezed, Down for rig repairs
35443 Rig Repairs
35445 Make up BHA RIH drill ahead from 33 m - 54m @ 24:00 visplex show sall properties except it does not seem to shear down, drilling bentonitic shales should start w/ lower concentration of gel
35446 Drill from 54 - 160 m, Gumbo shale, (no mud rings), gravel encountered (high seepage losses), full losses @ 160 m trip out of hole build volume and mix LCM pill
VISPLEX System : The properties remained consistent while running water in excess of 60 l/m while drilling gravel, until soda ash was added to treat calcium viscosity dropped to 37, Gel and visplex added directly through the hopper and caustic was added properties started to return when circulation was lost
35447 Pumped LCM pill containing mgna fiber calcarb and mica (did not spot contiued to drill bypassed the shaker for one circ) build volume mixed gel and proper amounts of Visplex (no properties) turned system to Gel chem system raised vis to 100 +s/l mixed LCM pill Containing sawdust prima seal CelloPhane and mcia
Pump 5m^3 LCM pill drill ahead w/ 100+ s/l vis Gel Chem system

Schlumberger Dowell

DRILLING MUD PROPERTIES RECORD

WELLNAME RANGER FORT LIARD P-66 LAT60.40' LONG123. 3
STOCK POINT GRANDE PRAIRIE
AREA FORT LIARD
CONTRACTOR CACTUS # 26E
ENGINEERS ROSS AND WAYNE

MUD SYSTEM VISPLEX II
TREATMENT # 2911-0721-

REPORT No.	DATE	DEPTH (m)	DENSITY (kg/m3)	VISCOSITY (s/L)	A.V. (mPa.s)	P.V. (mPa.s)	Y.P. (Pa.)	GELS (Pa.)	pH	HTHP FILTRATE (cm3)	API FILTRATE (cm3)	FILTERCAKE (mm)	Pf	Mf	Pm	TOT. HARDNESS (mg/l	Ca (mg/L)	CL (mg/L)	SAND CONTENT	SOLIDS CONTENT	OIL/WATER CONTENT	MBT (Kg/m3)	ELECTRICAL STABILIT	OIL WATER RATIO	E.C.D. kg/m^3	"n"	"k"
7	20-Jan-97	267	1060	58	35	26	9	1.5//15	10.5		0.0	0.0	0.40	0.50	0.00	20		100	0.30	5.49	0	50		0.0	1090.9	0.55	0.32
8	97-01-24	0	1060	58	35	26	9	1.5//15	10.5		0.0	0.0	0.40	0.50	0.00	20		100	0.30	3.66	0	50		0.0	1062.8	0.55	0.32
9	97-01-25	0	1070	34	9	7	2	.5\3	10.5		10.5	3.0	0.12	0.17	0.00	40		260	0.30	4.27	0	50		0.0	1071.6	0.42	0.26
10	97-01-26	332	1070	49	16	11	5	23\35	11.0		9.0	2.0	2.00	2.60	0.00	60		280	0.30	4.27	0	40		0.0	1074.0	0.10	1.68
11	27-Jan-97	360	1070	49	16	11	5	23\35	11.5		7.5	3.0	2.10	2.90	0.00	40		300	0.30	4.27	0	45		0.0	1074.0	0.10	1.68
12	28-Jan-97	436	1070	66	31	24	7	4\29	11.5		6.5	3.0	1.80	2.40	0.00	40		440	0.30	4.27	0	50		0.0	1073.4	0.49	0.43
13	29-Jan-97	466	1100	65	34	26	8	2\22	11.5		8.0	3.0	3.50	5.30	0.00	40		460	0.30	6.10	0	55		0.0	1103.0	0.53	0.35

35448 Drill to 254 m POH pick up monel mix LCM @ surface RIH Lost circulation mix LCM ream and clean to bottom survey, POH pick up hole opener,
open 17.5 hole w/ Gel Chem system 150 s/l, bentonitic shale, coarse sand, gravel
35449 Drill to 152 m (just above lost circ zone) build volume raise vis to 135 s/l drill ahead through lost circ zone no losses initially lost 50 m^3 by morning
35450 Hole became tight @ 245 m pulled wiper trip top mixed LCM, RIH drill w/ hole opener start adding visplex (mixed first 12 sx through chem bbl)to increase rheology no
35451 Pull wiper trip to 11 inch collars RIH circ 1 hr, Vis @ 90 s/l POH to run casing Run 20 inch surface casing circulate casing Viscosity dropped to 45 s/l due to lignitic sh
set slips run 127 mm pipe stab in and cement. some cement contaminated mud returns were disposed of. No cement returns.
Cut conductor off and run 2 7\8 tubing down annulus. Top off job and get 4 m3 returns to surface. WOC Nipple up and pressure test BOP's.
Run in and drill out cement from 246m . Circulated and treated cement contaminated mud. Drill out 19:15 hrs- 97-01-25. Drill 5 m and run leak off test.
Drill aheadwhile conditioning mud. Dumped approximately 70 m3 fluid as we were unable to keep mud on shakers. Increase viscosity as soon as possible.
Increased the viscosity to 52s\l. Hole and mud seemed stable. The tight hole stopped and connections were okay. Drilled to 356m and circulated.
Pull out of the hole. Tight on way out. Pick up the new BHA and run in the hole. Ream and work pipe to get to bottom. Hole not cleaning sufficiently.
Ream and work pipe as conditioning mud. Raise viscosity to 70 to 90 s\l. Drill ahead with bit 1B from 356m and condition mud. Viscosity drops were made at various times.
Dispersion rings were evident in shaker box and mud tanks every time drops occurred in viscosity. Drill ahead survey increasing in direction away from target.
At 466m survey was 4.5 degrees at N74.5E. The decision was made to stop drilling ahead and wait on directional tools and drillers. Wiper trip and circulate.
Wiper trip and circulate.

Schlumberger Dowell

DRILLING MUD PROPERTIES RECORD

WELLNAME RANGER FORT LIARD P-66 LAT60.40' LONG123. 3(
STOCK POINT GRANDE PRAIRIE
AREA FORT LIARD
CONTRACTOR CACTUS # 26E
ENGINEERS Dan Majocha

MUD SYSTEM VISPLEX II
TREATMENT # 2911-0721

REPORT No.	DATE	DEPTH (m)	DENSITY (kg/m3)	VISCOSITY (s/L)	A.V. (mPa.s)	P.V. (mPa.s)	Y.P. (Pa.)	GELS (Pa.)	pH	HTHP FILTRATE (cm3)	API FILTRATE (cm3)	FILTERCAKE (mm)	Pf	Mf	Pm	TOT. HARDNESS (mg/l	Ca (mg/L)	CL (mg/L)	SAND CONTENT	SOLIDS CONTENT	OIL/WATER CONTENT	MBT (Kg/m3)	ELECTRICAL STABILIT	OIL WATER RATIO	E.C.D. kg/m^3	"n"	"k"
14	30-Jan-97	466	1095	60	30	23	7	2\19	11.5		9.4	3.0	2.70	4.50	0.00	40		470	0.30	5.79	0	52		0.0	1098.0	0.50	0.39
15	31-Jan-97	492	1095	64	34	26	8	1//17/42	11.7		8.0	2.0	4.50	6.20	0.00	40		1000	0.30	5.79	0	58		0.0	1096.7	0.65	0.19
16	01-Feb-97	581	1120	67	38	27	11	2//30/60	11.0		7.5	3.0	3.00	4.50	0.00	20		1100	0.30	7.32	0	60		0.0	1121.3	0.70	0.14
17	02-Feb-97	662	1120	60	38	28	10	1.5//22	10.0		7.0	2.0	1.70	3.60	0.00		0	1400	0.30	7.32	0	62		0.0	1121.9	0.58	0.27
18	03-Feb-97	697	1150	95	43	28	15	4.5//29	10.0		6:0	2.0	1.80	3.70	0.00		0	1400	0.30	9.15	0	64		0.0	1153.1	0.35	0.78
19	04-Feb-97	757	1140	125	39	22	17	10//41	10.0		6.0	2.0	2.00	4.00	0.00		0	1400	0.30	8.54	0	62		0.0	1143.8	0.14	1.71
21	06-Feb-97	856	1160	130	36	22	14	9.5//44	10.0		6:0	1.5	2.00	3.90	0.00		0	1500	0.30	9.76	0	62		0.0	1164.3	0.11	2.09
22	07-Feb-97	905	1165	120	33	17	16	10//50	10.5		6:5	1.5	2.20	4.30	0.00		0	1500	0.30	10.06	0	63		0.0	1168.3	0.11	1.59
23	08-Feb-97	947	1150	140	28	14	14	9.5//60	11.0		8.0	1.5	2.90	5.20	0.00		0	1200	0.30	9.15	0	64		0.0	1153.0	0.10	1.54
24	09-Feb-97	997	1150	165	31	19	12	9//65	11.5		9.0	2.0	4.00	8.00	0.00		0	1000	0.30	9.15	0	62		0.0	1154.2	0.08	2.24
25	11-Feb-97	790	1160	115	33	17	16	4.5//47	11.0		8.5	1.5	3.50	7.10	0.00		0	900	0.30	9.76	0	62		0.0	1163.8	0.01	2.74
26	11-Feb-97	872	1160	75	34	17	17	11.5//44	10.7		7.0	1.5	3.30	6.70	0.00		0	1300	0.30	9.76	0	64		0.0	1163.4	0.09	1.75
27	12-Feb-97	1008	1160	95	31	15	16	9//50	11.5		8.0	1.5	3.80	7.90	0.00		0	1400	0.30	9.76	0	64		0.0	1162.8	0.15	1.18
28	13-Feb-97	1008	1150	230	43	22	21	19.5//70	11.7		6.5	1.5	4.40	8.20	0.00		0	1500	0.30	9.15	0	66		0.0	1154.2	0.00	3.12

Circulate and condition hole while waiting on tools and directional drillers. Wiper trip. Pull out and lay down BHA. Work on pumps.

Wait on bit sub and work on pumps. RIH break circulation drill to 468 m pull 8stands work on pump.

Control drill correcting angle drill to 470 m hole tight on 2 connections start additions of floplex and visplex 8 and 4 sx per circulation hole cleaned up fluid loss @ 8 ml

Drill no problems drilling rate up to 8 m per hour average 4.2 m/hr between sliding and rotating

Drill to 662 m trip Bit # 2, hole started to unload (hydraulic pipe out) pump out singles

RIH to 446 m ream 446 - 510 m RIH to 510 - 624 m ream 624 - 662 m drill ahead (while tripping became stuck and formation was overpressured, slooughing shales since.)

Drill to720 m wiper trip to casing RIH clean to bottom drill ahead. Built volume added 28 m^3 10 kg.m^3 Gel and 3 Kg/m^3 visplex Ph 12.5. deviation .4 degrees @ 750 m

Drill to 827 m POH for mud motor, RIH test MWD @ 300 m RIH to bottom no fill drll ahead.

Drill to 947 m mud temp 72 degrees C change pump heads on a regular basis due to high temp mud started to dehydrate increased water to 60 s/l for 3 circulations

ran water @ 40 s/l for regular maintanence

Drill to 1008 m (intermediate T.D.) @ 04:45 Feb 09, circulated 2 hours POH RIH to 479m w/ reamer assembly ream from 479-738 m POH rack small ID collars RIH ream from 70

Ream to 993 m pipe tourqued up back spinning kelly broke 2 tool joints free POH check and retourque tool joints RIH ream to 1008 m circ 4 hrs on bottom POH to log Logs to bot

WELL LOGGED succsesfully logs showed substantial wash out from 1008 - 650 m Rih for clean out trip hit bridge @ 880 ream to 950 m workledge for ~ 8 hours

shale returns minimal @ 950 raised viscosity to 230 s/l YP 20.5 ream to 1008 m

Schlumberger Dowell

DRILLING MUD PROPERTIES RECORD

WELLNAME RANGER FT. LIARD P-66 P-66 LAT 60 40' LONG 123
STOCK POINT 0
AREA
MUD SYSTEM CONTRACTOR CACTUS #26E
ENGINEERS JOE SMITH

REPORT No.	DATE	DEPTH (m)	DENSITY (kg/m3)	VISCOSITY (s/L)	A.V. (mPa.s)	P.V. (mPa.s)	Y.P. (Pa.)	GELS (Pa.)	pH	HTHP FILTRATE (cm3)	API FILTRATE (cm3)	FILTERCAKE (mm)		Pom	EXCESS LIME KG/M3	TOT. HARDNESS (mg/	Ca (mg/L)	CL (mg/L)	SAND CONTENT	SOLIDS CONTENT	OIL CONTENT	WATER CONTENT	ELECT. STABILITY	OIL WATER RATIO	CaCl2 w/w%	"n"	"k"
31	18-Feb-97	1006	980	0	6	5	1	.5//1	0.0	20.0		1.0	0.00	2.60	9.62		0	0	0.00	4.00	94	2	1900.0	98//2	0.0	0.31	0.60
32	19-Feb-97	1012	1000	39	6	5	1	.5//1	0.0	22.0		1.5	0.00	1.40	5.18		0	0	0.00	6.00	90	4	1300.0	96//4	0.0	0.31	0.60
33	21-Feb-97	1040	1055	39	12	9	3	1.5//3	0.0	10.0		1.5	0.00	1.30	4.81		0	0	0.00	10.00	86	4	1700.0	96//4	0.0	0.25	2.01
33a	21-Feb-97	1040	1055	39	12	9	3	1.5//3	0.0	10.0		1.5	0.00	1.30	4.81		0	0	0.00	10.00	86	4	1700.0	96//4	0.0	0.25	2.01
34	22-Feb-97	1078	1085	41	14	9	5	1.5//3.5	0.0	10.0		1.5	0.00	1.50	5.55		0	0	0.35	13.00	83	4	1440.0	95//5	0.0	0.35	1.69
34a	22-Feb-97	1122	1040	41	11	7	4	1.5//3.0	0.0	10.0		1.5	0.00	1.20	4.44		0	0	0.75	10.00	86	4	1290.0	96//4	0.0	0.29	1.88
35	23-Feb-97	1218	1065	38	14	8	6	2.5//3.5	0.0	10.0		1.5	0.00	3.20	11.84		0	0	1.20	12.00	84	4	1085.0	95//5	0.0	0.24	3.36
36	24-Feb-97	1303	1075	39	15	9	6	3.0//4.5	0.0	10.0		1.5	0.00	4.00			0	0	0.75	14.00	85	1	1210.0	99//1	0.0	0.20	4.36
37	25-Feb-97	1344	1055	37	14	9	5	2.5//4.0	0.0	10.0		1.5	0.00	4.00			0	0	0.75	12.50	87	1	1930.0	99.5//.5	0.0	0.21	3.58
38	26-Feb-97	1344	1055	37	14	9	5	2.5//4.0	N//A	10.0		1.5	0.00	4.10			0	0	0.75	12.50	87	1	1930.0	99.5//.5	0.0	0.21	3.58
39	27-Feb-97	1292																									
40	STUCK PIPE																										
41	STUCK PIPE																										
42	STUCK PIPE																										

PRESSURE TEST

DRILL out cement and shoe @ 14:15 Feb 19, Tagged cement @ 987m started to displace hole to TRUDRILL while drilling pump froze up due to insufficient cleaning of the mud tanks (water left in the plumbing) water froze when hit w/ -20 degree Trudrill. While thawing mud suction lines TRUDRILL and water flipped in the hole 30m^3 pumped t

Drill to 1012 performed leak off test drill to 1041m connections tight, circ 3/4 hr flow check pump pill lay down 1 single stuck pipe work stuck pipe (no jars) P/U surface jars jar pipe free in 1 1/4 hrs pull into casing circ and condition TRUDRILL (raise YP to 3 density to 1050) POH pick up directional BHA RIH CTB 1008M-1041M.

RIH CTB 1008M-1041M 1008M-1041M). DRILL AHEAD AND SURVEY.DRILL AND SURVEY POOH for MWD at 1079m. RIH CTB 8M (.25 Hours) DRILL and SURVEY to 1349m. Attempt to make connection. PIPE STUCK 8:15 AM Feb 25 free point back off fish feb 27 POH , RIH w/ new BHA Circ and condition Attempt to POH hole tight Circ and Condition mud POH RIH w/ jars Jarred on fish. ~ 7 hrs moved fish 5 m up. Backed off above jars POH RIH open ended to run whipstock plug

Schlumberger Dowell

DRILLING MUD PROPERTIES RECORD

WELLNAME RANGER FT. LIARD P-66 P-66 LAT 60 40' LONG 123 3(
STOCK POINT GRANDE PRAIRIE (FORMULA)
AREA
MUD SYSTEM INVERT TRUDRILL CONTRACTOR CACTUS #26E
ENGINEERS DAN MAJOCHA

REPORT No.	DATE	DEPTH (m)	DENSITY (kg/m3)	VISCOSITY (s/L)	A.V. (mPa.s)	P.V. (mPa.s)	Y.P. (Pa.)	GELS (Pa.)	pH	HTHP FILTRATE (cm3)	API FILTRATE (cm3)	FILTERCAKE (mm)		Pom	EXCESS LIME KG/M3	TOT. HARDNESS (mg/	Ca (mg/L)	CL (mg/L)	SAND CONTENT	SOLIDS CONTENT	OIL CONTENT	WATER CONTENT	ELECT. STABILITY	OIL WATER RATIO	CaCl2 w/w%	"n"	"k"
43	04-Mar-97	1292	1115	54	24	13	11	7.0//9.5	0.0	13.2		2.0	0.00	4.00	14.80		0	0	0.65	13.00	87	1	2000.0	99.5//.5	0.0	0.11	11.77
44	05-Mar-97	1115	1115	55	25	13	12	7.0//9.5	0.0	10.0		2.5	0.00	3.70	13.69		0	0	0.65	14.00	83	3	1500.0	97//3	0.0	0.14	11.12
45																											
46	07-Mar-97	1192	1140	50	28	15	13	8//10	0.0	9.0		2.0	0.00	3.60	13.32		0	0	0.60	15.00	83	2	1650.0	97.6//2.4	0.0	0.13	13.00
47	08-Mar-97	1224	1170	54	32	16	16	9//12	0.0	8.5		1.8	0.00	3.60	13.32		0	0	0.55	16.00	83	1	2000+	99//1	0.0	0.14	14.30
48	09-Mar-97	1265	1155	47	29	16	13	9//11	0.0	7.0		2.0	0.00	3.90	14.43		0	0	0.55	15.00	84	1	2000+	99//1	0.0	0.10	15.40
49	09-Mar-97	1314	1140	51	31	16	15	9//10	0.0	7.0		1.5	0.00	4.00	14.80		0	0	0.50	16.00	84	0	2000+	100//0	0.0	0.13	14.50
50	11-Mar-97	1288	1210	70	34	20	14	10//12	0.0	6.5		1.5	0.00	4.00	14.80		0	0	0.50	18.00	82	0	2000+	100//0	0.0	0.09	17.21
50b	11-Mar-97	1369	1210	56	32	18	14	10//11	0.0	9.0		2.0	0.00	3.50	12.95		0	0	0.50	20.00	80	0	2000+	100//0	0.0	0.08	17.58
51	12-Mar-97	1375	1205	56	33	19	14	10//11	0.0	8.0		2.0	0.00	3.50	12.95		0	0	0.50	20.00	79	1	2000+	99//1	0.0	0.09	17.27
52	13-Mar-97	1411	1220	59	35	20	15	10//12	0.0	8.0		1.5	0.00	3.60	13.32		0	0	0.50	21.00	79	0	2000+	100//1	0.0	0.11	16.74
53	14-Mar-97	STUCK PIPE																									
54	15-Mar-97	1005	1255	77	44	25	19	12//14	0.0	4.0		2.0	0.00	2.70	9.99		0	258222	0.50	18.00	72	10	1240.0	88//12	31.2	0.12	19.60

RIH OPEN ENDED PLUG BACK PLUG DOWN @ 12:00 NOON MAR 04 PO PLUG CIRCULATE POH
RIH HIT BRIDGE @ 1093 M (THOUGHT IT WAS CEMENT TOP CIRCULATED STARTED TO POLISH PLUG REAMTHROUGH BRIDGE TAG CEMENT @ 1164 M
POLISH PLUG TO 1172 M POH FOR DIRECTIONAL BHA RIH WASH 1153 - 1172 m Control drill to 1175 m (no cement in samples possibly side tracked while polishing plug)
Drill ahead building angle Drill to 1195 m POH for MWD (PULSER) RIH Wash 2 singles to BTM DRILL TO 1204 M POH for MWD (PROBE) RIH wash 1141 - 1195 drill ahead
Drill to 1265 m Pipe became stuck after sliding 4 m worked pipe free (near bit stabilzer hanging up (Possibly differential sticking trip gas after RIH) POH for JARS (QUIT FIRING) RI
RIH wash one single to bottom drill ahead building angle 25 derees @ 1292m
DRILL to 1369 m pull wiper trip to the casing RIH one single off bottom broke circ good returns pressured up, work tight hole no circulation, jarred pipe free POH RIH slick string
RIH clean to 1369 m pump HIVIS sweep pull wiper trip to the casing clean to 1369 m POH
RIH W/ DIRECTIONAL BHA, TO 1007 SLIP & CUT RIH CLEAN 1307 - 1369 m SURVEY 30.7 DEGREES @ 1350 m, DRILL AHEAD
DRILL TO 1405 @ 24:00 33.5 DEGREES @ 1389 m 204 8 AZMUTH
DRILL TO 1411 m drilling rate slowed to less than 1/2 m per hour pump pill attempt to POH pipe pulled tight right away pulled one single kelly'd up no circulation jar one single out
wait on wire line truck RIH w/ wire line pull MWD probe , free point and back off one collar above jars. circulate no sloughing shales over the shaker POH Make up bit and new Bha
RIH to 1005 Convert trudrill to 90/10 invert RIH to top of fish circ and condition INVERT pull into casing circulate, wait on top drive

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'		DATE	10-Jan-97
OPERATOR	RANGER Oil LTD.	CONTRACTOR CACTUS # 26E		REPORT No	1
REPORT FOR Mr.	ART SCHRIT	REPORT FOR Mr. TERRY GORGICHUCK		SPUD DATE	

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)		LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	175	PUMP #1	165X254	OPPOSITE DP	
BIT NUMBER					HOLE		M3/STK		OPPOSITE DC	
DRILL PIPE #1(mm)	127.0				TOTAL	175	PUMP #2	165X254	CIRC. TIME	
DRILLPIPE #2(mm)			LINER	TOP/BOT.	STAND BY		M3/STK		BOTTOMS UP	
COLLAR #1(mm)	279.0						S.P.M.			
COLLAR #2(mm)	225.0						M3/MIN			

HOLE DATA	DESANDER DESILTER		DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-	UNDERFLOW WT.	kg/m3	VISCOSITY	60-90 s/L
DEVIATION-	OVERFLOW WT.	kg/m3	FILTRATE	N/C cm3/30 mn.
CURRENT OP.-RIG UP	UNDERFLOW RT	m3/min	pH	11.0-11.5

EQUIPMENT: X DEGASSER DESILTER DESANDER XXX CENTRIFUGE

XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE 325

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN				MATERIALS	MATERIALS RECEIVED TO DATE	MATERIALS RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM											
PRESENT DEPTH											
FLOWLINE TEMPERATURE (C)											
DENSITY											
FUNNEL VISCOSITY (s/L)											
600 READING											
300 READING											
APPARENT VISCOSITY (mPa.s)											
PLASTIC VISCOSITY (mPa.s)											
YIELD POINT (Pa)											
GELS 0/10 min (Pa)											
pH	STRIP	X	METER:								
FILTRATE (cm3)	API	X	HTHP								
FILTER CAKE (mm)											
PF											
MF											
PM											
TOTAL HARDNESS (mg/l)			Ca								
CHLORIDES (mg/L)			NaCl								
SAND CONTENT	%		FR								
SOLIDS CONTENT	%		FR.								
OIL/WATER CONT	%		FR.								
MBT	(Kg/m3)		OIL RET								

ELECTRICAL STABILITY		PREVIOUS COST		STARTING VOLUME	
OIL WATER RATIO		DAILY COST		VOL. BUILT	
E.C.D. kg/m^3	#VALUE!	CUM. COST		VOL. LOST ON SURFACE	
"n"		ENGINEERING	$480.00	VOL. LOST ON SUB SURFACE	
"K"		DISCOUNTED COST		END VOLUME	
COMMENTS	PREP TO SPUD	TRUCKING		CUM. VOL BUILT	

CLEAN ALL MUD TANKS THOROUGHLY

633- 7390

IN THE PREMIX TANK - PREHYDRATE GEL @ 90 KG/M^3 e.g.: 50 M^3 = 112.5 40 KG SAX

IN THE ACTIVE SYSTEM - PREHYDRATE GEL @ 40 KG / M^3 ALLOW TO HYDRATE FOR SIX HOURS MINIMUM e.g.: 175 M^3 = 175 40 KG SAX

- RAISE pH TO 10.5 W/ CAUSTIC
- ADD 30 SAX OF VISPLEX THROUGH THE CHEMICAL BBL 2 SAX PER BBL

CONTROL VISCOSITY @ 60 - 90 S/L W/ ADDITIONS OF CAUSTIC THROUGH THE CHEM BBL

DO NOT ADD ANY SAWDUST FOR LOST CIRCULATION

SEVERE LOSSES WE WILL PUMP HIGH VISCOSITY VISPLEX PILLS CONTAINING CAL CARB, MAGNA FIBRE AND OR MICA

CALL ME IF YOU HAVE ANY QUESTIONS OR PROBLEMS

STOCK POINT	FORMULA TRANSPORT; GRANDE PRAIRIE	DOWELL ENGINEER	DAN MAJOCHA	On Location
PHONE	532 - 5078		Camp	Room # 27

THE INFORMATION IN THIS REPORT IS BASED ON OUR EXPERIENCE, REPRESENTS OUR BEST JUDGMENT IN THE MATTER AND IS INTENDED TO BE HELPFUL BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	12-Jan-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	2	
REPORT FOR Mr.	ART SCHRIT	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	660.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	175	PUMP #1	165X254	OPPOSITE DP	
BIT NUMBER	1A				HOLE	10	M3/STK	0.0158	OPPOSITE DC	11
DRILL PIPE #1(mm)	127.0				TOTAL	185	PUMP #2	165X254	CIRC. TIME	59
DRILLPIPE #2(mm)			LINER	TOP/BOT.	STAND BY		M3/STK	0.0158	BOTTOMS UP	3
COLLAR #1(mm)	279.0	28					S.P.M.	200		
COLLAR #2(mm)	225.0						M3/MIN	3.1593		

HOLE DATA	DESANDER DESILTER		DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT. 1020	kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT	kg/m3	VISCOSITY	60--90 s/L
DEVIATION-	OVERFLOW WT.	kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.	m3/min	pH	11.0-11.5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE 325

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			21:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			33								
FLOWLINE TEMPERATURE (C)			23.9	CAUSTIC	180		4	4	176	$232.00	$232.00
DENSITY			1020	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)				NAT BENTON	440		120	120	320	$1,909.20	$1,909.20
600 READING			70	LIGNITE	56		4	4	52	$80.00	$80.00
300 READING			50	LIME	54				54		
APPARENT VISCOSITY (mPa.s)			35	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)			20	BICARB	25		4	4	21	$316.00	$316.00
YIELD POINT (Pa)			15	MICA COARS	48				48		
GELS 0/10 min. (Pa)			14//13	MDF-FLR	7				7		
pH	STRIP	X METER	12	VISPLEX II	303		42	42	261	$15,414.00	$15,414.00
FILTRATE (cm3)	API	X HTHP		ID FREE 208	4				4		
FILTER CAKE (mm)				CELLOPHANE	100				100		
PF			2.9	MICA MEDIUM	50				50		
MF			3.1	FLOPLEX	50				50		
PM				P. SEAL "C"	50				50		
TOTAL HARDNESS (mg/l)		X Ca	120	P. SEAL "M"	60				60		
CHLORIDES (mg/L)		X NaCl	100	CALCARB "32	224				224		
SAND CONTENT	%	FR		CALCARB "50	224				224		
SOLIDS CONTENT	%	X FR	1.2	CALCAARB "C	224				224		
OIL/WATER CONT	%	FR		DETERGENT	20				20		
MBT	(Kg/m3)	X OIL RET	30	PREVIOUS COST				STARTING VOLUME			
ELECTRICAL STABILITY				DAILY COST	$17,951.20			VOL. BUILT			
OIL WATER RATIO				CUM. COST	$17,951.20			VOL. LOST ON SURFACE			
E.C.D. kg/m^3			1023.52	ENGINEERING CHARGES	$1,440.00			VOL. LOST ON SUB SURFACE			
"n"			0.01	ISCTD COST / CUM TOTAL	$8,975.60	$10,415.60		END VOLUME			
"K"			3.08	TRUCKING				CUM. VOL BUILT.			

COMMENTS SPUD @ 09:00

IN THE PREMIX TANK - PREHYDRATE GEL @ 90 KG/M^3 e.g.: 50 M^3 = 112.5 40 KG SAX

IN THE ACTIVE SYSTEM - START CIRCULATION OF 4 SX OF BICARB OVER ONE CIRCULATION
- CONTROL EXCESSIVE VISCOSITY'S W/ ADDITIONS OF LIGNITE 1-2 SAX PER CIRCULATION
- IF VISCOSITY DROPS BELOW 60 S/L START CIRCULATION OF CAUSTIC

SEVERE LOSSES WE WILL PUMP HIGH VISCOSITY VISPLEX PILLS CONTAINING CAL CARB, MAGNA FIBRE AND OR MICA

CALL ME IF YOU HAVE ANY QUESTIONS OR PROBLEMS

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	DAN MAJOCHA	On Location
PHONE	532 - 5078		Camp	Room # 27

THE INFORMATION IN THIS REPORT IS BASED ON OUR EXPERIENCE, REPRESENTS OUR BEST JUDGMENT IN THE MATTER AND IS INTENDED TO BE HELPFUL BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-65 LAT60.40' LONG123. 30'	DATE	16-Jan-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	3	
REPORT FOR Mr.	ART SCHRIT	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY		CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	160	PUMP #1	165X254	OPPOSITE DP	
BIT NUMBER	2A				HOLE	14	M3/STK	0.0158	OPPOSITE DC	32
DRILL PIPE #1(mm)					TOTAL	174	PUMP #2	165X254	CIRC. TIME	58
DRILL PIPE #2(mm)			LINER	TOP/BOT.	STAND BY		M3/STK	0.0158	BOTTOMS UP	5
COLLAR #1(mm)	279.0	54	660.0				S.P.M.	190		
COLLAR #2(mm)				33			M3/MIN	3.0014		

HOLE DATA	DESANDER DESILTER		DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT. 1030	kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.	kg/m3	VISCOSITY	60-90 s/L
DEVIATION-	OVERFLOW WT.	kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.	m3/min	pH	11.0-11.5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE 110

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			23:59	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			54								
FLOWLINE TEMPERATURE (C)			23.9	CAUSTIC	180			4	176		$232.00
DENSITY			1030	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)			57	NAT BENTON	440			120	320		$1,909.20
600 READING			69	LIGNITE	56		2	6	50	$40.00	$120.00
300 READING			59	LIME	54				54		
APPARENT VISCOSITY (mPa.s)			34.5	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)			10	BICARB	25		8	12	13	$632.00	$948.00
YIELD POINT (Pa)			24.5	MICA COARS	48				48		
GELS 0/10 min. (Pa)			12//12	IDF-FLR	7				7		
pH	STRIP		11.7	VISPLEX II	303			42	261		$15,414.00
FILTRATE (cm3)	API X	METER X HTHP		ID FREE 208L	4				4		
FILTER CAKE (mm)				CELLOPHANE	100				100		
PF			2.5	MICA MEDIUM	50				50		
MF			3	FLOPLEX	50				50		
PM				P. SEAL "C"	50				50		
TOTAL HARDNESS (mg/l)	X	Ca	30	P. SEAL "M"	60				60		
CHLORIDES (mg/L)	X	NaCl	100	CALCARB "32	224				224		
SAND CONTENT %	X	FR.	0.3	CALCARB "SC	224				224		
SOLIDS CONTENT %	X	FR.	1.3	CALCAARB "C	224				224		
OIL/WATER CONT %		FR.		DETERGENT	20				20		
MBT (Kg/m3)	X	OIL RET	34	PREVIOUS COST	$17,951.20			STARTING VOLUME			
ELECTRICAL STABILITY				DAILY COST	$672.00			VOL. BUILT			
OIL WATER RATIO				CUM. COST	$18,623.20			VOL. LOST ON SURFACE			
E.C.D. kg/m^3			1032.25	ENGINEERING CHARGES	$3,360.00			VOL. LOST ON SUB SURFACE			
"n"			0.17	HSCT'D COST / CUM TOTAL	$9,311.60	$12,671.60		END VOLUME			
"K"			0.71	TRUCKING				CUM. VOL BUILT.			

COMMENTS

START CENTRIFUGES CONTROL DENSITY AS LOW AS POSSIBLE
ADD REMAINING BBL OF CAUSTIC

IN THE ACTIVE SYSTEM -

- CONTROL EXCESSIVE VISCOSITY'S W/ ADDITIONS OF LIGNITE 1-2 SAX PER CIRCULATION
- IF VISCOSITY DROPS BELOW 60 S/L START CIRCULATION OF CAUSTIC

SEVERE LOSSES WE WILL PUMP HIGH VISCOSITY VISPLEX PILLS CONTAINING CAL CARB, MAGNA FIBRE AND OR MICA

CALL ME IF YOU HAVE ANY QUESTIONS OR PROBLEMS

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	DAN MAJOCHA	**On Location**
PHONE	532 - 5078		**Camp**	**Room # 5**

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Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-S6 LAT60.40' LONG123. 30'	DATE	17-Jan-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	4	
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING		MUD VOL (M3)		PUMP OUTPUT		ANNULAR VEL m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	107	PUMP #1	165X254	OPPOSITE DP	10
BIT NUMBER	3a				HOLE	31	M3/STK	0.0158	OPPOSITE DC	30
DRILL PIPE #1(mm)	127.0	18			TOTAL	138	PUMP #2	165X254	CIRC. TIME	39
DRILLPIPE #2(mm)	178.0	46	LINER	TOP/BOT.	STAND BY		M3/STK	0.0158	BOTTOMS UP	7
COLLAR #1(mm)	279.0	35	660.0				S.P.M.	214		
COLLAR #2(mm)	228.0	61		33			M3/MIN	3.3805		

HOLE DATA	DESANDER DESILTER		DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT. 1090	kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-LOST CIRCULATION	UNDERFLOW WT.	kg/m3	VISCOSITY	60-80 s/L
DEVIATION-3/4 deg @ 105	OVERFLOW WT.	kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-CONDITION MUD	UNDERFLOW RT.	m3/min	pH	11.0-11.5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES				INVENTORY						
TIME SAMPLE TAKEN			23:59	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			160								
FLOWLINE TEMPERATURE (C)			36.7	CAUSTIC	180			4	176		$232.00
DENSITY			1090	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)				NAT BENTON	440			120	320		$1,909.20
600 READING			68	LIGNITE	56			6	50		$120.00
300 READING			45	LIME	54				54		
APPARENT VISCOSITY (mPa.s)			34	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)			23	BICARB	25			12	13		$948.00
YIELD POINT (Pa)			11	MICA COARS	48				48		
GELS 0/10 min. (Pa)			5//22	IDF-FLR	7				7		
pH	STRIP	METER X	11	VISPLEX II	303			42	261		$15,414.00
FILTRATE (cm3)	API X	HTHP		ID FREE 208L	4				4		
FILTER CAKE (mm)				CELLOPHANE	100				100		
PF			0.6	MICA MEDIUM	50				50		
MF			0.9	FLOPLEX	50				50		
PM				P. SEAL "C"	50				50		
TOTAL HARDNESS (mg/l)		Ca		P. SEAL "M"	60				60		
CHLORIDES (mg/L)	X	NaCl	100	CALCARB "32	224				224		
SAND CONTENT	%X	FR.	0.5	CALCARB "S	224				224		
SOLIDS CONTENT	%X	FR.	5.5	CALCAARB "C	224				224		
OIL/WATER CONT	%	FR.		DETERGENT	20				20		
MBT	(Kg/m3) X	OIL RET	30	PREVIOUS COST		$18,623.20				600 RPM	68
ELECTRICAL STABILITY				DAILY COST		$19,282.43				300 RPM	45
OIL WATER RATIO				CUM. COST		$37,905.63				200 RPM	35
E.C.D. kg/m^3			1095.24	ENGINEERING CHARGES		$3,840.00				100 RPM	23
"n"			0.31	ISCT'D COST / CUM TOTAL		$18,952.82	$22,792.82			6 RPM	10
"K"			0.88	TRUCKING						3 RPM	8

COMMENTS — **Above Inventory Is Not Valid, See Attached Material Sheet For Inventory**

GAUGE ALL TANKS ON A REGULAR BASIS AND RECORD IN THE TOUR BOOK
FOR EVERY 8 M^3 VOLUME BUILT ADD 8SX OF NATURAL GEL AND 3 SX OF VISPLEX

MIX IN THE ACTIVE SYSTEM 70 SX OF NATURAL GEL AND 25 SX OF VISPLEX
MAINTAIN pH @ 11.0 W/ ADDITIONS OF CAUSTIC

CALL ME IF YOU HAVE ANY QUESTIONS OR PROBLEMS

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	DAN MAJOCHA	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER PORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	17-Jan-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No 4A		
REPORT FOR Mr.	ART SCHMITT	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY		CASING		MUD VOL (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH (m)	TANKS	107	PUMP #1	165X254	OPPOSITE DP	10
BIT NUMBER	3a				HOLE	31	M3/STK	0.0158	OPPOSITE DC	30
DRILL PIPE #1(mm)	127.0	18			TOTAL	136	PUMP #2	165X254	CIRC. TIME	35
DRILLPIPE #2(mm)	178.0	46	LINER	TOP/BOT.	STAND BY		M3/STK	0.0158	BOTTOMS UP	7
COLLAR #1(mm)	279.0	35	660.0				S.P.M.	214		
COLLAR #2(mm)	228.0	61		33			M3/MIN	3.3805		

HOLE DATA	DESANDER DESILTER		DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT. 1090	kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-LOST CIRCULATION	UNDERFLOW WT.	kg/m3	VISCOSITY	60-90 s/L
DEVIATION-3/4 deg @ 105	OVERFLOW WT.	kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-CONDITION MUD	UNDERFLOW RT.	m3/min	pH	11.0-11.5

EQUIPMENT: XX DECASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES				INVENTORY						
TIME SAMPLE TAKEN	23:59		MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE									
PRESENT DEPTH	160									
FLOWLINE TEMPERATURE (C)	36.7		CAUSTIC	180			4	176		$232.00
DENSITY	1090		X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)	103		NAT BENTON	440			120	320		$1,909.20
600 READING	110		LIGNITE	56			6	50		$120.00
300 READING	70		LIME	54				54		
APPARENT VISCOSITY (mPa.s)	55		SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)	40		BICARB	25			12	13		$948.00
YIELD POINT (Pa)	15		MICA COARS	48				48		
GELS 0/10 min. (Pa)	2.5/17		IDF-FLR	7				7		
pH STRIP / METER X	10		VISPLEX II	303			42	261		$15,414.00
FILTRATE (cm3) API X / HTHP			ID FREE 208L	4				4		
FILTER CAKE (mm)			CELLOPHANE	100				100		
PF	0.3		MICA MEDIUM	50				50		
MF	0.45		FLOPLEX	50				50		
PM			P. SEAL "C"	50				50		
TOTAL HARDNESS (mg/l) / Ca			P. SEAL "M"	60				60		
CHLORIDES (mg/L) X / NaCl	100		CALCARB "32	224				224		
SAND CONTENT % X / FR.	0.5		CALCARB "50	224				224		
SOLIDS CONTENT % X / FR.	5.5		CALCAARB "C	224				224		
OIL/WATER CONT % / FR.			DETERGENT	20				20		
MBT (Kg/m3) / OIL RET			PREVIOUS COST		$18,623.20					
ELECTRICAL STABILITY			DAILY COST		$19,282.43				600 RPM	110
OIL WATER RATIO			CUM. COST		$37,905.63				300 RPM	70
E.C.D. kg/m^3	1095.18		ENGINEERING CHARGES		$3,840.00				200 RPM	53
"n"	0.55		ISCTD COST / CUM TOTAL		$18,952.62	$22,792.82			100 RPM	32
"K"	0.40		TRUCKING						6 RPM	7
COMMENTS									3 RPM	5

Above Inventory Is Not Valid, See Attached Material Sheet For Inventory

GAUGE ALL TANKS ON A REGULAR BASIS AND RECORD IN THE TOUR BOOK

RAISE VIS TO 100 S/L W GEL
ADD SAWDUST AND PRIMASEAL 5 :1 RATIO
CELLOPHANE 1SX PER M^3
PUMP LCM PILL AND ALLOW TO STAND
MAINTAIN VISCOSITY @ 100+ S/L W NATURAL GEL
pH @ 10.5 - 11.0 W/CAUSTIC
ADD SAWDUST AND PRIMA SEAL @ THE SUCTION WHILE CIRCULATING UNTL FULL CIRCULATION HAS RETURNED

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	DAN MAJOCHA	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-56 LAT60.40' LONG123. 30' | DATE 17-Jan-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 26E | REPORT No 4A

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180	5	9	171	$290.00	$522.00
X-CIDE 207 10	48			48		
NAT BENTONITE 10	440	173	293	147	$2,752.43	$4,661.63
LIGNITE 1	56		6	50		$120.00
LIME 1	54			54		
SODA ASH 10	40	4	4	36	$144.00	$144.00
BICARB 10	25		12	13		$948.00
MICA COARSE 1034	48	30	30	18	$1,110.00	$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	303	38	80	223	$13,946.00	$29,360.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	100	20	20	80	$840.00	$840.00
MICA MEDIUM 1042	50			50		
FLOPLEX 10	50			50		
P. SEAL "C" 10	50			50		
P. SEAL "M" 104	60			50		
CALCARB "325" 104	224	10	10	214	$100.00	$100.00
CALCARB "SC" 1045	224	10	10	214	$100.00	$100.00
CALCAARB "0" 1045	224			224		
DETERGENT 10	20			20		
BARITE 1	4640			4640		
CALC CHLORIDE	20			20		
MAGNA FIBER	32	8	8	24		

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	18-Jan-97	TREATMENT #	2911-0721	
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	5			
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97			

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	161	PUMP #1	165X254	OPPOSITE DP	25
BIT NUMBER	3a				HOLE	78	M3/STK	0.0163	OPPOSITE DC	31
DRILL PIPE #1(mm)	127.0	75			TOTAL	239	PUMP #2	165X254	CIRC. TIME	59
DRILLPIPE #2(mm)	178.0	84	LINER	TOP/BOT.	STAND BY		M3/STK	0.0163	BOTTOMS UP	12
COLLAR #1(mm)	279.0	35	660.0				S.P.M.	215		
COLLAR #2(mm)	228.0	61		33			M3/MIN	3.5013		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - GEL CHEM	FLOWLINE WT. 1075	kg/m3	MUD WT.		1060-1200 Kg/m3
HOLE COND.-	UNDERFLOW WT.	kg/m3	VISCOSITY		100 + s/L
DEVIATION-2 deg @ 238	OVERFLOW WT.	kg/m3	FILTRATE		N/C cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.	m3/min	pH		10.5--11.0

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES					INVENTORY						
TIME SAMPLE TAKEN				7:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM				FLOWLINE								
PRESENT DEPTH				255								
FLOWLINE TEMPERATURE (C)				36.7	CAUSTIC	180			4	176		$232.00
DENSITY				1075	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)				105	NAT BENTON	440			120	320		$1,909.20
600 READING				138	LIGNITE	56			6	50		$120.00
300 READING				91	LIME	54				54		
APPARENT VISCOSITY (mPa.s)				69	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)				47	BICARB	25			12	13		$948.00
YIELD POINT (Pa)				22	MICA COARS	207				207		
GELS 0/10 min. (Pa)				2.5/9	IDF-FLR	7				7		
pH	STRIP		METER X	10	VISPLEX II	303			42	261		$15,414.00
FILTRATE (cm3)	API X		HTHP		ID FREE 208L	4				4		
FILTER CAKE (mm)					CELLOPHANE	300				300		
PF				0.35	MICA MEDIUM	110				110		
MF				0.5	FLOPLEX	50				50		
PM					P. SEAL "C"	50				50		
TOTAL HARDNESS (mg/l)			Ca		P. SEAL "M"	60				60		
CHLORIDES (mg/L)		X	NaCl	100	CALCARB "32	224				224		
SAND CONTENT	%	X	FR	0.5	CALCARB "SC	336				336		
SOLIDS CONTENT	%	X	FR	4.6	CALCAARB "C	224				224		
OIL/WATER CONT	%		FR		DETERGENT	20				20		
MBT	(Kg/m3)	X	OIL RET	57.5	PREVIOUS COST		$38,005.63				600 RPM	138
ELECTRICAL STABILITY					DAILY COST		$15,496.23				300 RPM	91
OIL WATER RATIO					CUM. COST		$53,501.86				200 RPM	70
E.C.D. kg/m^3				1078.84	ENGINEERING CHARGES		$4,320.00				100 RPM	44
"n"				0.59	MISCT'D COST / CUM TOTAL		$26,750.93	$31,070.93			6 RPM	7
"k"				0.32	TRUCKING						3 RPM	6

COMMENTS — Above Inventory Is Not Valid, See Attached Material Sheet For Inventory

MAINTAIN VISCOSITY @ 100+ S/L W NATURAL GEL
pH @ 10.5 - 11.0 W/CAUSTIC
DENSITY AS LOW AS POSSIBLE RUN CENTRIFUGES
RUN WATER ASREQUIRED TO MAINTAIN VOLUME
ANY LOSSES PUMP PILL IN DEGASSER TANK

PREMIX LCM PILL: ~ 20 M^3 ADD SAWDUST AND PRIMA SEAL 10:1 RATIO, CELLOPHANE 15-20 SX,
ANY LOSSES PUMP PILL IN DEGASSER TANK

ANY PROBLEMS PLEASE CALL

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	DAN MAJOCHA	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-66 LAT60.40' LONG123. 30' | DATE 18-Jan-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 25E | REPORT No 5

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180	8	17	163	$464.00	$586.00
X-CIDE 207 10	48			48		
NAT BENTONITE 10	440	453	746	-306	$7,207.23	$11,868.86
LIGNITE 1	56		11	45		$220.00
LIME 1	54			54		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25		12	13		$948.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	303	19	99	204	$6,973.00	$36,333.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300	11	31	269	$462.00	$1,302.00
MICA MEDIUM 1042	110			110		
FLOPLEX 10	50			50		
P. SEAL "C" 10	50			50		
P. SEAL "M" 104	60			60		
CALCARB "325" 104	224		10	214		$100.00
CALCARB "SC" 1045	336	13	23	313	$130.00	$230.00
CALCAARB "0" 1045	224			224		
DETERGENT 10	20			20		
BARITE 10	4640			4640		
CALC CHLORIDE	20			20		
MAGNA FIBER	32		8	24		
MICA FINE	239			239		
SAWDUST	200	40	40	160	$260.00	$260.00
CALC CARB "FG"	168			168		
TOTALS					$15,496.23	$53,501.86

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	19-Jan-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	6	
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	140	PUMP #1	165X254	OPPOSITE DP	10
BIT NUMBER-HOLE OPENER					HOLE	91	M3/STK	0.0163	OPPOSITE DC	28
DRILL PIPE #1(mm)	127.0	87			TOTAL	231	PUMP #2	165X254	CIRC. TIME	68
DRILLPIPE #2(mm)	178.0	84	LINER	TOP/BOT.	STAND BY		M3/STK	0.0163	BOTTOMS UP	24
COLLAR #1(mm)	279.0	35	660.0				S.P.M.	200	PUMP PRESS.	8000
COLLAR #2(mm)	228.0	61		128			M3/MIN	3.2570		

HOLE DATA	DESANDER DESILTER		DRILLING FLUID SPECIFICATIONS	
MUD TYPE - GEL CHEM	FLOWLINE WT. 1075	kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-LOST CIRC	UNDERFLOW WT.	kg/m3	VISCOSITY	100 + s/L
DEVIATION-2 deg @ 238	OVERFLOW WT.	kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.	m3/min	pH	10.5-11.0

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES		INVENTORY							
TIME SAMPLE TAKEN	10:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	267								
FLOWLINE TEMPERATURE (C)	36.7	CAUSTIC	180			4	176		$232.00
DENSITY	1075	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)	150	NAT BENTON	1240			120	1120		$1,909.20
600 READING	145	LIGNITE	56			6	50		$120.00
300 READING	92	LIME	54				54		
APPARENT VISCOSITY (mPa.s)	72.5	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)	53	BICARB	25			12	13		$948.00
YIELD POINT (Pa)	19.5	MICA COARS	207				207		
GELS 0/10 min. (Pa)	3/20	IDF-FLR	7				7		
pH STRIP	METER X 9.8	VISPLEX II	303			42	261		$15,414.00
FILTRATE (cm3) API X	HTHP	ID FREE 208L	4				4		
FILTER CAKE (mm)		CELLOPHANE	300				300		
PF	0.2	MICA MEDIUM	110				110		
MF	0.4	FLOPLEX	50				50		
PM		P. SEAL "C"	50				50		
TOTAL HARDNESS (mg/l) X Ca	20	P. SEAL "M"	60				60		
CHLORIDES (mg/L) X NaCl	100	CALCARB "32	224				224		
SAND CONTENT % X FR	0.5	CALCARB "SC	336				336		
SOLIDS CONTENT % X FR	4.6	CALCAARB "C	224				224		
OIL/WATER CONT % FR		DETERGENT	20				20		
MBT (Kg/m3) X OIL RET	60	PREVIOUS COST	$53,343.86						
ELECTRICAL STABILITY		DAILY COST	$9,410.67						
OIL WATER RATIO		CUM. COST	$62,754.53						
E.C.D. kg/m^3	1079.21	ENGINEERING CHARGES	$4,800.00						
"n"	0.57	DISCT'D COST / CUM TOTAL	$31,377.27	$36,177.27					
"K"	0.43	TRUCKING							
COMMENTS									

600 RPM	145
300 RPM	92
200 RPM	71
100 RPM	45
6 RPM	7
3 RPM	6

Above Inventory is Not Valid, See Attached Material Sheet For Inventory

MAINTAIN VISCOSITY @ 100+ S/L W NATURAL GEL RAISE AS REQUIRED TO CLEAN THE HOLE
pH @ 10.5 - 11.0 W/CAUSTIC
DENSITY AS LOW AS POSSIBLE RUN CENTRIFUGES
RUN WATER AS REQUIRED TO MAINTAIN VOLUME
LOST CIRCULATION MIX SAWDUST, PRIMA SEAL, CELLOPHANE, AND MICA AS REQUESTED

ANY PROBLEMS PLEASE CALL

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	DAN MAJOCHA	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-65 LAT60.40' LONG123. 30' | DATE 19-Jan-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 25E | REPORT No 6

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180	10	27	153	$580.00	$1,566.00
X-CIDE 207 10	48			48		
NAT BENTONITE 103	1240	387	1133	107	$6,157.17	$18,026.03
LIGNITE 1	56		11	45		$220.00
LIME 1	54			54		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25		10	15		$790.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	303		99	204		$36,333.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		31	269		$1,302.00
MICA MEDIUM 1042	110			110		
FLOPLEX 1	50			50		
P. SEAL "C" 10	50			50		
P. SEAL "M" 104	60	24	24	36	$912.00	$912.00
CALCARB "325" 104	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAARB "0" 1045	224			224		
DETERGENT 10	20			20		
BARITE 10	4640			4640		
CALC CHLORIDE	20			20		
MAGNA FIBER	32		8	24		
MICA FINE	239			239		
SAWDUST	200	271	311	-111	$1,761.50	$2,021.50
CALC CARB "FG"	168			168		

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	20-Jan-97	TREATMENT #	2911-0721	
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	7			
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97			

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	147	PUMP #1	165X254	OPPOSITE DP	10
BIT NUMBER	HOLE OPENER				HOLE	122	M3/STK	0.0163	OPPOSITE DC	28
DRILL PIPE #1(mm)	127.0	87			TOTAL	269	PUMP #2	165X254	CIRC. TIME	83
DRILLPIPE #2(mm)	178.0	84	LINER	TOP/BOT.	STAND BY		M3/STK	0.0163	BOTTOMS UP	37
COLLAR #1(mm)	279.0	35	660.0				S.P.M.	200	PUMP PRESS.	13000
COLLAR #2(mm)	228.0	61		250			M3/MIN	3.2570		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - GEL CHEM	FLOWLINE WT. 1090	kg/m3	MUD WT.	1060-1200 Kg/m3	
HOLE COND.-TIGHT	UNDERFLOW WT.	kg/m3	VISCOSITY	100 + s/L	
DEVIATION-2 deg @ 238	OVERFLOW WT.	kg/m3	FILTRATE	N/C cm3/30 min.	
CURRENT OP.-DRILLING	UNDERFLOW RT.	m3/min	pH	10.5–11.0	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			16:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			267								
FLOWLINE TEMPERATURE (C)			36.7	CAUSTIC	180			4	176		$232.00
DENSITY			1090	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)			58	NAT BENTON	2160			120	2040		$1,909.20
600 READING			89	LIGNITE	56			6	50		$120.00
300 READING			43	LIME	54				54		
APPARENT VISCOSITY (mPa.s)			34.5	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)			26	BICARB	25			12	13		$948.00
YIELD POINT (Pa)			8.5	MICA COARS	207				207		
GELS 0/10 min. (Pa)			1.5/15	IDF-FLR	7				7		
pH	STRIP	METER X	10.5	VISPLEX II	383			42	341		$15,414.00
FILTRATE (cm3)	API X	HTHP		ID FREE 208L	4				4		
FILTER CAKE (mm)				CELLOPHANE	300				300		
PF			0.4	MICA MEDIUM	110				110		
MF			0.5	FLOPLEX	50				50		
PM				P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)	X	Ca	20	P. SEAL "M"	160				160		
CHLORIDES (mg/L)	X	NaCl	100	CALCARB "32	224				224		
SAND CONTENT %	X	FR.	0.3	CALCARB "SC	336				336		
SOLIDS CONTENT %	X	FR.	5.5	CALCAARB "C	224				224		
OIL/WATER CONT %		FR.		DETERGENT	20				20		
MBT (Kg/m3)	X	OIL RET	50	PREVIOUS COST		$62,754.53				600 RPM	69
ELECTRICAL STABILITY				DAILY COST		$8,214.00				300 RPM	43
OIL WATER RATIO				CUM. COST		$70,968.53				200 RPM	32
E.C.D. kg/m^3			1090.94	ENGINEERING CHARGES		$5,280.00				100 RPM	20
"n"			0.55	ISCT'D COST / CUM TOTAL		$35,484.27	$40,764.27			6 RPM	4
"K"			0.32	TRUCKING						3 RPM	3

COMMENTS — Above Inventory Is Not Valid, See Attached Material Sheet For Inventory

MAINTAIN VISCOSITY @ 90 S/L W / ADDITIONS OF VISPLEX @ 7 SX PER CIRCULATION
pH @ 11.0 - 11.5 W/CAUSTIC
DENSITY AS LOW AS POSSIBLE RUN CENTRIFUGES
RUN WATER AS REQUIRED TO MAINTAIN VOLUME

ANY PROBLEMS PLEASE CALL

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	DAN MAJOCHA	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	24-Jan-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	22	
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	148	PUMP #1	165X254	OPPOSITE DP	19
BIT NUMBER	1B		508.0	263	HOLE	40	M3/STK	0.0163	OPPOSITE DC	23
DRILL PIPE #1(mm)	127.0	11			TOTAL	188	PUMP #2	165X254	CIRC. TIME	58
DRILLPIPE #2(mm)	178.0	90	LINER	TOP/BOT.	STAND BY		M3/STK	0.0163	BOTTOMS UP	12
COLLAR #1(mm)	279.0	56					S.P.M.	200	PUMP PRESS.	13000
COLLAR #2(mm)	228.0	106					M3/MIN	3.2570		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - GEL CHEM	FLOWLINE WT. 1060	kg/m3	MUD WT.		1060-1200 Kg/m3
HOLE COND.-TIGHT	UNDERFLOW WT.	kg/m3	VISCOSITY		100 + s/L
DEVIATION-2 deg @ 238	OVERFLOW WT.	kg/m3	FILTRATE		N/C cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.	m3/min	pH		10.5-11.0

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES					INVENTORY							
TIME SAMPLE TAKEN				16:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM				FLOWLINE								
PRESENT DEPTH												
FLOWLINE TEMPERATURE (C)				36.7	CAUSTIC	180			4	176		$232.00
DENSITY				1060	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)				58	NAT BENTON	2160			120	2040		$1,909.20
600 READING				69	LIGNITE	56			6	50		$120.00
300 READING				43	LIME	54				54		
APPARENT VISCOSITY (mPa.s)				34.5	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)				26	BICARB	25			12	13		$948.00
YIELD POINT (Pa)				8.5	MICA COARS	207				207		
GELS 0/10 min. (Pa)				1.5//15	IDF-FLR	7				7		
pH	STRIP		METER X	10.5	VISPLEX II	370			42	328		$15,414.00
FILTRATE (cm3)	API	X	HTHP		ID FREE 208L	4				4		
FILTER CAKE (mm)					CELLOPHANE	300				300		
PF				0.4	MICA MEDIUM	110				110		
MF				0.5	FLOPLEX	50				50		
PM					P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)		X	Ca	20	P. SEAL "M"	160				160		
CHLORIDES (mg/L)		X	NaCl	100	CALCARB "32	224				224		
SAND CONTENT	%	X	FR	0.3	CALCARB "SC	336				336		
SOLIDS CONTENT	%	X	FR	3.7	CALCAARB "C	224				224		
OIL/WATER CONT	%		FR		DETERGENT	20				20		
MBT	(Kg/m3)	X	OIL RET	50	PREVIOUS COST		$82,816.33					
ELECTRICAL STABILITY					DAILY COST							
OIL WATER RATIO					CUM. COST		$82,816.33					
E.C.D. kg/m^3				1062.75	ENGINEERING CHARGES		$7,200.00					
"n"				0.55	ISCT'D COST / CUM TOTAL		$41,408.17	$48,608.17				
"K"				0.32	TRUCKING							

600 RPM	69
300 RPM	43
200 RPM	32
100 RPM	20
6 RPM	4
3 RPM	3

COMMENTS

FILL THE DEGASSER TANK (~ 30 M^3) W/ MUD AND ISOLATE, ADD 32 SX OF GEL TO MAKE 90 KG/M^3

IN THE ACTIVE SYSTEM : TOP OFF TO 150 M^3 W/ WATER
ADD 35 SX OF VISPLEX

DRILL OUT REPORT : ISOLATE # 2 SUCTION TANK ADD 2 SX OF BICARB, START ANOTHER 2 SX ONCE DRILLING CEMENT. MAINTAIN VOLUME @ ~ 50 %
ADD WATER AS REQUIRED TO MAINTAIN VOLUME
KEEP PUMP RATE DOWN WHILE DRILLING CEMENT
ONCE CEMENT IS DRILLED AND CEMENT IS TREATED INCORPORATE HIGH pH MUD INTO THE ACTIVE SYSTEM

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	DAN MAJOCHA	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	25-Jan-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	9	
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	134	PUMP #1	165X254	OPPOSITE DP	22
BIT NUMBER	1B		508.0	263	HOLE	58	M3/STK	0.0163	OPPOSITE DC	33
DRILL PIPE #1(mm)	127.0	43			TOTAL	191	PUMP #2	165X254	CIRC. TIME	50
DRILLPIPE #2(mm)	178.0	90	LINER	TOP/BOT.	STAND BY		M3/STK	0.0179	BOTTOMS UP	14
COLLAR #1(mm)	279.0	56					S.P.M.	220	PUMP PRESS.	11270
COLLAR #2(mm)	228.0	106					M3/MIN	3.7456		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT. 1070		kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.		kg/m3	VISCOSITY	60-90 s/L
DEVIATION-2 deg @ 238	OVERFLOW WT.		kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.		m3/min	pH	10.5--11.0

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES						INVENTORY						
TIME SAMPLE TAKEN				22:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM				FLOWLINE								
PRESENT DEPTH				295								
FLOWLINE TEMPERATURE (C)				10.0	CAUSTIC	180			4	176		$232.00
DENSITY				1070	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)				34	NAT BENTON	2160			120	2040		$1,909.20
600 READING				17	LIGNITE	56			6	50		$120.00
300 READING				10	LIME	54				54		
APPARENT VISCOSITY (mPa.s)				8.5	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)				7	BICARB	25			12	13		$948.00
YIELD POINT (Pa)				1.5	MICA COARS	207				207		
GELS G/10 min. (Pa)				0.5\3	IDF-FLR	7				7		
pH	STRIP		METER	X 10.5	VISPLEX II	370			42	328		$15,414.00
FILTRATE (cm3)	API	X	HTHP	9	ID FREE 208L	4				4		
FILTER CAKE (mm)				3	CELLOPHANE	300				300		
PF				1.2	MICA MEDIUM	110				110		
MF				1.7	FLOPLEX	50				50		
PM					P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)		X	Ca	40	P. SEAL "M"	160				160		
CHLORIDES (mg/L)		X	NaCl	260	CALCARB "32	224				224		
SAND CONTENT	%	X	FR.	0.3	CALCARB "50	336				336		
SOLIDS CONTENT	%	X	FR.	4.3	CALCAARB "0	224				224		
OIL/WATER CONT	%		FR.		DETERGENT	20				20		
MBT	(Kg/m3)	X	OIL RET	45	PREVIOUS COST		$82,816.33				600 RPM	17
ELECTRICAL STABILITY					DAILY COST		$1,080.78				300 RPM	10
OIL WATER RATIO					CUM. COST		$83,897.11				200 RPM	7
E.C.D. kg/m^3				1071.65	ENGINEERING CHARGES		$7,680.00				100 RPM	4
"n"				0.42	ISCT'D COST / CUM TOTAL		$41,948.56	$49,628.56			6 RPM	1
"K"				0.26	TRUCKING						3 RPM	1

COMMENTS — **Above Inventory Is Not Valid, See Attached Material Sheet For Inventory**

WEIGHT 1080 KG\M3 OR LESS WITH SOLIDS CONTROL, AND RUN WATER TO MAINTAIN VOLUME
MAINTAIN VIS FROM 60-90 S\L OR AS HOLE DICTATES
USE PREMIX GEL 10M3 AND 8 SKS VISPLEX OVER 1 CIRCULATION
PH AT 11-11.5 WITH CAUSTIC THRU BARREL
**** NOTE !! PH CONTROLS VISCOSITY, IF PH GOES UP SO DOES VIS AND PH GOES DOWN, VIS GOES DOWN

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	KOVACS\TURGEON	**On Location**
PHONE	532 - 5078		**Camp**	**Room # 5\# 31**

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-65 LAT60.40' LONG123. 30' | DATE 25-Jan-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 26E | REPORT No 9

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180		44	136		$2,552.00
X-CIDE 207 10	48			48		
NAT BENTONITE 10	2160	58	1671	489	$922.78	$26,585.61
LIGNITE 1	56		11	45		$220.00
LIME 1	54			54		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25	2	12	13	$158.00	$948.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	370		119	251		$43,673.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 1042	110			110		
FLOPLEX 10	50			50		
P. SEAL "C" 10	260		50	210		$1,900.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 1045	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAARB "U" 1045	224			224		
DETERGENT 10	20			20		
BARITE 10	4640			4640		
CALC CHLORIDE	20			20		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	153			168		

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE 97-01-26		TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	10	
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	140	PUMP #1	165X254	OPPOSITE DP	22
BIT NUMBER	RR4A		508.0	263	HOLE	57	M3/STK	0.0163	OPPOSITE DC	32
DRILL PIPE #1(mm)	127.0	80			TOTAL	197	PUMP #2	165X254	CIRC. TIME	51
DRILLPIPE #2(mm)	178.0	90	LINER	TOP/BOT.	STAND BY		M3/STK	0.0163	BOTTOMS UP	13
COLLAR #1(mm)	279.0	56					S.P.M.	228	PUMP PRESS.	15000
COLLAR #2(mm)	228.0	106					M3/MIN	3.7130		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1070	1070 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.	1705	1720 kg/m3	VISCOSITY	60 TO 90 s/L
DEVIATION-312m @2deg N64E	OVERFLOW WT.	1055	1055 kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.	2	2 m3/min	pH	10.5--11.0

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES					INVENTORY					
TIME SAMPLE TAKEN		5:45	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM		FLOWLINE								
PRESENT DEPTH		332								
FLOWLINE TEMPERATURE (C)		[illegible].0	CAUSTIC	180			4	176		$232.00
DENSITY		070	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)		49	NAT BENTONI	2160			120	2040		$1,909.20
600 READING		31	LIGNITE	56			6	50		$120.00
300 READING		20	LIME	54				54		
APPARENT VISCOSITY (mPa.s)		15.5	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)		11	BICARB	25			12	13		$948.00
YIELD POINT (Pa)		4.5	MICA COARSE	207				207		
GELS 0/10 min. (Pa)		2/3/5	IDF-FLR	7				7		
pH STRIP	METER X	11	VISPLEX II	370			42	328		$15,414.00
FILTRATE (cm3) API X	HTHP	9	ID FREE 208L	4				4		
FILTER CAKE (mm)		2	CELLOPHANE	300				300		
PF		2	MICA MEDIUM	110				110		
MF		2.6	FLOPLEX	50				50		
PM			P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l) X	Ca	60	P. SEAL "M"	160				160		
CHLORIDES (mg/L) X	NaCl	280	CALCARB "32	224				224		
SAND CONTENT % X	FR.	0.3	CALCARB "SC	336				336		
SOLIDS CONTENT % X	FR.	4.3	CALCAARB "O	224				224		
OIL/WATER CONT %	FR.		DETERGENT	20				20		
MBT (Kg/m3) X	OIL RET	40	PREVIOUS COST		$83,897.11				600 RPM	31
ELECTRICAL STABILITY			DAILY COST		$456.00				300 RPM	20
OIL WATER RATIO			CUM. COST		$84,353.11				200 RPM	16
E.C.D. kg/m^3		1074.02	ENGINEERING CHARGES		#VALUE!				100 RPM	12
"n"		0.10	DISCT'D COST / CUM TOTAL		$42,176.56	#VALUE!			6 RPM	7
"K"		1.68	TRUCKING						3 RPM	7

COMMENTS

Above Inventory is Not Valid, See Attached Material Sheet For Inventory

1.WEIGHT AT 1080 OR LESS WITH SOLIDS CONTROL AND RUN WATER TO MAINTAIN VOLUME
2.MAINTAIN VIS FROM 60 TO 90 S\L
USE PREMIXED GEL. 10 M3 PREMIX AND 8 SX VISPLEX OVER 1 HOUR
3.PH AT 11 TO 11.5 WITH CAUSTIC THRU THE BARREL
**** NOTE!: PH CONTROLS VISCOSITY,IF PH COMES UP SO DOES VIS AND IF PH GOES DOWN SO DOES THE VIS
4.AS SOON AS POSSIBLE MIX GEL IN THE PREMIX FOR A 120S\L AND ROLL IF POSSIBLE.

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	ROSS AND WAYNE	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-66 LAT60.40' LONG123 30' | DATE 97-01-26

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 26E | REPORT No 10

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180		44	136		$2,562.00
X-CIDE 207 10	48			48		
NAT BENTONITE 103	2160		1671	489		$26,585.61
LIGNITE 1	56	7	18	38	$140.00	$360.00
LIME	54			54		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25	4	16	9	$316.00	$1,264.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	370		119	251		$43,673.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 1042	110			110		
FLOPLEX 10	50			50		
P. SEAL "C" 10	260		50	210		$1,900.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 1045	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAAR3 "0" 1045	224			224		
DETERGENT 104	20			20		
BARITE 10	4640			4640		
CALC CHLORIDE	20			20		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	168			168		
	127			127		

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	27-Jan-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	11	
REPORT FOR Mr.	ART SCHMITT	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING		MUD VOL (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	125	PUMP #1	165X254	OPPOSITE DP	22
BIT NUMBER	1B		508.0	263	HOLE	65	M3/STK	0.0163	OPPOSITE DC	33
DRILL PIPE #1(mm)	127.0	117			TOTAL	190	PUMP #2	165X254	CIRC. TIME	47
DRILLPIPE #2(mm)	178.0	84	LINER	TOP/BOT.	STAND BY		M3/STK	0.0179	BOTTOMS UP	13
COLLAR #1(mm)	279.0	53					S.P.M.	220	PUMP PRESS.	14000
COLLAR #2(mm)	228.0	106					M3/MIN	3.7488		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1070	1070 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.	1705	1720 kg/m3	VISCOSITY	60-90 s/L
DEVIATION-2 deg at 344 M	OVERFLOW WT.	1055	1055 kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.	0.002	0.002 m3/min	pH	10.5-11.0

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			5:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			360								
FLOWLINE TEMPERATURE (C)			39.0	CAUSTIC	180			4	176		$232.00
DENSITY			1070	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)			67	NAT BENTON	2160			120	2040		$1,509.20
600 READING			51	LIGNITE	56			6	50		$120.00
300 READING			32	LIME	54				54		
APPARENT VISCOSITY (mPa.s)			25.5	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)			19	BICARB	25			12	13		$948.00
YIELD POINT (Pa)			6.5	MICA COARS	207				207		
GELS 0/10 min. (Pa)			7/50	IDF-FLR	7				7		
pH	STRIP	METER X	11.5	VISPLEX II	370			42	328		$15,414.00
FILTRATE (cm3)	API 8	HTHP	9	ID FREE 208L	4				4		
FILTER CAKE (mm)			3	CELLOPHANE	300				300		
PF			2.1	MICA MEDIUM	110				110		
MF			2.9	FLOPLEX	50				50		
PM				P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)	X	Ca	40	P. SEAL "M"	160				160		
CHLORIDES (mg/L)	X	NaCl	300	CALCARB "32	224				224		
SAND CONTENT %	X	FR.	0.3	CALCARB "50	336				336		
SOLIDS CONTENT %	X	FR.	4.3	CALCAARB "0	224				224		
OIL/WATER CONT %		FR.		DETERGENT	20				20		
MBT (Kg/m3)	X	OIL RET	50	PREVIOUS COST		$84,353.11				600 RPM	51
ELECTRICAL STABILITY				DAILY COST		$13,480.80				300 RPM	32
OIL WATER RATIO				CUM. COST		$97,833.91				200 RPM	17
E.C.D. kg/m^3			1074.35	ENGINEERING CHARGES		$8,640.00				100 RPM	13
"n"			0.27	ISCT'D COST / CUM TOTAL		$48,916.96	$57,556.96			6 RPM	6.5
"K"			1.07	TRUCKING						3 RPM	6

COMMENTS — **Above Inventory Is Not Valid, See Attached Material Sheet For Inventory**

WEIGHT 1080 KG/M3 OR LESS WITH SOLIDS CONTROL, AND RUN WATER TO MAINTAIN VOLUME
MAINTAIN VIS FROM 60-90 S/L OR AS HOLE DICTATES
USE PREMIX GEL 10M3 AND 8 SKS VISPLEX OVER 1 CIRCULATION
PH AT 11-11.5 WITH CAUSTIC THRU BARREL
AS SOON AS POSSIBLE MIX GEL IN PREMIX FOR +120 VIS AND ROLL OVER IF POSSIBLE

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	KOVACS\TURGEON	On Location
PHONE	532 - 5078		Camp	Room # 5\# 31

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-66 LAT60 40' LONG123. 30' | DATE 27-Jan-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 25E | REPORT No 11

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180	8	52	128	$464.00	$3,016.00
X-CIDE 207 10	48			48		
NAT BENTONITE 103	2160	80	1751	409	$1,272.80	$27,858.41
LIGNITE 1	56		18	38		$360.00
LIME 1	54			54		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25		16	9		$1,264.00
MICA COARSE 103	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	370	32	151	219	$11,744.00	$55,417.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 1042	110			110		
FLOPLEX 10	50			50		
P. SEAL "C" 10	260		50	210		$1,900.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 1045	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAARB "0" 1045	224			224		
DETERGENT 10	20			20		
BARITE 10	4640			4640		
CALC CHLORIDE	20			20		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	168			168		

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'		DATE	28-Jan-97	TREATMENT #	2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E		REPORT No	12		
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK		SPUD DATE	12-Jan-97		

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	160	PUMP #1	165X254	OPPOSITE DP	28
BIT NUMBER	RR4A		508.0	263	HOLE	78	M3/STK	0.0163	OPPOSITE DC	31
DRILL PIPE #1(mm)	127.0	193			TOTAL	238	PUMP #2	165X254	CIRC. TIME	61
DRILLPIPE #2(mm)	178.0	84	LINER	TOP/BOT.	STAND BY	25	M3/STK	0.0163	BOTTOMS UP	16
COLLAR #1(mm)	279.0	53					S.P.M.	220	PUMP PRESS.	13900
COLLAR #2(mm)	228.0	106					M3/MIN	3.5827		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1075	1075 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.	1730	1705 kg/m3	VISCOSITY	70 to 90 s/L
DEVIATION-344m2degN64E	OVERFLOW WT.	1055	1055 kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.	2	2 m3/min	pH	10.5--11.0

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES					INVENTORY							
TIME SAMPLE TAKEN				5:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM				FLOWLINE								
PRESENT DEPTH				436								
FLOWLINE TEMPERATURE (C)				44.0	CAUSTIC	180			4	176		$232.00
DENSITY				1070	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)				66	NAT BENTONI	2320			120	2200		$1,909.20
600 READING				61	LIGNITE	56			6	50		$120.00
300 READING				37	LIME	54				54		
APPARENT VISCOSITY (mPa.s)				30.5	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)				24	BICARB	25			12	13		$948.00
YIELD POINT (Pa)				6.5	MICA COARSE	207				207		
GELS 0/10 min. (Pa)				4\29	IDF-FLR	7				7		
pH	STRIP		METER	X 11.5	VISPLEX II	530			42	488		$15,414.00
FILTRATE (cm3)	API	X	HTHP	6.5	ID FREE 208L	4				4		
FILTER CAKE (mm)				3	CELLOPHANE	300				300		
PF				1.8	MICA MEDIUM	110				110		
MF				2.4	FLOPLEX	50				50		
PM					P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)		X	Ca	40	P. SEAL "M"	160				160		
CHLORIDES (mg/L)		X	NaCl	440	CALCARB "32	224				224		
SAND CONTENT	%	X	FR.	0.3	CALCARB "SC	336				336		
SOLIDS CONTENT	%	X	FR.	4.3	CALCAARB "0	224				224		
OIL/WATER CONT	%		FR.		DETERGENT	20				20		
MBT	(Kg/m3)	X	OIL RET	50	PREVIOUS COST	$97,833.91					600 RPM	61
ELECTRICAL STABILITY					DAILY COST	$44,911.19					300 RPM	37
OIL WATER RATIO					CUM. COST	$142,745.10					200 RPM	28
E.C.D. kg/m^3				1073.45	ENGINEERING CHARGES	$9,120.00					100 RPM	17
"n"				0.49	DISCT'D COST / CUM TOTAL	$71,372.55	$80,492.55				6 RPM	3
"K"				0.43	TRUCKING						3 RPM	3

COMMENTS — Above Inventory is Not Valid, See Attached Material Sheet For Inventory

1.WEIGHT AT 1080 OR LESS WITH SOLIDS CONTROL AND RUN WATER TO MAINTAIN VOLUME
2.MAINTAIN VIS FROM 60 TO 90 S\L
USE PREMIXED GEL 10 M3 PREMIX AND 8 SX VISPLEX OVER 1 HOUR
3.PH AT 11 TO 11.5 WITH CAUSTIC THRU THE BARREL
MIX 2 SX AT A TIME AS IT IS A LARGE BARREL
4.KEEP PREMIX READY TO GO WITH 150 S\L VIS OR HIGHER

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	ROSS AND WAYNE	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-55 LAT60.40' LONG123. 30' | DATE 28-Jan-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 26E | REPORT No 12

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180	15	67	113	$870.00	$3,886.00
X-CIDE 207 10	48			48		
NAT BENTONITE 103	2320	109	1860	460	$1,734.19	$29,592.60
LIGNITE 1	56		18	38		$360.00
LIME	54			54		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25		16	9		$1,264.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	530	109	260	270	$40,003.00	$95,420.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 1042	110			110		
FLOPLEX 10	50	12	12	38	$2,304.00	$2,304.00
P. SEAL "C" 10	260		50	210		$1,900.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 1045	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAARB "0" 1045	224			224		
DETERGENT 104	20			20		
BARITE 10	4640			4640		
CALC CHLORIDE	20			20		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	168			168		
	160			160		
	200			200		
	360			360		

TOTALS $44,911.19 $142,745.10

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-65 LAT60.40' LONG123. 30'		DATE	21-Jan-97	TREATMENT #	2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E		REPORT No	13		
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUCK		SPUD DATE	12-Jan-97		

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	138	PUMP #1	165X254	OPPOSITE DP	27
BIT NUMBER	RR4A		508.0	263	HOLE	89	M3/STK	0.0163	OPPOSITE DC	30
DRILL PIPE #1(mm)	127.0	223			TOTAL	227	PUMP #2	165X254	CIRC. TIME	59
DRILLPIPE #2(mm)	178.0	84	LINER	TOP/BOT.	STAND BY	20	M3/STK	0.0163	BOTTOMS UP	19
COLLAR #1(mm)	279.0	53					S.P.M.	214	PUMP PRESS.	14000
COLLAR #2(mm)	228.0	106					M3/MIN	3.4850		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1100	1100 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.	1785	1760 kg/m3	VISCOSITY	70 to 90 s/L
DEVIATION-466m 4.5deg@N74.5E	OVERFLOW WT.	1075	1080 kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-CIRCULATE	UNDERFLOW RT.	2	3 m3/min	pH	11.0 TO 11.5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES						INVENTORY						
TIME SAMPLE TAKEN				5:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM				FLOWLINE								
PRESENT DEPTH				466								
FLOWLINE TEMPERATURE (C)				54.0	CAUSTIC	180			4	176		$232.00
DENSITY				1100	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)				65	NAT BENTONI	2320			120	2200		$1,909.20
600 READING				68	LIGNITE	56			6	50		$120.00
300 READING				42	LIME	54				54		
APPARENT VISCOSITY (mPa.s)				34	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)				26	BICARB	25			12	13		$948.00
YIELD POINT (Pa)				8	MICA COARSE	207				207		
GELS 0/10 min. (Pa)				2/22	IDF-FLR	7				7		
pH	STRIP		METER	X 11.5	VISPLEX II	530			42	488		$15,414.00
FILTRATE (cm3)	API	X	HTHP	8	ID FREE 208L	4				4		
FILTER CAKE (mm)				3	CELLOPHANE	300				300		
PF				3.5	MICA MEDIUM	110				110		
MF				5.3	FLOPLEX	50				50		
PM					P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)		X	Ca	40	P. SEAL "M"	160				160		
CHLORIDES (mg/L)		X	NaCl	460	CALCARB "32	224				224		
SAND CONTENT	%	X	FR.	0.3	CALCARB "SC	336				336		
SOLIDS CONTENT	%	X	FR.	6.1	CALCAARB "0	224				224		
OIL/WATER CONT	%		FR.		DETERGENT	20				20		
MBT	(Kg/m3)	X	OIL RET	55	PREVIOUS COST		$142,745.10				600 RPM	68
ELECTRICAL STABILITY					DAILY COST		$23,575.61				300 RPM	42
OIL WATER RATIO					CUM. COST		$166,320.71				200 RPM	30
E.C.D. kg/m^3				1103.04	ENGINEERING CHARGES		$9,600.00				100 RPM	17
"n"				0.53	DISCT'D COST / CUM TOTAL		$83,160.36	$92,760.36			6 RPM	3
"K"				0.35	TRUCKING						3 RPM	3

COMMENTS: Above Inventory Is Not Valid, See Attached Material Sheet For Inventory

1.WEIGHT AT 1080 OR LESS WITH SOLIDS CONTROL AND RUN WATER TO MAINTAIN VOLUME
2.MAINTAIN VIS FROM 60 TO 90 S\L
USE PREMIXED [illegible] 10 M3 PREMIX AND 8 SX VISPLEX OVER 1 HOUR
3.PH AT 11 TO 11.5 WITH CAUSTIC THRU THE BARREL
ADD 1 SX EVERY 2 HOURS
4.KEEP PREMIX READY TO GO WITH 150 S\L VIS OR HIGHER

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	ROSS AND WAYNE	On Location
PHONE	532 - 5078		Camp	Room # 5

THE INFORMATION IN THIS REPORT IS BASED ON OUR EXPERIENCE, REPRESENTS OUR BEST JUDGMENT IN THE MATTER AND IS INTENDED TO BE HELPFUL BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-66 LAT60.40' LONG123. 30' | DATE 29-Jan-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 26E | REPORT No 13

REPORT FOR Mr. JOHN FAULKNER | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180	20	87	93	$1,160.00	$5,046.00
X-CIDE 207 10	48			48		
NAT BENTONITE 103	2320	71	1931	389	$1,129.61	$30,722.21
LIGNITE 1	56		18	38		$360.00
LIME	54			54		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25		16	9		$1,264.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	530	58	318	212	$21,286.00	$116,706.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 104	110			110		
FLOPLEX 1	50		12	38		$2,304.00
P. SEAL "C" 10	260		50	210		$1,900.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 1045	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAARB "0" 1045	224			224		
DETERGENT 104	20			20		
BARITE 1	4640			4640		
CALC CHLORIDE	20			20		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	168			168		
	160			160		
	200			200		
	360			360		
TOTALS					$23,575.61	$166,320.71

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	30-Jan-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	14	
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING			MUD VOL (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	126	PUMP #1	152X254	OPPOSITE DP	25
BIT NUMBER	1B		508.0	263	HOLE	93	M3/STK	0.0138	OPPOSITE DC	29
DRILL PIPE #1(mm)	127.0	223			TOTAL	219	PUMP #2	152X254	CIRC. TIME	60
DRILLPIPE #2(mm)	178.0	84	LINER	TOP/BOT.	STAND BY	25	M3/STK	0.0138	BOTTOMS UP	21
COLLAR #1(mm)	279.0	53					S.P.M.	240	PUMP PRESS.	
COLLAR #2(mm)	228.0	106					M3/MIN	3.3168		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1095	1100 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT	1785	1775 kg/m3	VISCOSITY	60-90 s/L
DEVIATION-4 1/4 deg at 449 m	OVERFLOW WT.	1760	1080 kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-W.O.O.	UNDERFLOW RT.	0.002	0.003 m3/min	pH	11-11.5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES						INVENTORY							
TIME SAMPLE TAKEN				5:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM				TANKS								
PRESENT DEPTH				466								
FLOWLINE TEMPERATURE (C)				N/A	CAUSTIC	180			4	176		$232.00
DENSITY				1095	X-CIDE 207	48				48		
FUNNEL VISCOSITY (s/L)				60	NAT BENTON	2320			120	2200		$1,909.20
600 READING				60	LIGNITE	56			6	50		$120.00
300 READING				37	LIME	54				54		
APPARENT VISCOSITY (mPa.s)				30	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)				23	BICARB	25			12	13		$948.00
YIELD POINT (Pa)				7	MICA COARS	207				207		
GELS 0/10 min. (Pa)				2\19	IDF-FLR	7				7		
pH	STRIP		METER X	11	VISPLEX II	530			42	488		$15,414.00
FILTRATE (cm3)	API X		HTHP	9.4	ID FREE 208L	4				4		
FILTER CAKE (mm)				3	CELLOPHANE	300				300		
PF				2.7	MICA MEDIUM	110				110		
MF				4.5	FLOPLEX	50				50		
PM					P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)	X	Ca		40	P. SEAL "M"	160				160		
CHLORIDES (mg/L)	X	NaCl		470	CALCARB "32	224				224		
SAND CONTENT %	X	FR.		0.3	CALCARB "50	336				336		
SOLIDS CONTENT %	X	FR.		5.8	CALCAARB "0	224				224		
OIL/WATER CONT %		FR.			DETERGENT	20				20		
MBT (Kg/m3)	X	OIL RET		52	PREVIOUS COST	$166,320.71					600 RPM	60
ELECTRICAL STABILITY					DAILY COST	$16,689.00					300 RPM	37
OIL WATER RATIO					CUM. COST	$183,009.71					200 RPM	28
E.C.D. kg/m^3				1097.96	ENGINEERING CHARGES	$10,080.00					100 RPM	16
"n"				0.50	ISCT'D COST / CUM TOTAL	$91,504.86	$101,584.86				6 RPM	3
"K"				0.39	TRUCKING						3 RPM	3

COMMENTS — **Above Inventory is Not Valid, See Attached Material Sheet For Inventory**

WEIGHT 1080 KG\M3 OR LESS WITH SOLIDS CONTROL, AND RUN WATER TO MAINTAIN VOLUME
MAINTAIN VIS FROM 60-90 S\L OR AS HOLE DICTATES
USE PREMIX GEL 10M3 AND 8 SKS VISPLEX OVER 1 CIRCULATION
PH AT 11-11.5 WITH CAUSTIC THRU BARREL, WITH 1 SACK EVERY 2 HOURS
KEEP PREMIX READY TO GO AT 150 S\L OR HIGHER

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	KOVACS\TURGEON	On Location
PHONE	532 - 5078		Camp	Room # 5\# 31

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-66 LAT60.40' LONG123. 30' | DATE 30-Jan-97

OPERATOR RANGER Oil LTD. | CONTRACTOR CACTUS # 26E | REPORT No 14

REPORT FOR Mr. JOHN FAULKNER | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180	3	90	90	$174.00	$5,220.00
X-CIDE 207 10	48			48		
NAT BENTONITE 10	2320		1931	389		$30,722.21
LIGNITE 1	56		18	38		$360.00
LIME 1	54			54		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25		16	9		$1,264.00
MICA COARSE 103	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	530	45	363	167	$16,515.00	$133,221.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 104	110			110		
FLOPLEX 1	50		12	38		$2,304.00
P. SEAL "C" 10	260		50	210		$1,900.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 104	224		10	214		$100.00
CALCARB "SC" 104	336		23	313		$230.00
CALCAARB "0" 104	224			224		
DETERGENT 10	20			20		
BARITE 10	4640			4640		
CALC CHLORIDE	20			20		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	168			168		
NAT GEL	200			200		
TRUDRILL	160			160		
TRUVIS	360			360		

TOTALS $16,689.00 $183,009.71

540-1557

K.R.V BARTLETTR

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	31-Jan-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	15	
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING		MUD VOL (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	131	PUMP #1	152X254	OPPOSITE DP	22
BIT NUMBER	28 RR		508.0	263	HOLE	88	M3/STK	0.0138	OPPOSITE DC	27
DRILL PIPE #1(mm)	127.0	267			TOTAL	219	PUMP #2	152X254	CIRC. TIME	63
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY		M3/STK	0.0138	BOTTOMS UP	20
COLLAR #1(mm)	178.0	84					S.P.M.	226	PUMP PRESS.	15400
COLLAR #2(mm)	228.0	87					M3/MIN	3.1233		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1095	1095 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.	1760	1775 kg/m3	VISCOSITY	70 to 90 s/L
DEVIATION-470m 4.3DEG 74.2AZ	OVERFLOW WT.	1075	1080 kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.	4	3 m3/min	pH	11.0 TO 11.5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES					INVENTORY							
TIME SAMPLE TAKEN				5:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM				FLOWLINE								
PRESENT DEPTH				492								
FLOWLINE TEMPERATURE (C)				48.9	CAUSTIC	180			4	176		$232.00
DENSITY				1095	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)				64	NAT BENTON	2320			120	2200		$1,909.20
600 READING				68	LIGNITE	56			6	50		$120.00
300 READING				42	LIME	648				648		
APPARENT VISCOSITY (mPa.s)				34	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)				26	BICARB	25			12	13		$948.00
YIELD POINT (Pa)				8	MICA COARS	207				207		
GELS 0/10 min. (Pa)				117 15358 42	IDF-FLR	7				7		
pH	STRIP		METER	X 11.7	VISPLEX II	770			42	728		$15,414.00
FILTRATE (cm3)	API	X	HTHP	8	ID FREE 208L	4				4		
FILTER CAKE (mm)				2	CELLOPHANE	300				300		
PF				4.5	MICA MED/UM	110				110		
MF				6.2	FLOPLEX	100				100		
PM					P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)		X	Ca	40	P. SEAL "M"	160				160		
CHLORIDES (mg/L)		X	NaCl	1000	CALCARB "32	224				224		
SAND CONTENT	%	X	FR	0.3	CALCARB "SC	336				336		
SOLIDS CONTENT	%	X	FR	5.8	CALCAARB "C	224				224		
OIL/WATER CONT	%		FR		DETERGENT	52				52		
MBT	(Kg/m3)	X	OIL RET	58	PREVIOUS COST		$183,009.71					
ELECTRICAL STABILITY					DAILY COST		$20,678.00				600 RPM	68
OIL WATER RATIO					CUM. COST		$203,687.71		GELS		300 RPM	42
E.C.D. kg/m^3				1096.70	ENGINEERING CHARGES		$10,560.00		10 s	2	200 RPM	30
"n"				0.65	DISCT'D COST / CUM TOTAL		$101,843.86	$112,403.86	10 m	17	100 RPM	18
"K"				0.19	TRUCKING				20 m	42	6 RPM	3
COMMENTS											3 RPM	2

Above Inventory Is Not Valid, See Attached Material Sheet For Inventory

1. WEIGHT AT 1080 OR LESS WITH SOLIDS CONTROL AND RUN WATER TO MAINTAIN VOLUME
2. MAINTAIN VIS FROM 60 TO 90 S/L
   W/ ADDITIONS OF 8 SX OF FLOPLEX AND 4 SX OF VISPLEX
3. PH AT 11 TO 11.5 WITH CAUSTIC THRU THE BARREL
4. KEEP PREMIX READY TO GO WITH 150 S/L VIS OR HIGHER

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	Dan Majocha	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger / Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-65 LAT60.40' LONG123. 30' | DATE 31-Jan-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 26E | REPORT No 15

REPORT FOR Mr. JOHN FAULKNER | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180	1	91	89	$58.00	$5,278.00
X-CIDE 207 10	96			96		
NAT BENTONITE 100	2320		1931	389		$30,722.21
LIGNITE 1	56		18	38		$360.00
LIME 1	648			648		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25		16	9		$1,264.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	770	52	415	355	$19,084.00	$152,305.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 1042	110			110		
FLOPLEX 10	100	8	20	80	$1,536.00	$3,840.00
P. SEAL "C" 10	260		50	210		$1,900.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 1045	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAARB "0" 1045	224			224		
DETERGENT 10	52			52		
BARITE 10	4880			4880		
CALC CHLORIDE	20			20		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	168			168		
TRUDRILL	160			160		
NATURAL GEL	200			200		
TRUVIS	360			360		
HYMUL	32			32		
XCD	160			160		
INTERDRILL S	600			600		
EMUL	20			20		
INTER FL	20			20		
OW	32			32		
ZINC CARB	80			80		

TOTALS $20,678.00 $203,687.71

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	1-Feb-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	16	
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	134	PUMP #1	152X254	OPPOSITE DP	21
BIT NUMBER	2B RR		508.0	263	HOLE	103	M3/STK	0.0138	OPPOSITE DC	27
DRILL PIPE #1(mm)	127.0	356			TOTAL	237	PUMP #2	152X254	CIRC. TIME	70
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY		M3/STK	0.0138	BOTTOMS UP	25
COLLAR #1(mm)	178.0	84					S.P.M.	220	PUMP PRESS.	14700
COLLAR #2(mm)	228.0	87					M3/MIN	3.0404		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1120	1120 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.	1895	1890 kg/m3	VISCOSITY	70 to 90 s/L
DEVIATION-557 m 2.8deg AZ 129.6	OVERFLOW WT.	1100	1100 kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.	10	5 m3/min	pH	11.0 TO 11.5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES											INVENTORY			
TIME SAMPLE TAKEN				5:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM				FLOWLINE								
PRESENT DEPTH				581								
FLOWLINE TEMPERATURE (C)				62.2	CAUSTIC	180			4	176		$232.00
DENSITY				1120	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)				67	NAT BENTON	2320			120	2200		$1,909.20
600 READING				75	LIGNITE	56			6	50		$120.00
300 READING				48	LIME	648				648		
APPARENT VISCOSITY (mPa.s)				37.5	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)				27	BICARB	25			12	13		$948.00
YIELD POINT (Pa)				10.5	MICA COARS	207				207		
GELS 0/10 min. (Pa)				20119	IDF-FLR	7				7		
pH	STRIP	X	METER	11	VISPLEX II	770			42	728		$15,414.00
FILTRATE (cm3)	API	X	HTHP	7.5	ID FREE 208L	4				4		
FILTER CAKE (mm)				3	CELLOPHANE	300				300		
PF				3	MICA MEDIUN	110				110		
MF				4.5	FLOPLEX	100				100		
PM					P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)		X	Ca	20	P. SEAL "M"	160				160		
CHLORIDES (mg/L)		X	NaCl	1100	CALCARB "32	224				224		
SAND CONTENT	%	X	FR	0.3	CALCARB "SC	336				336		
SOLIDS CONTENT	%	X	FR	7.3	CALCAARB "C	224				224		
OIL/WATER CONT	%		FR		DETERGENT	52				52		
MBT	(Kg/m3)	X	OIL RET	60	PREVIOUS COST		$203,687.71					
ELECTRICAL STABILITY					DAILY COST		$6,008.00				600 RPM	75
OIL WATER RATIO					CUM. COST		$209,695.71		GELS		300 RPM	48
E.C.D. kg/m^3				1121.33	ENGINEERING CHARGES		$10,560.00		10 s	2	200 RPM	36
"n"				0.70	ISCT'D COST / CUM TOTAL		$104,847.86	$115,407.86	10 m	30	100 RPM	21
"k"				0.14	TRUCKING				20 m	55	6 RPM	3
COMMENTS											3 RPM	2

Above Inventory Is Not Valid, See Attached Material Sheet For Inventory

1.WEIGHT AS LOW AS POSSIBLE WITH SOLIDS CONTROL AND RUN WATER TO MAINTAIN VOLUME
2.MAINTAIN VIS FROM 70 TO 90 S\L
W/ ADDITIONS OF 8 SX OF FLOPLEX AND 4 SX OF VISPLEX
3.PH AT 11 TO 11.5 WITH CAUSTIC THRU THE BARREL

4.KEEP PREMIX READY TO GO WITH 150 S\L VIS OR HIGHER

ON TRIPS RIH BREAK CIRCULATION BELOW SHOE AND EVERY 10 - 15 STANDS

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	Dan Majocha
PHONE	532 - 5078		Camp Room # 5

On Location

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-65 LAT60.40' LONG123. 30' | DATE 1-Feb-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 25E | REPORT No 16

REPORT FOR Mr. JOHN FAULKNER | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180		91	89		$5,278.00
X-CIDE 207 10	96			96		
NAT BENTONITE 10	2320		1931	389		$30,722.21
LIGNITE 1	56		18	38		$360.00
LIME 1	648			648		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25		16	9		$1,264.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	770	8	423	347	$2,936.00	$155,241.00
ID FREE 203L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 1042	110			110		
FLOPLEX 1	100	16	36	64	$3,072.00	$6,912.00
P. SEAL "C" 10	260		50	210		$1,900.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 1045	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAARB "0" 1045	224			224		
DETERGENT 10	52			52		
BARITE 10	4880			4880		
CALC CHLORIDE	340			340		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	168			168		
TRUDRILL	160			160		
NATURAL GEL	200			200		
TRUVIS	360			360		
HYMUL	32			32		
XCD	160			160		
INTERDRILL S	600			600		
EMUL	20			20		
INTER FL	20			20		
OW	32			32		
ZINC CARB	80			80		
BARITE 10	720			720		
HSO 600 10	29			29		
PTS 200 10						

TOTALS $6,008.00 $209,695.71

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	2-Feb-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	17	
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING		MUD VOL (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	108	PUMP #1	152X254	OPPOSITE DP	21
BIT NUMBER			508.0	263	HOLE	153	M3/STK	0.0138	OPPOSITE DC	27
DRILL PIPE #1(mm)	127.0	437			TOTAL	261	PUMP #2	152X254	CIRC. TIME	76
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY		M3/STK	0.0138	BOTTOMS UP	39
COLLAR #1(mm)	178.0	84					S.P.M.	220	PUMP PRESS.	14700
COLLAR #2(mm)	228.0	87					M3/MIN	3.0404		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1120	1120 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-TIGHT	UNDERFLOW WT.	1895	1890 kg/m3	VISCOSITY	70 to 90 s/L
DEVIATION-557 m 2.8deg AZ 129.5	OVERFLOW WT.	1100	1100 kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-TRIP, PUMP OUT	UNDERFLOW RT.	10	5 m3/min	pH	11.0 TO 11.5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES			INVENTORY							
TIME SAMPLE TAKEN	6:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	662								
FLOWLINE TEMPERATURE (C)	62.2	CAUSTIC	180			4	176		$232.00
DENSITY	1120	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)	60	NAT BENTON	2320			120	2200		$1,909.20
600 READING	76	LIGNITE	56			6	50		$120.00
300 READING	48	LIME	648				648		
APPARENT VISCOSITY (mPa.s)	38	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)	28	BICARB	25			12	13		$948.00
YIELD POINT (Pa)	10	MICA COARS	207				207		
GELS 0/10 min. (Pa)	1.5/22	IDF-FLR	7				7		
pH STRIP X METER	10	VISPLEX II	770			42	728		$15,414.00
FILTRATE (cm3) API X HTHP	7	ID FREE 208L	4				4		
FILTER CAKE (mm)	2	CELLOPHANE	300				300		
PF	1.7	MICA MEDIUN	110				110		
MF	3.6	FLOPLEX	100				100		
PM		P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l) Ca		P. SEAL "M"	160				160		
CHLORIDES (mg/L) X NaCl	1400	CALCARB "32	224				224		
SAND CONTENT % X FR	0.3	CALCARB "SC	336				336		
SOLIDS CONTENT % X FR	7.3	CALCAARB "C	224				224		
OIL/WATER CONT % FR		DETERGENT	52				52		
MBT (Kg/m3) X OIL RET	62	PREVIOUS COST		$209,695.71				600 RPM	76
ELECTRICAL STABILITY		DAILY COST		$6,066.00				300 RPM	48
OIL WATER RATIO		CUM. COST		$215,761.71		GELS		200 RPM	36
E.C.D. kg/m^3	1121.93	ENGINEERING CHARGES		$11,520.00		10 s	3	100 RPM	23
"n"	0.58	ISCT'D COST / CUM TOTAL		$107,880.86	$119,400.86	10 m	22	6 RPM	4
"K"	0.27	TRUCKING				20 m	65 30	3 RPM	3

COMMENTS **Above Inventory Is Not Valid, See Attached Material Sheet For Inventory**

1.WEIGHT AS LOW AS POSSIBLE WITH SOLIDS CONTROL AND RUN WATER @ 20 - 25 L/MIN TO MAINTAIN VOLUME
2.MAINTAIN VIS @ 90 S/L MINIMUM
W/ ADDITIONS OF 8 SX OF FLOPLEX AND 4 SX OF VISPLEX
3.PH AT 11 TO 11.5 WITH CAUSTIC THRU THE BARREL

4.KEEP PREMIX READY TO GO WITH 150 S/L VIS OR HIGHER

ON TRIPS RIH BREAK CIRCULATION BELOW SHOE AND EVERY 10 - 15 STANDS

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	Dan Majocha	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-65 LAT60.40' LONG123. 30' | DATE 2-Feb-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 25E | REPORT No 17

REPORT FOR Mr. JOHN FAULKNER | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180	1	92	88	$58.00	$5,336.00
X-CIDE 207 10	96			96		
NAT BENTONITE 10	2320		1931	389		$30,722.21
LIGNITE 1	56		18	38		$360.00
LIME 1	648			648		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25		16	9		$1,264.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	770	8	431	339	$2,936.00	$158,177.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 1042	110			110		
FLOPLEX 10	100	16	52	48	$3,072.00	$9,984.00
P. SEAL "C" 10	260		50	210		$1,900.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 1045	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAARB "0" 1045	224			224		
DETERGENT 10	52			52		
BARITE 10	4880			4880		
CALC CHLORIDE	340			340		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	168			168		
TRUDRILL	160			160		
NATURAL GEL	200			200		
TRUVIS	360			360		
HYMUL	32			32		
XCD	160			160		
INTERDRILL S	600			600		
EMUL	20			20		
INTER FL	20			20		
OW	32			32		
ZINC CARB	80			80		
BARITE 10	720			720		
HSO 600 10	29			29		
PTS 200 10	8			8		
FIBER FLUID "F"						
FIBER FLUID "C"						
				TOTALS	$6,066.00	$215,761.71

Schlumberger Dowell

DAILY MUD REPORT

540 1557

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	3-Feb-97	TREATMENT #	2911-0721	
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	18			
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97			

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	100	PUMP #1	1520254	OPPOSITE DP	21
BIT NUMBER	28 RR		508.0	263	HOLE	160	M3/STK	0.0138	OPPOSITE DC	27
DRILL PIPE #1(mm)	127.0	472			TOTAL	260	PUMP #2	1520254	CIRC. TIME	76
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY		M3/STK	0.0138	BOTTOMS UP	41
COLLAR #1(mm)	178.0	84					S.P.M.	220	PUMP PRESS.	15760
COLLAR #2(mm)	228.0	87					M3/MIN	3.0404		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1150	1150 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT	1895	1890 kg/m3	VISCOSITY	70 to 90 s/L
DEVIATION-683 m 2.5 AZ 124.3	OVERFLOW WT.	1100	1100 kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.	10	5 m3/min	pH	11.0 TO 11.5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			6:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			697								
FLOWLINE TEMPERATURE (C)			62.2	CAUSTIC	180			4	176		$232.00
DENSITY			1150	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)			95	NAT BENTON	2320			120	2200		$1,909.20
600 READING			85	LIGNITE	56			6	50		$120.00
300 READING			57	LIME	648				648		
APPARENT VISCOSITY (mPa.s)			42.5	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)			28	BICARB	25			12	13		$948.00
YIELD POINT (Pa)			14.5	MICA COARS	207				207		
GELS 0/10 min. (Pa)			4.5/29	IDF-FLR	7				7		
pH	STRIP	X METER	10	VISPLEX II	770			42	728		$15,414.00
FILTRATE (cm3)	API	X HTHP	6	ID FREE 208L	4				4		
FILTER CAKE (mm)			2	CELLOPHANE	300				300		
PF			1.8	MICA MEDIUM	110				110		
MF			3.7	FLOPLEX	100				100		
PM				P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)		Ca		P. SEAL "M"	160				160		
CHLORIDES (mg/L)	X	NaCl	1400	CALCARB "32	224				224		
SAND CONTENT	%X	FR.	0.3	CALCARB "SC	336				336		
SOLIDS CONTENT	%X	FR.	9.1	CALCAARB "C	224				224		
OIL/WATER CONT	%	FR.		DETERGENT	52				52		
MBT ——— (Kg/m3)	X	OIL RET	64	PREVIOUS COST	$215,761.71						
ELECTRICAL STABILITY				DAILY COST	$1,884.00					600 RPM	85
OIL/WATER RATIO				CUM. COST	$217,645.71					300 RPM	57
E.C.D. kg/m^3			1153.08	ENGINEERING CHARGES	$12,000.00			GELS		200 RPM	45
"n"			0.35	ISCT'D COST / CUM TOTAL	$108,822.86	$120,822.86		10 s	7	100 RPM	30
"K"			0.78	TRUCKING				10 m	29	6 RPM	10
COMMENTS								20 m	32.5	3 RPM	9

Above Inventory Is Not Valid, See Attached Material Sheet For Inventory

1. WEIGHT AS LOW AS POSSIBLE WITH SOLIDS CONTROL AND RUN WATER @ 20 - 25 L/MIN TO MAINTAIN VOLUME
2. MAINTAIN VIS @ **90 S/L MINIMUM**
   USE CAUSTIC TO CONTROL VISCOSITY TO A **MAXIMUM pH OF 11.5**
   W/ ADDITIONS OF 8 SX OF FLOPLEX AND 4 SX OF VISPLEX SEE MUD MAN BEFORE MIXING
   IF VISCOSITY CLIMBS ABOVE 170 S/L RUN HEAVY STREAM OF WATER FOR 1 CIRCULATION
3. PH AT 11 TO 11.5 WITH CAUSTIC THRU THE BARREL
4. KEEP PREMIX READY TO GO WITH 150 S/L VIS OR HIGHER

ON TRIPS RIH BREAK CIRCULATION BELOW SHOE AND EVERY 10 - 15 STANDS

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	Dan Majocha	On Location
PHONE	532 - 5078		Camp	Room # 5

THE INFORMATION IN THIS REPORT IS BASED ON OUR EXPERIENCE, REPRESENTS OUR BEST JUDGMENT IN THE MATTER AND IS INTENDED TO BE HELPFUL BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-66 LAT60.40' LONG123. 30' | DATE 3-Feb-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 26E | REPORT No 18

REPORT FOR Mr. JOHN FAULKNER | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	190	6	98	82	$348.00	$5,684.00
X-CIDE 207 10	96			96		
NAT BENTONITE 103	2320		1931	389		$30,722.21
LIGNITE 1	56		18	38		$360.00
LIME 1	648			648		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25		16	9		$1,264.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	770		431	339		$158,177.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 1042	110			110		
FLOPLEX 1	100	8	60	40	$1,536.00	$11,52
P. SEAL "C" 10	260		50	210		$1,900.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 1045	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAARB "0" 1045	224			224		
DETERGENT 10	52			52		
BARITE 10	4880			4880		
CALC CHLORIDE	340			340		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	168			168		
TRUDRILL	160			160		
NATURAL GEL	200			200		
TRUVIS	360			360		
HYMUL	32			32		
XCD	160			160		
INTERDRILL S	600			600		
EMUL	20			20		
INTER FL	20			20		
OW	32			32		
ZINC CARB	80			80		
BARITE 10	720			720		
HSO 600 10	29			29		
PTS 200 10	8			8		
FIBER FLUID "F"						
FIBER FLUID "C"						

TOTALS $1,884.00 $217,645.71

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	4-Feb-97	TREATMENT #	2911-0721	
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	19			
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUCK	SPUD DATE	12-Jan-97			

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	125	PUMP #1	152X254	OPPOSITE DP	21
BIT NUMBER	2B RR		508.0	263	HOLE	174	M3/STK	0.0138	OPPOSITE DC	27
DRILL PIPE #1(mm)	127.0	532			TOTAL	299	PUMP #2	152X254	CIRC. TIME	98
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY		M3/STK	0.0138	BOTTOMS UP	45
COLLAR #1(mm)	178.0	84					S.P.M.	220	PUMP PRESS.	15920
COLLAR #2(mm)	228.0	87					M3/MIN	3.0404		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS
MUD TYPE - VISPLEX	FLOWLINE WT. 1140	1140 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND -GOOD	UNDERFLOW WT. 1910	1895 kg/m3	VISCOSITY	70 to 90 s/L
DEVIATION-752m 1.6AZ 151.3	OVERFLOW WT. 1135	1135 kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-DRILLNG	UNDERFLOW RT. 4	4 m3/min	pH	11.0 TO 11.5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE

MUD PROPERTIES				INVENTORY						
TIME SAMPLE TAKEN	5:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	757								
FLOWLINE TEMPERATURE (C)	62.8	CAUSTIC	180			4	176		$232.00
DENSITY	1140	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)	125	NAT BENTON	2320			120	2200		$1,909.20
600 READING	77	LIGNITE	56			6	50		$120.00
300 READING	55	LIME	648				648		
APPARENT VISCOSITY (mPa s)	38.5	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa s)	22	BICARB	25			12	13		$948.00
YIELD POINT (Pa)	16.5	MICA COARS	207				207		
GELS 0/10 min. (Pa)	10/41	DF-FLR	7				7		
pH STRIP X METER	10	VISPLEX II	770			42	728		$15,414.00
FILTRATE (cm3) API X HTHP	6	D FREE 208L	4				4		
FILTER CAKE (mm)	2	CELLOPHANE	300				300		
PF	2	MICA MEDIUM	110				110		
MF	4	FLOPLEX	100				100		
PM		P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l) Ca		P. SEAL "M"	160				160		
CHLORIDES (mg/L) X NaCl	1400	CALCARB "32	224				224		
SAND CONTENT % X FR	0.3	CALCARB "SC	336				336		
SOLIDS CONTENT % X FR	8.5	CALCAARB "C	224				224		
OIL/WATER CONT % FR		DETERGENT	52				52		
MBT (Kg/m3) X OIL RET	62	PREVIOUS COST		$217,645.71				600 RPM	77
ELECTRICAL STABILITY		DAILY COST		$3,970.00				300 RPM	55
OIL WATER RATIO		CUM. COST		$221,615.71		GELS		200 RPM	45
E.C.D. kg/m^3	1143.81	ENGINEERING CHARGES		$12,480.00		10 s	16	100 RPM	35
"n"	0.14	ESCT'D COST / CUM TOTAL		$110,807.86	$123,287.86	10 m	41	6 RPM	20
"K"	1.71	TRUCKING				20 m	45	3 RPM	20

COMMENTS — **Above Inventory Is Not Valid, See Attached Material Sheet For Inventory**

1. WEIGHT AS LOW AS POSSIBLE WITH SOLIDS CONTROL AND RUN WATER @ 20 - 25 L/MIN TO MAINTAIN VOLUME
2. MAINTAIN VIS @ **90 S\L MINIMUM**
   USE CAUSTIC TO CONTROL VISCOSITY TO A **MAXIMUM pH OF 11.5**
   W/ ADDITIONS OF 8 SX OF FLOPLEX AND 4 SX OF VISPLEX SEE MUD MAN BEFORE MIXING
3. PH AT 11 TO 11.5 WITH CAUSTIC THRU THE BARREL
4. PREMIX GEL @ 30 KG /M^3

ON TRIPS RIH BREAK CIRCULATION BELOW SHOE AND EVERY 10 - 15 STANDS

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	Dan Majocha	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-65 LAT60.40' LONG123. 30' | DATE 4-Feb-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 26E | REPORT No 19

REPORT FOR Mr. JOHN FAULKNER | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180	4	102	78	$232.00	$5,916.00
X-CIDE 207 10	96			96		
NAT BENTONITE 10	2320		1931	389		$30,722.21
LIGNITE 1	56		18	38		$360.00
LIME 1	648			648		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25		16	9		$1,264.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	770	6	437	333	$2,202.00	$160,379.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 1042	110			110		
FLOPLEX 1	100	8	68	32	$1,536.00	$13,056.00
P. SEAL "C" 10	260		50	210		$1,900.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 1045	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAARB "0" 1045	224			224		
DETERGENT 10	52			52		
BARITE 1	4880			4880		
CALC CHLORIDE	340			340		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	168			168		
TRUDRILL	160			160		
NATURAL GEL	200			200		
TRUVIS	360			360		
HYMUL	32			32		
XCD	160			160		
INTERDRILL S	600			600		
EMUL	20			20		
INTER FL	20			20		
OW	32			32		
ZINC CARB	80			80		
BARITE 1	720			720		
HSO 600 1	29			29		
PTS 200 1	8			8		
FIBER FLUID "F"						
FIBER FLUID "C"						
TOTALS					$3,970.00	$221,615.71

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123. 30'	DATE	5-Feb-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	20	
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. DENNIS BROWN	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	128	PUMP #1	152X254	OPPOSITE DP	21
BIT NUMBER	2B RR		508.0	263	HOLE	189	M3/STK	0.0138	OPPOSITE DC	27
DRILL PIPE #1(mm)	127.0	602			TOTAL	317	PUMP #2	152X254	CIRC. TIME	104
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY		M3/STK	0.0138	BOTTOMS UP	50
COLLAR #1(mm)	178.0	84					S.P.M.	220	PUMP PRESS.	15920
COLLAR #2(mm)	228.0	87					M3/MIN	3.0404		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1145	1145 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.	1930	1930 kg/m3	VISCOSITY	70 to 90 s/L
DEVIATION-808 m 1.3 az 135.4	OVERFLOW WT.	1140	1140 kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-TRIPPING	UNDERFLOW RT.	4	4 m3/min	pH	11.0 TO 11.5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE 175 x 3 # 1, 110 x 3 # 2

MUD PROPERTIES		INVENTORY							
TIME SAMPLE TAKEN	6:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	OVER FLOW								
PRESENT DEPTH	827								
FLOWLINE TEMPERATURE (C)	62.8	CAUSTIC	180			4	176		$232.00
DENSITY	1145	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)	125	NAT BENTON	2320			120	2200		$1,909.20
600 READING	54	LIGNITE	56			6	50		$120.00
300 READING	39	LIME	648				648		
APPARENT VISCOSITY (mPa.s)	27	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)	15	BICARB	25			12	13		$948.00
YIELD POINT (Pa)	12	MICA COARS	207				207		
GELS 0/10 min. (Pa)	7.5/35	IDF-FLR	7				7		
pH STRIP X METER	10	VISPLEX II	770			42	728		$15,414.00
FILTRATE (cm3) API X HTHP	6	ID FREE 208L	4				4		
FILTER CAKE (mm)	2	CELLOPHANE	300				300		
PF	1.9	MICA MEDIUN	110				110		
MF	3.8	FLOPLEX	100				100		
PM		P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l) Ca		P. SEAL "M"	160				160		
CHLORIDES (mg/L) X NaCl	1500	CALCARB "32	224				224		
SAND CONTENT % X FR.	0.3	CALCARB "50	336				336		
SOLIDS CONTENT % X FR.	8.8	CALCAARB "0	224				224		
OIL/WATER CONT % FR.		DETERGENT	52				52		
MBT (Kg/m3) X OIL RET	62	PREVIOUS COST		$221,615.71				600 RPM	54
ELECTRICAL STABILITY		DAILY COST		$7,958.00				300 RPM	39
OIL WATER RATIO		CUM. COST		$229,573.71		GELS		200 RPM	34
E.C.D. kg/m^3	1148.16	ENGINEERING CHARGES		$12,960.00		10 s	10	100 RPM	25
"n"	0.13	ISCT'D COST / CUM TOTAL		$114,786.86	$127,746.86	10 m	35	6 RPM	15
"K"	1.47	TRUCKING				20 m	40	3 RPM	15

COMMENTS **Above Inventory Is Not Valid, See Attached Material Sheet For Inventory**

1. WEIGHT AS LOW AS POSSIBLE WITH SOLIDS CONTROL AND RUN WATER @ 20 - 25 L/MIN TO MAINTAIN VOLUME
2. MAINTAIN VIS @ **90 S\L MINIMUM**
   USE CAUSTIC TO CONTROL VISCOSITY TO A **MAXIMUM pH OF 11.5**
   W/ ADDITIONS OF 8 SX OF FLOPLEX AND 4 SX OF VISPLEX SEE MUD MAN BEFORE MIXING
3. PH AT 11 TO 11.5 WITH CAUSTIC THRU THE BARREL
4. PREMIX GEL @ 30 KG /M^3

ON TRIPS RIH BREAK CIRCULATION BELOW SHOE AND EVERY 10 - 15 STANDS

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	Dan Majocha	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-65 LAT60.40' LONG123. 30' | DATE 5-Feb-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 26E | REPORT No 20

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. DENNIS BROWN | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	180	5	107	73	$290.00	$6,206.00
X-CIDE 207 10	96			96		
NAT BENTONITE 10	2320		1931	389		$30,722.21
LIGNITE 1	56		18	38		$360.00
LIME 1	648			648		
SOL ASH 10	40		4	36		$144.00
BICARB 10	25		16	9		$1,264.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 1	770	12	449	321	$4,404.00	$164,783.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 1042	110			110		
FLOPLEX 10	100	17	85	15	$3,264.00	$16,320.00
P. SEAL "C" 10	260		50	210		$1,900.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 1045	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAARB "0" 1045	224			224		
DETERGENT 10	52			52		
BARITE 10	4880			4880		
CALC CHLORIDE	340			340		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	168			168		
TRUDRILL	160			160		
NATURAL GEL	200			200		
TRUVIS	360			360		
HYMUL	32			32		
XCD	160			160		
INTERDRILL S	600			600		
EMUL	20			20		
INTER FL	20			20		
OW	32			32		
ZINC CARB	80			80		
BARITE 10	720			720		
HSO 600 10	29			29		
PTS 200 10	8			8		
FIBER FLUID "F"						
FIBER FLUID "C"						
TOTALS					$7,958.00	$229,573.71

Schlumberger Dowell

Dowell Division
of Schlumberger Canada Limited

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-66 LAT60.40' LONG123.:	DATE	06-Feb-97	TREATMENT # 2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E	REPORT No	21	
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. DENNIS BROWN	SPUD DATE	12-Jan-97	

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	119	PUMP #1	152X254	OPPOSITE DP	23
BIT NUMBER	3		508.0	263	HOLE	189	M3/STK	0.0138	OPPOSITE DC	28
DRILL PIPE #1(mm)	127.0	602			TOTAL	308	PUMP #2	152X254	CIRC. TIME	95
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY		M3/STK	0.0138	BOTTOMS UP	47
COLLAR #1(mm)	178.0	84					S.P.M.	235	PUMP PRESS.	1550
COLLAR #2(mm)	228.0	87					M3/MIN	3.2477		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1160	1160 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.	1930	1930 kg/m3	VISCOSITY	70 to 90 s/L
DEVIATION-808 m 1.3 az 135.4	OVERFLOW WT.	1140	1140 kg/m3	FILTRATE	N/C cm3/30 min.
CURRENT OP.-TRIPPING	UNDERFLOW RT.	4	4 m3/min	pH	11.0 TO 11.5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE 175 x 3 # 1, 110 x 3 # 2

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			6:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			856								
FLOWLINE TEMPERATURE (C)			65.55555556	CAUSTIC	240			4	236		$232.00
DENSITY			1160	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)			130	NAT BENTONI	2320			120	2200		$1,909.20
600 READING			72	LIGNITE	56			6	50		$120.00
300 READING			50	LIME	648				648		
APPARENT VISCOSITY (mPa.s)			36	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)			22	BICARB	25			12	13		$948.00
YIELD POINT (Pa)			14	MICA COARSE	207				207		
GELS 0/10 min. (Pa)			9.5//44	IDF-FLR	7				7		
pH	STRIP	X	METER 10	VISPLEX II	770			42	728		$15,414.00
FILTRATE (cm3)	API	X	HTHP 6	ID FREE 206L	4				4		
FILTER CAKE (mm)			1.5	CELLOPHANE	300				300		
PF			2	MICA MEDIUM	110				110		
MF			3.9	FLOPLEX	150				150		
PM				P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)			Ca	P. SEAL "M"	160				160		
CHLORIDES (mg/L)		X	NaCl 1500	CALCARB "32	224				224		
SAND CONTENT	%	X	FR. 0.3	CALCARB "SC	336				336		
SOLIDS CONTENT	%	X	FR. 9.756097561	CALCAARB "0	224				224		
OIL/WATER CONT	%		FR.	DETERGENT	52				52		
MBT	(Kg/m3)	X	OIL RET 62	PREVIOUS COST	##########					600 RPM	72
ELECTRICAL STABILITY				DAILY COST	$174.00					300 RPM	50
OIL WATER RATIO				CUM. COST	##########			GELS		200 RPM	42
E.C.D. kg/m^3			1164.31	ENGINEERING CHARGES	13440			10 s	15	100 RPM	32
"n"			0.11	DISCT'D COST / CUM TOTAL	114873.855	128213.855		10 m	44	6 RPM	20
"K"			2.09	TRUCKING				20 m	40	3 RPM	19

COMMENTS: Above Inventory Is Not Valid, See Attached Material Sheet For Inventory

1.WEIGHT AS LOW AS POSSIBLE WITH SOLIDS CONTROL AND RUN WATER @ 20 - 25 L/MIN TO MAINTAIN VOLUME
2.MAINTAIN VIS @ 90 S\L MINIMUM
USE CAUSTIC TO CONTROL VISCOSITY TO A MAXIMUM pH OF 11.5
W/ ADDITIONS OF 8 SX OF FLOPLEX AND 4 SX OF VISPLEX SEE MUD MAN BEFORE MIXING

3.PH AT 11 TO 11.5 WITH CAUSTIC THRU THE BARREL
4. PREMIX GEL @ 30 KG /M^3

ON TRIPS RIH BREAK CIRCULATION BELOW SHOE AND EVERY 10 - 15 STANDS

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	Dan Majocha	On Location
PHONE	532 - 5078		Camp	Room # 5

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Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-56 LAT60 40' LONG123. 30'	DATE	11-Feb-97		TREATMENT #	2911-0721
OPERATOR	RANGER OIL LTD	CONTRACTOR CACTUS # 26E	REPORT No	27			
REPORT FOR Mr	ART SCHRITT	REPORT FOR Mr. DENNIS BROWN	SPUD DATE	12-Jan-97			

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444 5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	100	PUMP #1	165X254	OPPOSITE DP	27
BIT NUMBER	3		508 0	263	HOLE	229	M3/STK	0 0163	OPPOSITE DC	34
DRILL PIPE #1(mm)	127.0	783			TOTAL	329	PUMP #2	165X254	CIRC TIME	84
DRILLPIPE #2(mm)	127 0	54	LINER	TOP/BOT.	STAND BY		M3/STK	0 0163	BOTTOMS UP	49
COLLAR #1(mm)	178 0	84					S P.M.	240	PUMP PRESS	13500
COLLAR #2(mm)	228 0	87					M3/MIN	3 9084		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1160	1160 kg/m3	MUD WT	1060-1300 Kg/m3
HOLE COND -GOOD	UNDERFLOW WT	1795	1795 kg/m3	VISCOSITY	70 to 90 s/L
DEVIATION-973 5 3 AZ 170 5	OVERFLOW WT	1150	1150 kg/m3	FILTRATE	N/C cm3/30 min
CURRENT OP -PCH to LOG	UNDERFLOW RT.	4	4 m3/min	pH	11.0 TO 11 5

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE 175 x 3 # 1, 110 x 3 # 2

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			23:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			1008								
FLOWLINE TEMPERATURE (C)			56 7	CAUSTIC	240			4	236		$232 0(
DENSITY			1160	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)			95	NAT BENTON	2320			120	2200		$1 909 2
600 READING			62	LIGNITE	56			6	50		$120 0
300 READING			47	LIME	648				648		
APPARENT VISCOSITY (mPa.s)			31	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa s)			15	BICARB	25			12	13		$945 0(
YIELD POINT (Pa)			16	MICA COARS	207				207		
GELS 0/10 mn (Pa)			9/50	IDF-FLR	7				7		
pH STRIP	X	METER	11 5	VISPLEX II	770			42	728		$15 414 6(
FILTRATE (cm3) API	X	HTHP	8	ID FREE 208L	4				4		
FILTER CAKE (mm)			1 5	CELLOPHANE	300				300		
PF			3 8	MICA MEDIUN	110				110		
MF			7 9	FLOPLEX	150				150		
PM				P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)		Ca		P. SEAL "M"	160				160		
CHLORIDES (mg/L)	X	NaCl	1400	CALCARB "32	224				224		
SAND CONTENT %	X	FR	0 3	CALCARB "50	336				336		
SOLIDS CONTENT %	X	FR	9 8	CALCAARB "0	224				224		
OIL/WATER CONT %		FR		DETERGENT	52				52		
MBT (Kg/m3)	X	OIL RET	64	PREVIOUS COST	$246,597 41					600 RPM	62
ELECTRICAL STABILITY				DAILY COST						300 RPM	47
OIL WATER RATIO				CUM. COST	$246 597 41		GELS			200 RPM	40
E C D. kg/m^3			1162 81	ENGINEERING CHARGES	$15,840.00		10 s	22		100 RPM	30
"n"			0 15	ISCT'D COST / CUM TOTAL	$123,298 71	$139,138.71	10 m	50		6 RPM	18
"K"			1 16	TRUCKING			20 m	60		3 RPM	16
COMMENTS											

1.WEIGHT AS LOW AS POSSIBLE WITH SOLIDS CONTROL AND RUN WATER @ 30 - 35 L/MIN TO MAINTAIN VOLUME
2.MAINTAIN VIS @ 90 S/L MINIMUM
USE CAUSTIC TO CONTROL VISCOSITY TO A MAXIMUM pH OF 11.5

3 PH AT 11 TO 11 5 WITH CAUSTIC THRU THE BARREL
RAISE pH TO 11.5 PRIOR TO T.D

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	Dan Majoche
PHONE	532 - 5078		On Location
			Camp Room # 5

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Schlumberger Dowell

INVENTORY

TREATMENT # 2911-0721

WELL NAME RANGER FORT LIARD | LOCATION P-66 LAT60.43' LONG123.30' | DATE 12-Feb-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 25E | REPORT No 27

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. DENNIS BROWN | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	240	17	163	77	$986.00	$9,454.00
X-CIDE 207 10	96			96		
NAT BENTONITE 100	2320	50	2001	319	$795.50	$31,835.91
LIGNITE 1	56		18	38		$360.00
LIME 1	648			648		
SODA ASH 10	40		4	36		$144.00
BICARB 10	25		16	9		$1,264.00
MICA COARSE 1034	207		30	177		$1,110.00
IDF-FLR 1	7			7		
VISPLEX II 10	770	26	502	268	$9,542.00	$184,234.00
ID FREE 208L 10	4			4		
CELLOPHANE 103	300		34	266		$1,428.00
MICA MEDIUM 1042	110			110		
FLOPLEX 10	150	11	112	38	$2,112.00	$21,504.00
P. SEAL "C" 10	260		50	210		$1,800.00
P. SEAL "M" 104	160		15	145		$570.00
CALCARB "325" 1045	224		10	214		$100.00
CALCARB "SC" 1045	336		23	313		$230.00
CALCAARB "0" 1045	224			224		
DETERGENT 10	52			52		
BARITE 10	5920	40	115	5805	$780.00	$2,242.50
CALC CHLORIDE	340			340		
MAGNA FIBER	32		8	24		$1,024.00
MICA FINE	239			239		
SAWDUST	1400		525	875		$3,412.50
CALC CARB "FG"	168			168		
TRUDRILL	160			160		
NATURAL GEL	520			520		
TRUVIS	360			360		
HYMUL	32			32		
XCD	160			160		
INTERDRILL S	600			600		
EMUL	20			20		
INTER FL	20			20		
OW	32			32		
ZINC CARB	80			80		
BARITE 10	720			720		
HSO 600 10	29			29		
PTS 200 10	8			8		
FIBER FLUID "F"	400			400		
FIBER FLUID "C"	200			200		
				TOTALS	$14,215.50	$260,812.91

Schlumberger Dowell

DAILY MUD REPORT

WELL NAME	RANGER FORT LIARD	LOCATION P-65 LAT60.47' LONG123.30'		DATE	13-Feb-97	TREATMENT #	2911-0721
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 26E		REPORT No	28		
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. DENNIS BROWN		SPUD DATE	12-Jan-97		

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	444.5	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	85	PUMP #1	165X254	OPPOSITE DP	26
BIT NUMBER	3		508.0	263	HOLE	229	M3/STK	0.0163	OPPOSITE DC	33
DRILL PIPE #1(mm)	127.0	783			TOTAL	314	PUMP #2	165X254	CIRC. TIME	84
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY		M3/STK	0.0163	BOTTOMS UP	51
COLLAR #1(mm)	178.0	84					S.P.M	230	PUMP PRESS	13500
COLLAR #2(mm)	228.0	87					M3/MIN	3.7456		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - VISPLEX	FLOWLINE WT.	1150	1150 kg/m3	MUD WT.	1060-1200 Kg/m3
HOLE COND -	UNDERFLOW WT	1795	1795 kg/m3	VISCOSITY	70 to 90 s/L
DEVIATION-973 5.3 AZ 170.5	OVERFLOW WT.	1140	1140 kg/m3	FILTRATE	N/C cm3/30 min
CURRENT OP -REAM TO RUN CSG	UNDERFLOW RT.	4	4 m3/min	pH	11.0 TO 11.5

EQUIPMENT. XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

XX DOUBLE DECK OR HIGH SPEED SHAKER SCREEN SIZE 175 x 3 # 1, 110 x 3 # 2

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			5:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			1908								
FLOWLINE TEMPERATURE (C)			53.3	CAUSTIC	240			4	236		$232.00
DENSITY			1150	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)			230	NAT BENTON	2300			120	2200		$1,909.20
600 READING			65	LIGNITE	55			6	50		$120.00
300 READING			-	LIME	648				648		
APPARENT VISCOSITY (mPa)			-	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa)			-	BICARB	25			12	13		$948.00
YIELD PO INT (Pa)			20.5	MICA COARS	207				207		
GELS 0/10 min (Pa)			19.5/70	IDF-FLR	7				7		
pH	STRIP	X	METER	VISPLEX II	770			42	728		$15,414.00
FILTRATE (cm3	API	X	HTHP	ID FREE 208L	4				4		
FILTER CAKE (mm)			1.5	CELLOPHANE	300				300		
PF			4.4	MICA MEDIUM	110				110		
MF			8.2	FLOPLEX	150				150		
PM				P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)			Ca	P. SEAL "M"	160				160		
CHLORIDES (mg/L)		X	NaCl	1500	CALCARB "32	224			224		
SAND CONTENT	%	X	FR.	0.3	CALCARB "5	336			336		
SOLIDS CONTENT	%	X	FR.	9.1	CALCARB "0	224			224		
OIL/WATER CONT	%		FR.		DETERGENT	52			52		
MBT	(Kg/m3)	X	CEC RET	66	PREVIOUS COST	$ 312.91				600 RPM	85
ELECTRICAL STABILITY					DAILY COST					300 RPM	63
OIL WATER RATIO					CUM. CO	$ 312.91		GELS		200 RPM	58
E C D			1154.15		ENGINEERING CHARGE	$16,800.00		10 s	37	100 RPM	52
			0.00		ISCTD COST / CUM	$139,293.57 $147,206.48		10 m	70	6 RPM	39
PK			3.12		TOTAL COST			20 m	80	3 RPM	39

COMMENTS

MUD CHECK ON CLEAN OUT TRIP PRIOR TO RUNNING CASING

1 WEIGHT AS LOW AS POSSIBLE WITH SOLIDS CONTROL RUN WATER @ 30 - 35 L/MIN TO MAINTAIN VOLUME

2 MAINTAIN VIS @ 130 S/L MINIMUM

USE CAUSTIC TO CONTROL VISCOSITY TO A MINIMUM pH OF 11.5

STOCK POINT	GRANDE PRAIRIE	DOWELL ENGINEER	Dan Majocha	On Location
PHONE	532 - 5078		Camp Room # 5	

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Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 47' LONG 123 30'		DATE	19-Feb-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 28 E		REPORT No	32
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	160	PUMP #1	165X254	OPPOSITE DP	49
BIT NUMBER	3C				HOLE	73	M3/STK	0.0163	OPPOSITE DC	93
DRILL PIPE #1(mm)	127.0	815	339.7	1007	TOTAL	233	PUMP #2	165X254	CIRC. TIME	72
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	120	M3/STK	0.0163	BOTTOMS UP	20
COLLAR #1(mm)	177.8	84					S.P.M.	200		
COLLAR #2(mm)	228.0	58					M3/MIN	3.2570		

HOLE DATA	DESANDER DESILTER		DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT.	kg/m3	MUD WT.	1000 - 1600 Kg/m3
HOLE COND.-	UNDERFLOW WT.	kg/m3	VISCOSITY	35 - 40 s/L
DEVIATION-	OVERFLOW WT.	kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-DRILL OUT CEMENT	UNDERFLOW RT.	m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER 84 – 38

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			16:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			1012								
FLOWLINE TEMPERATURE (C)			23.3	CAUSTIC	240				240		
DENSITY			1000	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)			39	NAT BENTONI	1960				1960		
600 READING @ 50 C			12	LIGNITE	56				56		
300 READING			7	LIME	648				648		
APPARENT VISCOSITY (mPa.s)			6	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)			5	BICARB	25				25		
YIELD POINT (Pa)			1	MICA COARSE	207				207		
GELS 0/10 min. (Pa)			5/11	IDF-FLR	7				7		
pH	STRIP	METER		VISPLEX II	541				541		
FILTRATE (cm3) @ 120 C		HTHP X	22	ID FREE 208L	4				4		
FILTER CAKE (mm)			1.5	CELLOPHANE	300				300		
				MICA MEDIUM	110				110		
Pom			1.4	FLOPLEX	250				250		
EXCESS LIME KG/M3			5.18	P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)		Ca		P. SEAL "M"	160				160		
CHLORIDES (mg/L)		NaCl		CALCARB "32	224				224		
SAND CONTENT %		FR.		CALCARB "SC	336				336		
SOLIDS CONTENT %	X	FR.	6	CALCAARB "U	448				448		
OIL CONTENT %			90	DETERGENT	52				52		
WATER CONTENT %		X	4	PREVIOUS COST	$283,304.30			STARTING VOLUME		353	
ELECTRICAL STABILITY			1300	DAILY COST				VOL. BUILT			
OIL WATER RATIO			96/4	CUM. COST	$283,304.30			VOL. LOST ON SURFACE			
CaCl2 w/w%				CUM. ENG. COST	$20,160.00			VOL. LOST ON SUB SURFACE			
"n"			0.31	Discounted/ Total	$141,652.15	$161,812.15		END VOLUME			
"K"			0.60	TRUCKING				CUM. VOL BUILT.			

COMMENTS

ONCE ON BOTTOM DRILLING AHEAD START CIRCULATION OF 1 BBL OF INTERDRILL "OW" OVER 2-3 CIRC'S AND 20 SX OF LIME OVER ONE CIRCULATION

MAINTAIN :
VISCOSITY @ 38 - 42 S/L WITH TRUVIS
START ADDITIONS OF LIME @ 10 SX PER TOUR UNTIL FURTHER NOTICE
DENSITY AS LOW AS CONDITIONS ALLOW RUN CENTRIFUGES, TRANSFER TRUDRILL AS REQUIRED TO MAINTAIN VOLUME
RECORD TRANSFERS FROM THE 400 BBL TANK
RECOVER TRUDRILL FROM SUMP AFTER IT HAS SEPARATED
ANY TIGHT HOLE INCREASE PUMP RATE IF POSSIBLE OTHERWISE RAISE VISCOSITY TO 45 S/L W/ TRUVIS
SEEPAGE LOSSES ADD 5 SX OF INTERDRILL "S" AND 5 SX OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING
KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

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DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123				DATE	21-Feb-97			
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 28 E				REPORT No	33			
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK				SPUD DATE	12-Jan-97			

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	76	PUMP #1	152X254	OPPOSITE DP	50
BIT NUMBER	3C		508.0	263	HOLE	94	M3/STK	0.0138	OPPOSITE DC	94
DRILL PIPE #1(mm)	127.0	843	339.7	1007	TOTAL	170	PUMP #2	152X254	CIRC. TIME	51
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	152	M3/STK	0.0138	BOTTOMS UP	25
COLLAR #1(mm)	177.8	84					S.P.M.	240		
COLLAR #2(mm)	226.0	58					M3/MIN	3.3168		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT.		kg/m3	MUD WT.	1000 - 1600 Kg/m3
HOLE COND -	UNDERFLOW WT		kg/m3	VISCOSITY	35 - 40 s/L
DEVIATION-	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
URRENT OP.-TRIP FOR BHA	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER 84 – 38

MUD PROPERTIES					INVENTORY						
TIME SAMPLE TAKEN		2:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM		FLOWLINE								
PRESENT DEPTH		1040								
FLOWLINE TEMPERATURE (C)		37.77777778	CAUSTIC	240				240		
DENSITY		1055	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)		39	NAT BENTON	1960				1960		
600 READING @ 60 C		24	LIGNITE	56				56		
300 READING		15	LIME	648				648		
APPARENT VISCOSITY (mPa.s)		12	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)		9	BICARB	25				25		
YIELD POINT (Pa)		3	MICA COARS	207				207		
GELS 0/10 min. (Pa)		1.5/3	IDF-FLR	7				7		
pH STRIP	METER		VISPLEX II	541				541		
FILTRATE (cm3) @ 120 C	HTHP X	10	ID FREE 208L	4				4		
FILTER CAKE (mm)		1.5	CELLOPHANE	300				300		
			MICA MEDIUM	110				110		
Pom		1.3	FLOPLEX	250				250		
EXCESS LIME KG/M3		4.81	P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)	Ca		P. SEAL "M"	160				160		
CHLORIDES (mg/L)	NaCl		CALCARB "32	224				224		
SAND CONTENT %	FR.		CALCARB "SC	336				336		
SOLIDS CONTENT % X	FR.	10	CALCAARB "C	448				448		
OIL CONTENT		86	DETERGENT	52				52		
WATER CONTENT %	X	4	PREVIOUS COST	#########				STARTING VOLUME		353
ELECTRICAL STABILITY		1700.00	DAILY COST	$42,961.20				VOL. BUILT		
OIL WATER RATIO		96/4	CUM. COST	#########				VOL. LOST ON SURFACE		15
CaCl2 w/w%			CUM. ENG. COST	21120				VOL. LOST ON SUB SURFACE		
"n"		0.25	Discounted/ Total	163132.75	184252.75			END VOLUME		338
"K"		2.01	TRUCKING					CUM. VOL BUILT.		

COMMENTS: Above Inventory Is Not Valid, See Attached Material Sheet For Inventory

ONCE ON BOTTOM DRILLING AHEAD START CIRCULATION 20 SX OF LIME OVER ONE CIRCULATION

MAINTAIN :
VISCOSITY @ 38 - 42 S/ L WITH TRUVIS
START ADDITIONS OF LIME @ 10 SX PER TOUR UNTIL FURTHER NOTICE
DENSITY @ 1050 kg/m^3 WITH BARITE (45 SX WILL RAISE CURRENT VOLUME 10 POINTS) TRANSFER TRUDRILL AS REQUIRED TO MAINTAIN VOLUME
RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
RECOVER TRUDRILL FROM SUMP AFTER IT HAS SEPARATED
ANY TIGHT HOLE INCREASE PUMP RATE IF POSSIBLE OTHERWISE RAISE VISCOSITY TO 45 S/L W/ TRUVIS
SEEPAGE LOSSES ADD 5 SX OF INTERDRILL "S" AND 5 SX OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING
KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

NOTE : TRUDRILL PUMPED TO THE SUMP DUE TO WATER CONTAMINATION WHILE DISPLACING WAS IN EXCESS OF 30 M^3 AND MAY BE RECOVERABLE

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. #	

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Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LA: 60 40' LONG 123 30'		DATE	22-Feb-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 25 E		REPORT No	34
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL (BBL)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	78	PUMP #1	152X254	OPPOSITE DP	49
BIT NUMBER	2C		508.0	253	HOLE	92	M3/STK	0.0138	OPPOSITE DC	91
DRILL PIPE #1(mm)	127.0	845	339.7	1007	TOTAL	170	PUMP #2	152X254	CIRC. TIME	53
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	152	M3/STK	0.0138	BOTTOMS UP	25
COLLAR #1/mm)	171.0	45					S.P.M.	230		
COLLAR #2(mm)	228.0	96					M3/MIN	3.1786		

HOLE DATA	DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1000 - 1600 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.		kg/m3	VISCOSITY	40-44 s/L
DEVIATION-6.7	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-DRLG w MWD	UNDERFLOW RT.		m3/min	pH	N/A

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
XX DOUBLE DECK OR HIGH SPEED SHAKER 84 – 38

MUD PROPERTIES		INVENTORY							
TIME SAMPLE TAKEN	05:35	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	1076								
FLOWLINE TEMPERATURE (C)	57.8	CAUSTIC	240				240		
DENSITY	1085	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)	41	NAT BENTONI	1960				1960		
600 READING @ 60 C	28	LIGNITE	56				56		
300 READING	19	LIME	648				648		
APPARENT VISCOSITY (mPa.s)	14	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)	9	BICARB	25				25		
YIELD POINT (Pa)	5	MICA COARSE	207				207		
GELS 0/10 min. (Pa)	1.5/3.5	IDF-FLR	7				7		
pH STRIP / METER	N/A	VISPLEX II	541				541		
FILTRATE (cm3) @ 120 C / HTHP X	10	ID FREE 208L	4				4		
FILTER CAKE (mm)	1.5	CELLOPHANE	300				300		
		MICA MEDIUM	110				110		
Pom	1.5	FLOPLEX	250				250		
EXCESS LIME KG/M3	5.55	P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l) / Ca		P. SEAL "M"	160				160		
CHLORIDES (mg/L) / NaCl		CALCARB "32	224				224		
SAND CONTENT % X / FR	0.35	CALCARB "SC	336				336		
SOLIDS CONTENT % X / FR	13	CALCAARB "0	448				448		
OIL CONTENT %	33	DETERGENT	52				52		
WATER CONTENT % X	4	PREVIOUS COST		$326,265.50			STARTING VOLUME		338
ELECTRICAL STABILITY	1440	DAILY COST		$22,112.80			VOL. BUILT		
OIL WATER RATIO	95/5	CUM. COST		$348,378.30			VOL. LOST ON SURFACE		6
CaCl2 w/w%		CUM. ENG. COST		$21,120.00			VOL. LOST ON SUB SURFACE		8
"n"	0.35	Discounted/ Total		$174,189.15	$195,309.15		END VOLUME		324
"K"	1.69	TRUCKING					CUM. VOL BUILT.		

COMMENTS **Above Inventory Is Not Valid, See Attached Material Sheet For Inventory**

ADD 30SX OF LIME OVER TWO CIRCULATIONS
MAINTAIN :
VISCOSITY @ 38 - 42 S/ L WITH TRUVIS
START ADDITIONS OF LIME @ 10 SX PER TOUR UNTIL FURTHER NOTICE
DENSITY @ 1050 kg/m^3 WITH BARITE (45 SX WILL RAISE CURRENT VOLUME 10 POINTS) TRANSFER TRUDRILL AS REC OF 30 M^3 AND MAY BE RECOVERABLE
RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
RECOVER TRUDRILL FROM SUMP AFTER IT HAS SEPARATED
ANY TIGHT HOLE INCREASE PUMP RATE IF POSSIBLE OTHERWISE RAISE VISCOSITY TO 45 S/L W/ TRUVIS
SEEPAGE LOSSES ADD 5 SX OF INTERDRILL "S" AND 5 SX OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING

NOTE : TRUDRILL PUMPED TO THE SUMP DUE TO WATER CONTAMINATION WHILE DISPLACING WAS IN EXCESS

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

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Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE 22-Feb-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 28 E | REPORT No 34

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	240		170	70	$0.00	$9,860.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 10	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	648	30	30	618	$465.00	$465.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 103	207		30	177	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	300		34	266	$0.00	$1,428.00
MICA MEDIUM 104	110		0	110	$0.00	$0.00
FLOPLEX 10	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	260		50	210	$0.00	$1,900.00
P. SEAL "M" 104	160		15	145	$0.00	$570.00
CALCARB "325" 104	224		10	214	$0.00	$100.00
CALCARB "SC" 104	336		23	313	$0.00	$230.00
CALCAARB "U" 104	448		0	448	$0.00	$0.00
DETERGENT 10	62		0	62	$0.00	$0.00
BARITE 10	7520	100	857	6663	$1,950.00	$16,711.50
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		0	239	$0.00	$0.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	168		0	168	$0.00	$0.00
TRUDRILL	353	14	29	324	$12,600.00	$26,100.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360	23	65	295	$7,097.80	$20,059.00
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800		0	800	$0.00	$0.00
EMUL	32		0	32	$0.00	$0.00
INTER FL	32		0	32	$0.00	$0.00
OW	40		4	36	$0.00	$6,360.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		0	720	$0.00	$0.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400		0	400	$0.00	$0.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00
			TOTALS		$22,112.80	$348,378.30

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION	P-66 LAT 60 40' LONG 123 30'	DATE	23-Feb-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR	CACTUS # 29 E	REPORT No	34A
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr.	TERRY GORGICHUCK	SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	88	PUMP #1	152X254	OPPOSITE DP	49
BIT NUMBER	2C		508.0	263	HOLE	92	M3/STK	0.0138	OPPOSITE DC	91
DRILL PIPE #1(mm)	127.0	927	339.7	1007	TOTAL	180	PUMP #2	152X254	CIRC. TIME	56
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	152	M3/STK	0.0138	BOTTOMS UP	25
COLLAR #1(mm)	171.0	45					S.P.M.	230		
COLLAR #2(mm)	228.0	96					M3/MIN	3.1785		

HOLE DATA		DESANDER DESILTER			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT.	RUN 10 Hrs	OFF	kg/m3	MUD WT.	1050 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.			kg/m3	VISCOSITY	40--44 s/L
DEVIATION-9.7	OVERFLOW WT.			kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-DRLG w MWD	UNDERFLOW RT.			m3/min	pH	N/A

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

XX DOUBLE DECK OR HIGH SPEED SHAKER 38 -- 38

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			23:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			1122								
FLOWLINE TEMPERATURE (C)			57.8	CAUSTIC	240				240		
DENSITY			1040	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)			41	NAT BENTONI	1960				1960		
600 READING @ 60 C			22	LIGNITE	56				56		
300 READING			15	LIME	648				648		
APPARENT VISCOSITY (mPa.s)			11	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)			7	BICARB	25				25		
YIELD POINT (Pa)			4	MICA COARSE	207				207		
GELS 0/10 min. (Pa)			1.5/3.0	IDF-FLR	7				7		
pH	STRIP	METER	N/A	VISPLEX II	541				541		
FILTRATE @ 90C (cm3)		HTHP X	10	ID FREE 208L	4				4		
FILTER CAKE (mm)			1.5	CELLOPHANE	300				300		
				MICA MEDIUM	110				110		
Pom			1.2	FLOPLEX	250				250		
EXCESS LIME KG/M3			4.44	P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)		Ca		P. SEAL "M"	160				160		
CHLORIDES (mg/L)		NaCl		CALCARB "32/	224				224		
SAND CONTENT %	X	FR.	0.75	CALCARB "SC	336				336		
SOLIDS CONTENT %	X	FR.	10	CALCAARB "0	448				448		
OIL CONTENT %			86	DETERGENT	52				52		
WATER CONTENT %		X	4	PREVIOUS COST		$326,265.50			STARTING VOLUME		338
ELECTRICAL STABILITY			1290	DAILY COST		$3,780.00			VOL. BUILT		
OIL WATER RATIO			96/4	CUM. COST		$330,045.50			VOL. LOST ON SURFACE		6
CaCl2 w/w%				CUM. ENG. COST		$21,600.00			VOL. LOST ON SUB SURFACE		8
"n"			0.29	Discounted/ Total		$165,022.75	$186,622.75		END VOLUME		324
"K"			1.88	TRUCKING					CUM. VOL BUILT		

COMMENTS **Above Inventory Is Not Valid. See Attached Material Sheet For Inventory**

ADD 50 SACKS OF LIME @ 10 MINUTES PER SACK
MAINTAIN :
VISCOSITY @ 41-43 S/L WITH TRUVIS
START ADDITIONS OF LIME @ 10 SX PER TOUR UNTIL FURTHER NOTICE
DENSITY @ 1050 kg/m^3 WITH BARITE (45 SX WILL RAISE CURRENT VOLUME 10 POINTS) TRANSFER TRUDRILL AS REC OF 30 M^3 AND MAY BE RECOVERABLE
RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

ANY TIGHT HOLE INCREASE PUMP RATE IF POSSIBLE OTHERWISE RAISE VISCOSITY TO 45 S/L W/ TRUVIS
SEEPAGE LOSSES ADD 5 SX OF INTERDRILL "S" AND 5 SX OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

THE INFORMATION IN THIS REPORT IS BASED ON OUR EXPERIENCE, REPRESENTS OUR BEST JUDGMENT IN THE MATTER AND IS INTENDED TO BE HELPFUL BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-65 | LOCATION LAT 60 40' LONG 123 30' | DATE 23-Feb-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 25 E | REPORT No 34A

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	240		170	70	$0.00	$9,860.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 10	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	648	30	30	618	$465.00	$465.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 103	207		30	177	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$193,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	300		34	266	$0.00	$1,428.00
MICA MEDIUM 104	110		0	110	$0.00	$0.00
FLOPLEX 1	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	260		50	210	$0.00	$1,900.00
P. SEAL "M" 104	160		15	145	$0.00	$570.00
CALCARB "325" 104	224		10	214	$0.00	$100.00
CALCARB "SC" 1045	336		23	313	$0.00	$230.00
CALCAARB "0" 1045	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 10	7520	30	787	6733	$585.00	$15,346.50
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		0	239	$0.00	$0.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	168		0	168	$0.00	$0.00
TRUDRILL	353	0	15	338	$0.00	$13,500.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360	0	42	318	$0.00	$12,961.20
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800		0	800	$0.00	$0.00
EMUL	32	1	1	31	$1,140.00	$1,140.00
INTER FL	32		0	32	$0.00	$0.00
OW	40	1	5	35	$1,590.00	$7,950.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		0	720	$0.00	$0.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400		0	400	$0.00	$0.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00
			TOTALS		$3,780.00	$330,045.50

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 47' LONG 123 30'		DATE	23-Feb-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 29 E		REPORT No	35
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	88	PUMP #1	152/254	OPPOSITE DP	50
BIT NUMBER	2CRR		508.0	263	HOLE	108	M3/STK	0.0138	OPPOSITE DC	91
DRILL PIPE #1(mm)	127.0	927	339.7	1007	TOTAL	196	PUMP #2	152/254	CIRC. TIME	59
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	142	M3/STK	0.0138	BOTTOMS UP	28
COLLAR #1(mm)	171.0	45					S.P.M.	230		
COLLAR #2(mm)	228.0	96					M3/MIN	3.1786		

HOLE DATA	DESANDER/DESILTER		DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF kg/m3	MUD WT.	1050 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.	kg/m3	VISCOSITY	38-42 s/L
DEVIATION- 19 201 DEGREES	OVERFLOW WT.	kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-DRLG w MWD	UNDERFLOW RT.	m3/min	pH	N/A

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

38-38 84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER 38 – 38

MUD PROPERTIES	
TIME SAMPLE TAKEN	20:25
SAMPLE FROM	FLOWLINE
PRESENT DEPTH	1218
FLOWLINE TEMPERATURE (C)	65.6
DENSITY	1065
FUNNEL VISCOSITY (s/L)	38
600 READING @ 60 C	28
300 READING	20
APPARENT VISCOSITY (mPa.s)	14
PLASTIC VISCOSITY (mPa.s)	8
YIELD POINT (Pa)	6
GELS 0/10 min. (Pa)	2.5/3.5
pH STRIP / METER	N/A
FILTRATE @ 90C (cm3) / HTHP X	10
FILTER CAKE (mm)	1.5
Pom	3.2
EXCESS LIME KG/M3	11.84
TOTAL HARDNESS (mg/l) / Ca	
CHLORIDES (mg/L) / NaCl	
SAND CONTENT % X / FR. X	1.2
SOLIDS CONTENT % X / FR.	12
OIL CONTENT %	84
WATER CONTENT % X	4
ELECTRICAL STABILITY	1085
OIL WATER RATIO	95/5
CaCl2 w/w%	
"n"	0.24
"k"	3.36

INVENTORY								
MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC	240				240		
X-CIDE 207	96				96		
NAT BENTONI	1960				1960		
LIGNITE	56				56		
LIME	648				648		
SODA ASH	40				40		
BICARB	25				25		
MICA COARSE	207				207		
MDF-FLR	7				7		
VISPLEX II	541				541		
ID FREE 208L	4				4		
CELLOPHANE	300				300		
MICA MEDIUM	110				110		
FLOPLEX	250				250		
P. SEAL "C"	260				260		
P. SEAL "M"	160				160		
CALCARB "32	224				224		
CALCARB "SC	336				336		
CALCAARB "0	448				448		
DETERGENT	52				52		

PREVIOUS COST	$326,265.50	STARTING VOLUME	338
DAILY COST		VOL. BUILT	
CUM. COST	$335,910.50	VOL. LOST ON SURFACE	6
CUM. ENG. COST	$21,800.00	VOL. LOST ON SUB SURFACE	8
Discounted/ Total	$167,955.25 $189,555.25	END VOLUME	324
TRUCKING		CUM. VOL BUILT.	

COMMENTS

ADD 1 DRUM OF EMUL AND 1 DRUM OF INTERDRILL OW EVERY 12 HOURS

MAINTAIN :

VISCOSITY @ 38-42 S/L WITH TRUVIS 10 SACKS AT 12 MINUTES PER SACK AS REQ,D

ADDITIONS OF LIME @ 5SX PER TOUR UNTIL FURTHER NOTICE

DENSITY @ 1050 kg/m3 BY RUNNING CENTRIFUGE FOR 1 HOUR AT A TIME

DENSITY @ 1050 kg/m^3 WITH BARITE (45 SX WILL RAISE CURRENT VOLUME 10 POINTS) TRANSFER TRUDRILL AS REC OF 30 M^3 AND MAY BE RECOVERABLE

RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

ANY TIGHT HOLE INCREASE PUMP RATE IF POSSIBLE OTHERWISE RAISE VISCOSITY TO 45 S/L W/ TRUVIS

SEEPAGE LOSSES ADD 10 SX OF INTERDRILL 'S' AND 10 SACKS OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDUCATE DOWN HOLE LOSSES

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

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BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-65 | LOCATION LAT 60 40' LONG 123 30' | DATE 23-Feb-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 28 E | REPORT No 35

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	240		170	70	$0.00	$9,860.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 100	1960		1790	170	$0.00	$26,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	648	60	60	588	$930.00	$930.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 1034	207		30	177	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	300		34	266	$0.00	$1,428.00
MICA MEDIUM 1042	110		0	110	$0.00	$0.00
FLOPLEX 10	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	260		50	210	$0.00	$1,900.00
P. SEAL "M" 104	160		15	145	$0.00	$570.00
CALCARB "325" 1045	224		10	214	$0.00	$100.00
CALCARB "SC" 1045	336		23	313	$0.00	$230.00
CALCAARB "C" 1045	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 10	7520		787	6733	$0.00	$15,346.50
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		0	239	$0.00	$0.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	168		0	168	$0.00	$0.00
TRUDRILL	353	10	21	332	$9,000.00	$18,900.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360	10	52	308	$3,086.00	$16,047.20
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800		0	800	$0.00	$0.00
EMUL	32	3	1	31	$3,420.00	$1,140.00
INTER FL	32	1	1	31	$1,530.00	$1,530.00
OW	40	3	5	35	$4,770.00	$7,950.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		0	720	$0.00	$0.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400		0	400	$0.00	$0.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00
				TOTALS	$22,736.00	$340,526.50

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	24-Feb-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 28 E		REPORT No	98
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUCK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	73	PUMP #1	152X254	OPPOSITE DP	50
BIT NUMBER	2CRR		508.0	263	HOLE	109	M3/STK	0.0138	OPPOSITE DC	91
DRILL PIPE #1(mm)	127.0	1162	339.7	1007	TOTAL	182	PUMP #2	152X254	CIRC. TIME	62
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	142	M3/STK	0.0138	BOTTOMS UP	27
COLLAR #1(mm)	171.0	45					S.P.M.	230		
COLLAR #2(mm)	228.0	96					M3/MIN	3.1786		

HOLE DATA		CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT.	OFF	OFF	kg/m3	MUD WT.	1020 Kg/m3
HOLE COND -GOOD	UNDERFLOW WT.	2000		kg/m3	VISCOSITY	37-39 s/L
DEVIATION-24.8	OVERFLOW WT.	985		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-DRLG w MWD	UNDERFLOW RT.			m3/min	pH	N/A

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

38-38 84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER 38 – 38

MUD PROPERTIES												INVENTORY		
TIME SAMPLE TAKEN				20:00		MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM				FLOWLINE									
PRESENT DEPTH				1303									
FLOWLINE TEMPERATURE (C)				71.7		CAUSTIC	240				240		
DENSITY				1075		X-CIDE 207	86				86		
FUNNEL VISCOSITY (s/L)				39		NAT BENTONI	1960				1960		
600 READING @ 60 C				30		LIGNITE	56				56		
300 READING				21		LIME	648				648		
APPARENT VISCOSITY (mPa.s)				15		SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)				9		BICARB	25				25		
YIELD POINT (Pa)				6		MICA COARSE	207				207		
GELS 0/10 min. (Pa)				3.0/4.5		IDF-FLR	7				7		
pH	STRIP		METER	N/A		VISPLEX II	541				541		
FILTRATE @ 90C (cm3)			HTHP X	10		ID FREE 208L	4				4		
FILTER CAKE (mm)				1.5		CELLOPHANE	300				300		
						MICA MEDIUM	110				110		
Pom				4		FLOPLEX	250				250		
EXCESS LIME KG/M3				14.8		P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)			Ca			P. SEAL "M"	160				160		
CHLORIDES (mg/L)			NaCl			CALCARB "32	224				224		
SAND CONTENT	%	X	FR X	0.75		CALCARB "SC	336				336		
SOLIDS CONTENT	%	X	FR	14		CALCAARB "0	448				448		
OIL CONTENT	%			85		DETERGENT	52				52		
WATER CONTENT	%		X	1		PREVIOUS COST	$355,727.50				STARTING VOLUME		353
ELECTRICAL STABILITY				1210		DAILY COST	$15,488.50				VOL. BUILT		
OIL WATER RATIO				99/1		CUM. COST	$358,813.50				VOL. LOST ON SURFACE		8
CaCl2 w/w%						CUM. ENG. COST	$22,080.00				VOL. LOST ON SUB SURFACE		21
"n"				0.20		Discounted/ Total	$179,406.75	$201,486.75			END VOLUME		324
"K"				4.36		TRUCKING					CUM. VOL BUILT		

COMMENTS — Above Inventory Is Not Valid, See Attached Material Sheet For Inventory

ADD 1 DRUM OF EMUL AND 1 DRUM OF INTERDRILL OW AND 1 DRUM OF INTERDRILL FL EVERY 12 HOURS

MAINTAIN :

VISCOSITY @ 38-42 S/L WITH TRUVIS 10 SACKS AT 12 MINUTES PER SACK AS REQ.D

NO LIME ADDITIONS UNTIL FURTHER NOTICE

DENSITY @ 1020kg/m3 by RUNNING CENTRIFUGE AS REQUIRED

DENSITY @ 1050 kg/m^3 WITH BARITE (45 SX WILL RAISE CURRENT VOLUME 10 POINTS) TRANSFER TRUDRILL AS REC OF 30 M^3 AND MAY BE RECOVERABLE

RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

TRANSFER TRUDRILL AS REQUIRED TO MAINTAIN VOLUME

ANY TIGHT HOLE INCREASE PUMP RATE IF POSSIBLE OTHERWISE RAISE VISCOSITY TO 45 S/L W/ TRUVIS

SEEPAGE LOSSES ADD 10 SX OF INTERDRILL 'S' AND 10 SACKS OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDUCATE DOWN HOLE LOSSES

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS — RETORT of DRYER CUTTINGS 60% SOLIDS 34% OIL 6% WATER

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

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BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE 24-Feb-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 26 E | REPORT No 36

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	240		187	53	$0.00	$10,846.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 100	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	648	10	120	528	$155.00	$1,860.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 1034	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 1042	97		0	97	$0.00	$0.00
FLOPLEX 10	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 1045	224		14	210	$0.00	$140.00
CALCARB "SC" 1045	336		33	303	$0.00	$330.00
CALCAARB "0" 1045	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 10	7520	85	67	7453	$1,657.50	$1,306.50
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353	4	25	328	$3,600.00	$22,500.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360	10	62	298	$3,086.00	$19,133.20
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800		0	800	$0.00	$0.00
EMUL	32	2	4	28	$2,280.00	$4,560.00
INTER FL	32	1	2	30	$1,530.00	$3,060.00
OW	40	2	8	32	$3,180.00	$12,720.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		720	0	$0.00	$12,384.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400		0	400	$0.00	$0.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00
				TOTALS	$15,488.50	$358,813.50

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-86	LOCATION	P-86 LAT 60 40' LONG 123 30'	DATE	25-Feb-97				
OPERATOR	RANGER OIL LTD.	CONTRACTOR	CACTUS # 28 E	REPORT No	57				
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr.	TERRY GORGICHUCK	SPUD DATE	12-Jan-97				

ASSEMBLY			CASING		MUD VOL. (BBL)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	76	PUMP #1	152X254	OPPOSITE DP	50
BIT NUMBER	2CRR		508.0	263	HOLE	113	M3/STK	0.0138	OPPOSITE DC	91
DRILL PIPE #1(mm)	127.0	1203	339.7	1007	TOTAL	189	PUMP #2	152X254	CIRC. TIME	59
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	127	M3/STK	0.0138	BOTTOMS UP	2R
COLLAR #1(mm)	171.0	45					S.P.M.	230		
COLLAR #2(mm)	228.0	96					M3/MIN	3.1786		

HOLE DATA	CENTRIFUGE				DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT.	1060	OFF	kg/m3	MUD WT.	1020 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.	2085		kg/m3	VISCOSITY	37-39 s/L
DEVIATION-28.2	OVERFLOW WT.	1000		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-DRLG w MWD	UNDERFLOW RT.	0.003		m3/min	pH	N/A

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

38-38 84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER 38 – 38

MUD PROPERTIES								INVENTORY				
TIME SAMPLE TAKEN			7:05	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			1344								
FLOWLINE TEMPERATURE (C)			71.7	CAUSTIC	240				240		
DENSITY			1055	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)			37	NAT BENTONI	1960				1960		
600 READING @ 50 C			28	LIGNITE	56				56		
300 READING			19	LIME	648				648		
APPARENT VISCOSITY (mPa.s)			14	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)			9	BICARB	25				25		
YIELD POINT (Pa)			5	MICA COARSE	207				207		
GELS 0/10 min. (Pa)			2.5/14.0	IDF-FLR	7				7		
pH	STRIP	METER	N/A	VISPLEX II	541				541		
FILTRATE @ 90C (cm3)		HTHP X	10	ID FREE 208L	4				4		
FILTER CAKE (mm)			1.5	CELLOPHANE	300				300		
				MICA MEDIUM	110				110		
Pom			4	FLOPLEX	250				250		
EXCESS LIME KG/M3			14.8	P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)		Ca		P. SEAL "M"	160				160		
CHLORIDES (mg/L)		NaCl		CALCARB "32"	224				224		
SAND CONTENT %	X	FR X	0.75	CALCARB "SC	336				336		
SOLIDS CONTENT %	X	FR	12.5	CALCAARB "0"	448				448		
OIL CONTENT %			87	DETERGENT	52				52		
WATER CONTENT %		X	1	PREVIOUS COST		$355,727.50			STARTING VOLUME		353
ELECTRICAL STABILITY			1930	DAILY COST		$15,488.50			VOL. BUILT		
OIL WATER RATIO			99.5/.5	CUM. COST		$358,813.50			VOL. LOST ON SURFACE		8
CaCl2 w/w%				CUM. ENG. COST		$22,560.00			VOL. LOST ON SUB SURFACE		21
"n"			0.21	Discounted/ Total		$179,406.75	$201,966.75		END VOLUME		324
"K"			3.58	TRUCKING					CUM. VOL BUILT		

COMMENTS **Above Inventory is Not Valid, See Attached Material Sheet For Inventory**

ADD 1 DRUM OF EMUL AND 1 DRUM OF INTERDRILL OW AND 1 DRUM OF INTERDRILL FL EVERY 12 HOURS

MAINTAIN :

VISCOSITY @ 38-42 S/L WITH TRUVIS 10 SACKS AT 12 MINUTES PER SACK AS REQ.D

NO LIME ADDITIONS UNTIL FURTHER NOTICE

DENSITY @ 1020kg/m3 by RUNNING CENTRIFUGE AS REQUIRED

DENSITY @ 1050 kg/m^3 WITH BARITE (45 SX WILL RAISE CURRENT VOLUME 10 POINTS) TRANSFER TRUDRILL AS REC OF 30 M^3 AND MAY BE RECOVERABLE

RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

TRANSFER TRUDRILL AS REQUIRED TO MAINTAIN VOLUME

ANY TIGHT HOLE INCREASE PUMP RATE IF POSSIBLE OTHERWISE RAISE VISCOSITY TO 45 S/L W/ TRUVIS

SEEPAGE LOSSES ADD 10 SX OF INTERDRILL 'S' AND 10 SACKS OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDUCATE DOWN HOLE LOSSES

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS **RETORT of DRYER CUTTINGS 60% SOLIDS 34% OIL 6% WATER**

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

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BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	25-Feb-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 28 E		REPORT No	37A
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUCK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL. (BC)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	76	PUMP #1	152/254	OPPOSITE DP	50
BIT NUMBER	2CRR		508.0	263	HOLE	113	M3/STK	0.0138	OPPOSITE DC	91
DRILL PIPE #1(mm)	127.0	1203	339.7	1007	TOTAL	189	PUMP #2	152/254	CIRC. TIME	59
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	97	M3/STK	0.0138	BOTTOMS UP	28
COLLAR #1(mm)	171.0	45					S.P.M.	230		
COLLAR #2(mm)	228.0	96					M3/MIN	3.1786		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. 1060 OFF	OFF	kg/m3	MUD WT.	1050-1100 Kg/m3
HOLE COND.-STUCK PIPE 1335M	UNDERFLOW WT. 2085		kg/m3	VISCOSITY	37-39 s/L
DEVIATION-28.2	OVERFLOW WT. 1000		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-WORK PIPE no circ	UNDERFLOW RT. 0.003		m3/min	pH	N/A

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

XX 38-38 +84-84 DOUBLE DECK OR HIGH SPEED SHAKER 38 – 38

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			7:05	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			1349								
FLOWLINE TEMPERATURE (C)			71.7	CAUSTIC	240				240		
DENSITY			1055	X-CIDE 207	96				96		
FUNNEL VISCOSITY (s/L)			37	NAT BENTONS	1960				1960		
600 READING @ 60 C			28	LIGNITE	56				56		
300 READING			19	LIME	648				648		
APPARENT VISCOSITY (mPa.s)			14	SODA ASH	40				40		
PLASTIC VISCOSITY (mPa.s)			9	BICARB	25				25		
YIELD POINT (Pa)			5	MICA COARSE	207				207		
GELS 0/10 min. (Pa)			2.5/4.0	IDF-FLR	7				7		
pH STRIP		METER	N/A	VISPLEX II	541				541		
FILTRATE @ 90C (cm3)		HTHP X	11.8	ID FREE 208L	4				4		
FILTER CAKE (mm)			1.5	CELLOPHANE	300				300		
				MICA MEDIUM	110				110		
Pom			4.1	FLOPLEX	250				250		
EXCESS LIME KG/M3			15.17	P. SEAL "C"	260				260		
TOTAL HARDNESS (mg/l)		Ca		P. SEAL "M"	160				160		
CHLORIDES (mg/L)		NaCl		CALCARB "32"	224				224		
SAND CONTENT %	X	FR X	0.75	CALCARB "SC"	336				336		
SOLIDS CONTENT %	X	FR	12.5	CALCAARB "U"	448				448		
OIL CONTENT %			87	DETERGENT	52				52		
WATER CONTENT %		X	1	PREVIOUS COST		$356,727.50			STARTING VOLUME		353
ELECTRICAL STABILITY			1930	DAILY COST		$37,277.80			VOL. BUILT		
OIL WATER RATIO			99.5/1.5	CUM. COST		$407,730.80			VOL. LOST ON SURFACE		10
CaCl2 w/w%				CUM. ENG. COST		$22,560.00			VOL. LOST ON SUB SURFACE		49
"n"			0.21	Discounted/ Total		$203,865.40	$226,425.40		END VOLUME		294
"k"			3.58	TRUCKING					CUM. VOL BUILT.		

COMMENTS STUCK while making a connection **Above Inventory Is Not Valid, See Attached Material Sheet For Inventory**

RETORT of CENTRIFUGE SLUDGE from UFLOW 58% SOLIDS 36% OIL 6% WATER

MAINTAIN

VISCOSITY @ 38-42 S/L WITH TRUVIS 10 SACKS AT 12 MINUTES PER SACK AS REQ,D

NO LIME ADDITIONS UNTIL FURTHER NOTICE

DO NOT RUN CENTRIFUGES UNTIL FURTHER NOTICE

DENSITY @ 1050 kg/m^3 WITH BARITE (45 SX WILL RAISE CURRENT VOLUME 10 POINTS) TRANSFER TRUDRILL AS REC REQUIRED TO MAINTAIN VOLUME

RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

TRANSFER TRUDRILL AS REQUIRED TO MAINTAIN VOLUME

ANY TIGHT HOLE INCREASE PUMP RATE IF POSSIBLE OTHERWISE RAISE VISCOSITY TO 45 S/L W/ TRUVIS

SEEPAGE LOSSES ADD 10 SX OF INTERDRILL 'S' AND 10 SACKS OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS **RETORTof CENTRIFUGE UFLOW 5 58% SOLIDS 36% OIL 6% WATER**

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger / Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE 25-Feb-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS # 25 E | REPORT No 37

REPORT FOR Mr. JOHN FAULKNER | REPORT FOR Mr. TERRY GORGICHUCK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	240		187	53	$0.00	$10,846.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 103	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	648		130	518	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 1034	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 1042	97		0	97	$0.00	$0.00
FLOPLEX 10	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 1045	224		14	210	$0.00	$140.00
CALCARB "SC" 1040	336		33	303	$0.00	$330.00
CALCAARB "0" 1045	448		0	448	$0.00	$0.00
DETERGENT 10	82		0	82	$0.00	$0.00
BARITE 10	7520		130	7390	$0.00	$2,535.00
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353	30	59	294	$27,000.00	$53,100.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360	23	95	265	$7,097.80	$29,317.00
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800		0	800	$0.00	$0.00
EMUL	32		3	29	$0.00	$3,420.00
INTER FL	32		3	29	$0.00	$4,590.00
OW	40	2	12	28	$3,180.00	$19,080.00
ZINC CARS	80		0	80	$0.00	$0.00
BARITE 10	720		720	0	$0.00	$12,384.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400		0	400	$0.00	$0.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00

ADJUSTMENTS MADE AS PER PHYSICAL COUNT OF STOCKS ON LOC.

TOTALS $37,277.80 $407,730.80

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-65	LOCATION P-65 LAT 60 40' LONG 123 30'		DATE	26-Feb-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS # 29 E		REPORT No	38
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	76	PUMP #1	152X254	OPPOSITE DP	50
BIT NUMBER	2CRR		508.0	263	HOLE	113	M3/STK	0.0138	OPPOSITE DC	91
DRILL PIPE #1(mm)	127.0	1203	339.7	1007	TOTAL	189	PUMP #2	152X254	CIRC. TIME	59
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	97	M3/STK	0.0138	BOTTOMS UP	28
COLLAR #1(mm)	171.0	45					S.P.M.	230		
COLLAR #2(mm)	228.0	96					M3/MIN	3.1786		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. 1060 OFF	OFF	kg/m3	MUD WT.	1050-1100 Kg/m3
HOLE COND.-STUCK PIPE 1335M	UNDERFLOW WT. 2085		kg/m3	VISCOSITY	38-42 S/L s/L
DEVIATION-28.2	OVERFLOW WT. 1000		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-JAR ON STRING	UNDERFLOW RT. 0.003		m3/min	pH	N/A

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

38-38 84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER 38 – 38

MUD PROPERTIES					INVENTORY						
TIME SAMPLE TAKEN			7:05	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			1349								
FLOWLINE TEMPERATURE (C)			71.7	LIME	648			130	518		$155.00
DENSITY			1055	MICA COARSE	48			30	18		$1,110.00
FUNNEL VISCOSITY (s/L)			37	CELLOPHANE	100			34	66		$1,426.00
600 READING @ 60 C			28	MICA MED	97				97		
300 READING			19	CALCARB 325	224			14	210		$140.00
APPARENT VISCOSITY (mPa s)			14	CALCARBSC	336			33	303		$330.00
PLASTIC VISCOSITY (mPa.s)			9	CALCARB O	448				448		
YIELD POINT (Pa)			5	BARITE	7520			130	7390		$2,535.00
GELS 0/10 min. (Pa)			2.5/4.0	CACL2	393				393		
pH	STRIP	METER	N/A	MICA FINE	239			39	200		$1,443.00
FILTRATE @ 90C (cm3)		HTHP X	11.8	SAWDUST	1400			525	875		$3,412.50
FILTER CAKE (mm)			1.5	TRUDRILL	353			59	294		$53,100.00
				TRUVIS	360			95	265		$29,307.50
Pom			4.1	INTERDRIL S	800				800		
EXCESS LIME KG/M3			15.17	EMUL	32			3	29		$3,420.00
TOTAL HARDNESS (mg/l)		Ca		INTERDRIL FL	32			3	29		$4,590.00
CHLORIDES (mg/L)		NaCl		INTERDRIL OV	40			12	28		$19,080.00
SAND CONTENT %	X	FR. X	0.75	FIBER FL F	400				400		
SOLIDS CONTENT %	X	FR.	12.5	FIBER FL C	200				200		
OIL CONTENT %			87	HYMUL	32				32		
WATER CONTENT %		X	1	PREVIOUS COST		$407,730.80		STARTING VOLUME			353
ELECTRICAL STABILITY			1930	DAILY COST				VOL. BUILT			
OIL WATER RATIO			99.5/.5	CUM. COST		$407,730.80		VOL. LOST ON SURFACE			10
CaCl2 w/w%				CUM. ENG. COST		$23,040.00		VOL. LOST ON SUB SURFACE			49
"n"			0.21	Discounted/ Total		$203,865.40	$226,905.40	END VOLUME			294
"K"			3.58	TRUCKING				CUM. VOL BUILT.			

COMMENTS STUCK WH LE MAKING CONNEC N

MAINTAIN **RETORT OF CENTRIFUGE SLUDGE from UFLOW 68% SOLIDS 36% OIL 6% WATER**

VISCOSITY @ 38-42 S/L WITH TRUVIS 10 SACKS AT 12 MINUTES PER SACK AS REQ'D

NO LIME ADDITIONS UNTIL FURTHER NOTICE

DENSITY @ 1050-1100kg/m3 ± AS PER ENGINEERS REQUEST

DENSITY AS REQUIRED BY ADDING BARITE OR ALLOWING DRILLED SOLIDS TO BUILD . LOWER BY RUNNING CENTRIFUGE AS NECESSARY.

DENSITY @ 105[illegible] kg/m^3 WITH BARITE (45 SX WILL RAISE CURRENT VOLUME 10 POINTS) TRANSFER TRUDRILL AS REC OF 30 M^3 AND MAY BE RECOVERABLE

RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

TRANSFER TRUDRILL AS REQUIRED TO MAINTAIN VOLUME

ANY TIGHT HOLE INCREASE PUMP RATE IF POSSIBLE OTHERWISE RAISE VISCOSITY TO 45 S/L W/ TRUVIS

SEEPAGE LOSSES ADD 10 SX OF INTERDRILL 'S' AND 10 SACKS OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS **RETORT of DRYER CUTTINGS 60% SOLIDS 34% OIL 6% WATER**

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

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BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	27-Feb-97
OPERATOR	RANGER Oil LTD.	CONTRACTOR CACTUS # 29 E		REPORT No	39
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	70	PUMP#1	152/254	OPPOSITE DP	50
BIT NUMBER	RR1C		508.0	263	HOLE	111	M3/STK	0.0138	OPPOSITE DC	91
DRILL PIPE #1(mm)	127.0	1117	339.7	1007	TOTAL	181	PUMP #2	152/254	CIRC. TIME	57
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	97	M3/STK	0.0138	BOTTOMS UP	27
COLLAR #1(mm)	171.0	45					S.P.M.	230		
COLLAR #2(mm)	228.0	64					M3/MIN	3.1786		

HOLE DATA		CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL		FLOWLINE WT.	OFF	OFF kg/m3	MUD WT.	1075-1100 Kg/m3
HOLE COND.-STUCK PIPE 1335M		UNDERFLOW WT.	2085	kg/m3	VISCOSITY	43-48S/L s/L
DEVIATION-28.2		OVERFLOW WT.	1000	kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-CIRC AND COND		UNDERFLOW RT.	0.003	m3/min	pH	N/A

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

38-38 84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER 38 – 38

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			18:10	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			1292								
FLOWLINE TEMPERATURE (C)			54.4	LIME	648			130	518		$155.00
DENSITY			1075	MICA COARSE	48			30	18		$1,110.00
FUNNEL VISCOSITY (s/L)			48	CELLOPHANE	100			34	66		$1,428.00
600 READING @ 60 C			37	MICA MED	97				97		
300 READING			27	CALCARB 325	224			14	210		$140.00
APPARENT VISCOSITY (mPa.s)			18.5	CALCARBSC	336			33	303		$330.00
PLASTIC VISCOSITY (mPa.s)			10	CALCARB O	448				448		
YIELD POINT (Pa)			8.5	BARITE	7520			130	7390		$2,535.00
GELS 0/10 min. (Pa)			4.5/6.5	CACL2	393				393		
pH	STRIP	METER	N/A	MICA FINE	239			39	200		$1,443.00
FILTRATE @ 90C (cm3)		HTHP X	13.2	SAWDUST	1400			525	875		$3,412.50
FILTER CAKE (mm)			1.5	TRUDRILL	353		5	59	289	$4,500.00	$53,100.00
				TRUVIS	360		40	95	225	$12,340.00	$29,307.50
Pom			4.1	INTERDRIL S	800				800		
EXCESS LIME KG/M3			15.17	EMUL	32			3	29		$3,420.00
TOTAL HARDNESS (mg/l)		Ca		INTERDRIL FL	32			3	29		$4,590.00
CHLORIDES (mg/L)		NaCl		INTERDRIL OV	40			12	28		$19,080.00
SAND CONTENT %	X	FR. X	0.65	FIBER FL F	400				400		
SOLIDS CONTENT %	X	FR.	13	FIBER FL C	200				200		
OIL CONTENT %			66	HYMUL	32				32		
WATER CONTENT %		X	1	PREVIOUS COST		$407,730.80		STARTING VOLUME			353
ELECTRICAL STABILITY			2000	DAILY COST		$16,840.00		VOL. BUILT			
OIL WATER RATIO			99.5/.5	CUM. COST		$424,570.80		VOL LOST ON SURFACE			11
CaCl2 w/w%				CUM. ENG. COST		$22,520.00		VOL LOST ON SUB SURFACE			53
"n"			0.17	Discounted/ Total		$212,285.40	$235,805.40	END VOLUME			289
"K"			6.81	TRUCKING				CUM. VOL BUILT			

COMMENTS: BACK OFF FISH POOH RIH NEW BHA C & COND[illegible] N

MAINTAIN

VISCOSITY @ 45-48S/L WITH TRUVIS AT 6 TO 12 MINUTES PER SACK

NO LIME ADDITIONS UNTIL FURTHER NOTICE

DENSITY AT 1075-1100kg/m3 AS PER ENGINEERS REQUEST

DENSITY AS REQUIRED BY ADDING BARITE OR ALLOWING DRILLED SOLIDS TO BUILD . LOWER BY RUNNING CENTRIFUGE AS NECESSARY.

DENSITY @ 1050 kg/m^3 WITH BARITE (45 SX WILL RAISE CURRENT VOLUME 10 POINTS) TRANSFER TRUDRILL AS REC OF 30 M^3 AND MAY BE RECOVERABLE

RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

TRANSFER TRUDRILL AS REQUIRED TO MAINTAIN VOLUME

SEEPAGE LOSSES ADD 10 SX OF INTERDRILL 'S' AND 10 SACKS OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDUCATE DOWN HOLE LOSSES

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

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BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	28-Feb-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS29E		REPORT No	40
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	70	PUMP #1	152/254	OPPOSITE DP	50
BIT NUMBER	2CRR		508.0	263	HOLE	111	M3/STK	0.0138	OPPOSITE DC	
DRILL PIPE #1(mm)	127.0	1238	339.7	1007	TOTAL	181	PUMP #2	152/254	CIRC. TIME	57
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	97	M3/STK	0.0138	BOTTOMS UP	27
COLLAR #1(mm)							S.P.M.	230		
COLLAR #2(mm)							M3/MIN	3.1786		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT.	OFF	kg/m3	MUD WT.	1100 Kg/m3
HOLE COND.-STUCK PIPE 1335M	UNDERFLOW WT.		kg/m3	VISCOSITY	52-54S/L s/L
DEVIATION-28.2	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-JAR ON STRING	UNDERFLOW RT.		m3/min	pH	N/A

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

38-38 84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER 38 – 38

MUD PROPERTIES	
TIME SAMPLE TAKEN	18:00
SAMPLE FROM	FLOWLINE
PRESENT DEPTH	1292
FLOWLINE TEMPERATURE (C)	54.4
DENSITY	1095
FUNNEL VISCOSITY (s/L)	54
600 READING @ 60 C	59
300 READING	43
APPARENT VISCOSITY (mPa.s)	29.5
PLASTIC VISCOSITY (mPa.s)	16
YIELD POINT (Pa)	13.5
GELS 0/10 min. (Pa)	7.0/9.5
pH STRIP / METER	N/A
FILTRATE @ 90C (cm3) / HTHP X	13.2
FILTER CAKE (mm)	2
Pom	4.1
EXCESS LIME KG/M3	15.17
TOTAL HARDNESS (mg/l) / Ca	
CHLORIDES (mg/L) / NaCl	
SAND CONTENT % X / FR X	0.65
SOLIDS CONTENT % X / FR	13
OIL CONTENT %	86
WATER CONTENT % X	1
ELECTRICAL STABILITY	2000
OIL WATER RATIO	99.5/0.5
CaCl2 w/w%	
"n"	0.18
"K"	10.49

INVENTORY

MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
LIME	648			130	518		$155.00
MICA COARSE	48			30	18		$1,110.00
CELLOPHANE	100			34	66		$1,426.00
MICA MED	97				97		
CALCARB 325	224			14	210		$140.00
CALCARBSC	336			33	303		$330.00
CALCARB O	448				448		
BARITE	7520		125	255	7265	$2,437.50	$4,972.50
CACL2	393				393		
MICA FINE	239			39	200		$1,443.00
SAWDUST	1400			525	875		$3,412.50
TRUDRILL	353			64	289		$53,100.00
TRUVIS	360		20	155	205	$6,170.00	$47,617.50
INTERDRIL S	800		10	10	790	$738.30	$738.30
EMUL	32			3	29		$3,420.00
INTERDRIL FL	32			3	29		$4,530.00
INTERDRIL OW	40			12	28		$19,080.00
FIBER FL F	400				400		
FIBER FL C	200				200		
HYMUL	32				32		
PREVIOUS COST		$424,570.80					
DAILY COST		$9,345.80					
CUM. COST		$433,916.80					
CUM. ENG. COST		$24,000.00					
Discounted/ Total		$216,958.30	$240,958.30				
TRUCKING							

STARTING VOLUME	353
VOL. BUILT	
VOL. LOST ON SURFACE	11
VOL. LOST ON SUB SURFACE	53
END VOLUME	289
CUM. VOL. BUILT	

COMMENTS JAR ON FISH MUD NOT CIRC

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MAINTAIN

VISCOSITY @ 52-54S/L WITH TRUVIS ADDED AT 10 MIN PER SACK

RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

TRANSFER TRUDILL AS REQ.D TO BUILD/MAINTAIN VOLUME

DENSITY AT 1100KG/M3 AS PER ENGINEERS REQUEST

DENSITY AS REQUIRED BY ADDING BARITE OR ALLOWING DRILLED SOLIDS TO BUILD . LOWER BY RUNNING CENTRIFUGE AS NECESSARY.

IF 35M3 OF TRUDRILL IS INTRODUCED INTO THE ACTIVE SYSTEM ADD 240SX OF BARITE,13 SX TRUVIS 3 DRUMS INTERDRILL OW,1 DRUM EMUL,1 DRUM INTERDRILL FL.

NO LIME ADDITIONS ARE REQUIRED FOR NOW.

SEEPAGE LOSSES ADD 10 SX OF INTERDRILL 'S' AND 10 SACKS OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDUCATE DOWN HOLE LOSSES

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

RETORT of DRYER CUTTINGS 60% SOLIDS 34% OIL 6% WATER

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. #5	

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BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE Feb 28 1-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #26E | REPORT No 40 40

REPORT FOR Mr. JOHN FAULKNER | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	240		187	53	$0.00	$10,846.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 10	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	648		130	518	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 1034	48		30	18	$0.00	$1,110.00
IC*-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 20dL 10	4			4	$0.00	$0.00
CELLOPHANE 10	100		34	66	$0.00	$1,428.00
MICA MEDIUM 1042	97		0	97	$0.00	$0.00
FLOPLEX 1	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 1045	224		14	210	$0.00	$140.00
CALCARB "SC" 1045	336		33	303	$0.00	$330.00
CALCARB "0" 1045	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 1	7520		255	7265	$0.00	$4,972.50
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353		64	289	$0.00	$57,600.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360		155	205	$0.00	$47,833.00
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800		10	790	$0.00	$736.30
EMUL	32		3	29	$0.00	$3,420.00
INTER FL	32		3	29	$0.00	$4,590.00
OW	40		12	28	$0.00	$19,080.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 1	720		720	0	$0.00	$12,384.00
HSO 600 1	29		0	29	$0.00	$0.00
PTS 200 1	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400		0	400	$0.00	$0.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00

TOTALS $0.00 $453,922.60

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	1-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #28E		REPORT No	41
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL. (BBL)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	65	PUMP #1	152X254	OPPOSITE DP	50
BIT NUMBER	2CRR		508.0	263	HOLE	111	M3/STK	0.0136	OPPOSITE DC	60
DRILL PIPE #1(mm)	127.0	1238	339.7	1007	TOTAL	176	PUMP #2	152X254	CIRC. TIME	55
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	97	M3/STK	0.0136	BOTTOMS UP	27
COLLAR #1(mm)							S.P.M.	230		
COLLAR #2(mm)	171.0	55					M3/MIN	3.1786		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1100 Kg/m3
HOLE COND.-STUCK PIPE 1335M	UNDERFLOW WT.		kg/m3	VISCOSITY	52-54S/L s/L
DEVIATION-28.2	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-ATT. BACK OFF	UNDERFLOW RT.		m3/min	pH	N/A

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

38-38 84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER 38 - 38

MUD PROPERTIES				INVENTORY							
TIME SAMPLE TAKEN			18:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			1292								
FLOWLINE TEMPERATURE (C)			54.4	LIME	648			130	518		$155.00
DENSITY			1095	MICA COARSE	48			30	18		$1,110.00
FUNNEL VISCOSITY (s/L)			54	CELLOPHANE	100			34	66		$1,428.00
600 READING @ 60 C			59	MICA MED	97				97		
300 READING			43	CALCARB 325	224			14	210		$140.00
APPARENT VISCOSITY (mPa.s)			29.5	CALCARBSC	336			33	303		$330.00
PLASTIC VISCOSITY (mPa.s)			16	CALCARB O	448				448		
YIELD POINT (Pa)			13.5	BARITE	7520		58	313	7207	$1,131.00	$6,103.50
GELS 0/10 min. (Pa)			7.0/9.5	CACL2	393				393		
pH	STRIP	METER	N/A	MICA FINE	239			39	200		$1,443.00
FILTRATE @ 90C (cm3)		HTHP X	13.2	SAWDUST	1400			525	875		$3,412.50
FILTER CAKE (mm)			2	TRUDRILL	353		5	69	284	$4,500.00	$62,100.00
				TRUVIS	360			155	205		$47,817.50
Pom			4.1	INTERDRIL S	800			10	790		$738.30
EXCESS LIME KG/M3			15.17	EMUL	32			3	29		$3,420.00
TOTAL HARDNESS (mg/l)		Ca		INTERDRIL FL	32			3	29		$4,590.00
CHLORIDES (mg/L)		NaCl		INTERDRIL OW	40			12	28		$19,080.00
SAND CONTENT %	X	FR X	0.65	FIBER FL F	400				400		
SOLIDS CONTENT %	X	FR	13	FIBER FL C	200				200		
OIL CONTENT %			86	HYMUL	32				32		
WATER CONTENT %		X	1	PREVIOUS COST	$433,916.60			STARTING VOLUME			353
ELECTRICAL STABILITY			2000	DAILY COST	$5,631.00			VOL. BUILT			
OIL WATER RATIO			99.5/7.5	CUM. COST	$439,547.60			VOL. LOST ON SURFACE			12
CaCl2 w/w%				CUM. ENG. COST	$24,480.00			VOL. LOST ON SUB SURFACE			57
"n"			0.18	Discounted/ Total	$219,773.80	$244,253.80		END VOLUME			284
"k"			10.49	TRUCKING				CUM. VOL BUILT			

COMMENTS JAR ON FISH MUD NOT CIRC

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MAINTAIN

VISCOSITY @ 52-54S/L WITH TRUVIS ADDED AT 10 MIN PER SACK

RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

TRANSFER TRUDRILL AS REQ,D TO BUILD/MAINTAIN VOLUME

DENSITY AT 1100KG/M3 AS PER ENGINEERS REQUEST

DENSITY AS REQUIRED BY ADDING BARITE OR ALLOWING DRILLED SOLIDS TO BUILD . LOWER BY RUNNING CENTRIFUGE AS NECESSARY.

IF 35M3 OF TRUDRILL IS INTRODUCED INTO THE ACTIVE SYSTEM ADD:240SX OF BARITE,13 SX TRUVIS 3 DRUMS INTERDRILL OW,1 DRUM EMUL,1 DRUM INTERDRILLFL.

NO LIME ADDITIONS ARE REQUIRED FOR NOW.

SEEPAGE LOSSES ADD 10 SX OF INTERDRILL 'S' AND 10 SACKS OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDUCATE DOWN HOLE LOSSES

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

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BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-65 | LOCATION LAT 60 47 LONG 123 30' | DATE 1-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #35E | REPORT No 41

REPORT FOR Mr. JOHN FAULKNER | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	240		187	53	$0.00	$10,846.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 100	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME	648		130	518	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 103	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4			4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 104	97		0	97	$0.00	$0.00
FLOPLEX 1	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 104	224		14	210	$0.00	$140.00
CALCARB "SC" 104	336		33	303	$0.00	$330.00
CALCAARB "0" 104	448		0	448	$0.00	$0.00
DETERGENT 10	62		0	62	$0.00	$0.00
BARITE 1	7520	58	313	7207	$1,131.00	$6,103.50
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353	5	69	284	$4,500.00	$62,100.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360		155	205	$0.00	$47,833.00
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800		10	790	$0.00	$738.30
EMUL	32		3	29	$0.00	$3,420.00
INTER FL	32		3	29	$0.00	$4,590.00
OW	40		12	28	$0.00	$19,080.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 1	720		720	0	$0.00	$12,384.00
HSO 600 1	29		0	29	$0.00	$0.00
PTS 200 1	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400		0	400	$0.00	$0.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00
				TOTALS	$5,631.00	$439,553.60

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	2-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #29E		REPORT No	42
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	65	PUMP #1	152X254	OPPOSITE DP	50
BIT NUMBER	2CRR		508.0	263	HOLE	111	M3/STK	0.0138	OPPOSITE DC	60
DRILL PIPE #1(mm)	127.0	1238	339.7	1007	TOTAL	176	PUMP #2	152X254	CIRC. TIME	55
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	97	M3/STK	0.0138	BOTTOMS UP	27
COLLAR #1(mm)							S.P.M.	230		
COLLAR #2(mm)	171.0	55					M3/MIN	3.1786		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT.	OFF	OFF kg/m3	MUD WT.	1100 Kg/m3
HOLE COND.-STUCK PIPE 1335M	UNDERFLOW WT.		kg/m3	VISCOSITY	52-54S/L s/L
DEVIATION-28.2	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-RIH NEW JARS	UNDERFLOW RT.		m3/min	pH	N/A

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

38-38 84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER 38 – 38

MUD PROPERTIES							INVENTORY					
TIME SAMPLE TAKEN			20:00 NOT CIRC	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			1292								
FLOWLINE TEMPERATURE (C)			54.4	LIME	648			130	518		$155.00
DENSITY			1095	MICA COARSE	48			30	18		$1,110.00
FUNNEL VISCOSITY (s/L)			54	CELLOPHANE	100			34	66		$1,428.00
600 READING @ 60 C			59	MICA MED	97				97		
300 READING			43	CALCARB 325	224			14	210		$140.00
APPARENT VISCOSITY (mPa.s)			29.5	CALCARBSC	336			33	303		$330.00
PLASTIC VISCOSITY (mPa.s)			16	CALCARB O	448				448		
YIELD POINT (Pa)			13.5	BARITE	7520			313	7207		$6,103.50
GELS 0/10 min. (Pa)			7.0/9.5	CACL2	393				393		
pH	STRIP	METER	N/A	MICA FINE	239			39	200		$1,443.00
FILTRATE @ 90C (cm3)		HTHP X	13.2	SAWDUST	1400			525	875		$3,412.50
FILTER CAKE (mm)			2	TRUDRILL	353			69	284		$62,100.00
				TRUVIS	360			155	205		$47,817.50
Pom			4.1	INTERDRIL S	800			10	790		$738.30
EXCESS LIME KG/M3			15.17	EMUL	32			3	29		$3,420.00
TOTAL HARDNESS (mg/l)		Ca		INTERDRIL FL	32			3	29		$4,590.00
CHLORIDES (mg/L)		NaCl		INTERDRIL OW	40			12	28		$19,080.00
SAND CONTENT %	X	FR. X	0.65	FIBER FL F	400				400		
SOLIDS CONTENT %	X	FR.	13	FIBER FL C	200				200		
OIL CONTENT %			86	HYMUL	32				32		
WATER CONTENT %		X	1	PREVIOUS COST		$439,547.60			STARTING VOLUME		353
ELECTRICAL STABILITY			2000	DAILY COST					VOL. BUILT		
OIL WATER RATIO			99.5/.5	CUM. COST		$439,547.60			VOL. LOST ON SURFACE		12
CaCl2 ww%				CUM. ENG. COST		$24,960.00			VOL. LOST ON SUB SURFACE		57
"n"			0.18	Discounted/ Total		$219,773.80	$244,733.80		END VOLUME		284
"k"			10.49	TRUCKING					CUM. VOL BUILT.		

COMMENTS JAR ON FISH MUD NOT CIRC N

MAINTAIN

VISCOSITY @ 52-54S/L WITH TRUVIS ADDED AT 10 MIN PER SACK

RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

TRANSFER TRUDILL AS REQ,D TO BUILD/MAINTAIN VOLUME

DENSITY AT 1100KG/M3 AS PER ENGINEERS REQUEST

DENSITY AS REQUIRED BY ADDING BARITE OR ALLOWING DRILLED SOLIDS TO BUILD . LOWER BY RUNNING CENTRIFUGE AS NECESSARY.

IF 35M3 OF TRUDRILL IS INTRODUCED INTO THE ACTIVE SYSTEM ADD 240SX OF BARITE,13 SX TRUVIS 3 DRUMS INTERDRILL OW,1 DRUM EMUL,1 DRUM INTERDRILLFL.

NO LIME ADDITIONS ARE REQUIRED FOR NOW.

SEEPAGE LOSSES ADD 10 SX OF INTERDRILL 'S' AND 10 SACKS OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDUCATE DOWN HOLE LOSSES

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

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BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD F-66 | LOCATION LAT 60 47' LONG 123 30' | DATE 2-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS 425E | REPORT No 42

REPORT FOR Mr. JOHN FAULKNER | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	240		187	53	$0.00	$10,845.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 10	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME	648		130	518	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 1034	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 1042	97		0	97	$0.00	$0.00
FLOPLEX 10	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 1045	224		14	210	$0.00	$140.00
CALCARB "SC" 1045	336		33	303	$0.00	$330.00
CALCAARB "0" 1045	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 10	7520		313	7207	$0.00	$6,103.50
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353		69	284	$0.00	$62,100.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360		155	205	$0.00	$47,833.00
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800		10	790	$0.00	$738.30
EMUL	32		3	29	$0.00	$3,420.00
INTER FL	32		3	29	$0.00	$4,590.00
OW	40		12	28	$0.00	$19,080.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		720	0	$0.00	$12,384.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400		0	400	$0.00	$0.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00
				TOTALS	$0.00	$439,553.60

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'	DATE 4-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #28E	REPORT No 45
REPORT FOR Mr.	JOHN FAULKNER	REPORT FOR Mr. TERRY GORGICHUK	SPUD DATE 12-Jan-97

ASSEMBLY			CASING		MUD VOL (M3)		PUMP OUTPUT		ANNULAR VEL m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	65	PUMP #1	152X254	OPPOSITE DP	50
BIT NUMBER	2CRR		508.0	283	HOLE	103	M3/STK	0.0138	OPPOSITE DC	60
DRILL PIPE #1(mm)	127.0	1153	339.7	1007	TOTAL	168	PUMP #2	152X254	CIRC. TIME	53
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	97	M3/STK	0.0138	BOTTOMS UP	29
COLLAR #1(mm)							S.P.M.	230		
COLLAR #2(mm)	171.0	55					M3/MIN	3.1786		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1100 Kg/m3
HOLE COND.-STUCK PIPE 1335M	UNDERFLOW WT.		kg/m3	VISCOSITY	52-54S/L s/L
DEVIATION-28.2	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-PLUG BACK	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
38-38 84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES					INVENTORY					
TIME SAMPLE TAKEN	8:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	1292								
FLOWLINE TEMPERATURE (C)	43.3								
DENSITY	1115								
FUNNEL VISCOSITY (s/L)	56								
600 READING @ 60 C	47								
300 READING	34								
APPARENT VISCOSITY (mPa.s)	23.5								
PLASTIC VISCOSITY (mPa.s)	13								
YIELD POINT (Pa)	10.5								
GELS 0/10 min. (Pa)	7.0/9.5								
pH STRIP / METER									
FILTRATE @ 90C (cm3) HTHP X	12.5								
FILTER CAKE (mm)	2								
Pom	4								
EXCESS LIME KG/M3	14.8								
TOTAL HARDNESS (mg/l) Ca									
CHLORIDES (mg/L) NaCl									
SAND CONTENT % X FR	0.65								
SOLIDS CONTENT % X FR	13.5								
OIL CONTENT %	86.0								
WATER CONTENT % X	0.5								
ELECTRICAL STABILITY	2000								
OIL WATER RATIO	99.5/.5								
CaCl2 w/w%									
"n"	0.11								
"K"	11.77								

PREVIOUS COST	$456,639.10		
DAILY COST	$17,665.50		
CUM. COST	$474,304.60		
CUM. ENG. COST	$25,920.00		
Discounted/ Total	$237,152.30	$263,072.30	

STARTING VOLUME	284
VOL. BUILT	
VOL. LOST ON SURFACE	
VOL. LOST ON SUB SURFACE	19
END VOLUME	265
CUM. VOL BUILT.	

COMMENTS

MAINTAIN

WHILE KICKING OFF PLUG ADD 2 BBLS OF INTERDRILL "OW"

TRANSFER TRUDILL AS REQ,D TO BUILD/MAINTAIN VOLUME

VISCOSITY @ 52-54S/L WITH TRUVIS ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST

RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

DENSITY AT 1100KG/M3

DENSITY AS REQUIRED BY ADDING BARITE OR ALLOWING DRILLED SOLIDS TO BUILD . LOWER BY RUNNING CENTRIFUGE AS NECESSARY.

IF 35M3 OF TRUDRILL IS INTRODUCED INTO THE ACTIVE SYSTEM ADD 240SX OF BARITE,13 SX TRUVIS 1 DRUMS INTERDRILL OW,1 DRUM EMUL,1 DRUM INTERDRILLFL.

NO LIME ADDITIONS ARE REQUIRED FOR NOW.

SEEPAGE LOSSES ADD 10 SX OF INTERDRILL "S" AND 10 SACKS OF FIBER FLUID PER DAY CONSULT WITH ENGINEER AND MUD MAN BEFORE ADDING

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDUCATE DOWN HOLE LOSSES

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 43' LONG 123 30' | DATE 4-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS 628E | REPORT No 43

REPORT FOR Mr. JOHN FAULKNER | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
CAUSTIC 10	240		177	63	$0.00	$10,266.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 10	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME	648		130	518	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 1034	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 1042	110		0	110	$0.00	$0.00
FLOPLEX 1	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 1045	224		14	210	$0.00	$140.00
CALCARB "SC" 1045	336		33	303	$0.00	$330.00
CALCAARB "0" 1045	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 10	7520	29	342	7178	$565.50	$6,669.00
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353	19	88	265	$17,100.00	$79,200.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360		155	205	$0.00	$47,833.00
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800		10	790	$0.00	$738.30
EMUL	32		3	29	$0.00	$3,420.00
INTER FL	32		3	29	$0.00	$4,590.00
OW	40		12	28	$0.00	$19,080.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		720	0	$0.00	$12,384.00
HSO 600 10	29		0	29	$0.00	$0.00
FTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400		0	400	$0.00	$0.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00
				TOTALS	$17,665.50	$456,639.10

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'	DATE 5-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #29E	REPORT No 44
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK	SPUD DATE 12-Jan-97

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	84	PUMP #1	152/254	OPPOSITE DP	50
BIT NUMBER	3C		508.0	263	HOLE	86	M3/STK	0.0138	OPPOSITE DC	60
DRILL PIPE #1(mm)	127.0	1005	339.7	1007	TOTAL	170	PUMP #2	152/254	CIRC. TIME	53
DRILLPIPE #2(mm)	127.0	54	LINER	TOP/BOT.	STAND BY	57	M3/STK	0.0138	BOTTOMS UP	24
COLLAR #1(mm)							S.P.M.	220		
COLLAR #2(mm)	171.0	55					M3/MIN	3.1796		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1100--1150 Kg/m3
HOLE COND.-	UNDERFLOW WT.		kg/m3	VISCOSITY	54--56 s/L
DEVIATION-28.2	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-POLISH PLUG	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

38-38 84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES		DAILY PRODUCT USAGE							
TIME SAMPLE TAKEN	11:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	1114.5								
FLOWLINE TEMPERATURE (C)	43.3	BARITE	7520		16	358	7162	$312.00	$6,991.00
DENSITY	1115								
FUNNEL VISCOSITY (s/L)	55								
600 READING @ 60 C	50								
300 READING	37								
APPARENT VISCOSITY (mPa.s)	25								
PLASTIC VISCOSITY (mPa.s)	13								
YIELD POINT (Pa)	12								
GELS 0/10 min. (Pa)	7.4/9.5								
pH STRIP / METER									
FILTRATE @ 90C (cm3) / HTHP	10								
FILTER CAKE (mm)	2.5								
Pom	3.7								
EXCESS LIME KG/M3	13.89								
TOTAL HARDNESS (mg/l) / Ca									
CHLORIDES (mg/L) / NaCl									
SAND CONTENT % X / FR.	0.65								
SOLIDS CONTENT % X / FR.	14								
OIL CONTENT %	83.0								
WATER CONTENT % X	3.0	PREVIOUS COST	$456,639.10				STARTING VOLUME	265	
ELECTRICAL STABILITY	1500	DAILY COST	$312.00				VOL. BUILT	2	
OIL WATER RATIO	97/3	CUM. COST	$456,951.10				VOL. LOST ON SURFACE		
CaCl2 w/w%		CUM. ENG. COST	$26,400.00				VOL. LOST ON SUB SURFACE		
"n"	0.44	Discounted/ Total	$228,475.55	$254,875.55			END VOLUME	267	
"K"	11.12						CUM. VOL BUILT.	2	

COMMENTS POH FOR DIRECTIONAL BHA

MAINTAIN

WHILE KICKING OFF PLUG ADD 2 BBLS OF INTERDRILL "OW"

VISCOSITY @ 54-56 S/L WITH TRUVIS ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST

DENSITY AT 1100 - 1150 KG/M3 OR AS REQUIRED BY ADDING BARITE OR ALLOWING DRILLED SOLIDS TO BUILD . LOWER BY RUNNING CENTRIFUGE AS NECESSARY.

TRANSFER TRUDRILL AS REQ'D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSITY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS

NO LIME ADDITIONS ARE REQUIRED FOR NOW.

ADD 5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR INFLUX

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE 3-Mar-87

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #29E | REPORT No 44

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-87

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST D/C	CUMULATIVE COST CUM/C
CAUSTIC 10	240		177	63	$0.00	$10,266.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 10	1960		1790	170	$0.00	$26,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	648		130	518	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 103	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 104	110		0	110	$0.00	$0.00
FLOPLEX 1	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 104	224		14	210	$0.00	$140.00
CALCARB "SC" 104	336		33	303	$0.00	$330.00
CALCAARB "U" 104	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 1	7520	16	358	7162	$312.00	$6,951.00
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353		88	265	$0.00	$79,200.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360		155	205	$0.00	$47,833.00
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800		10	790	$0.00	$736.30
EMUL	32		3	29	$0.00	$3,420.00
INTER FL	32		3	29	$0.00	$4,590.00
OW	40		12	28	$0.00	$19,080.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 1	720		720	0	$0.00	$12,384.00
HSO 600 1	29		0	29	$0.00	$0.00
PTS 200 1	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400		0	400	$0.00	$0.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00
			TOTALS		$312.00	$456,951.10

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'	DATE 6-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E	REPORT No 45
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK	SPUD DATE 12-Jan-97

ASSEMBLY			CASING		MUD VOL (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	92	PUMP #1	152/254	OPPOSITE DP	50
BIT NUMBER	3C		508.0	283	HOLE	83	M3/STK	0.0138	OPPOSITE DC	91
DRILL PIPE #1(mm)	127.0	957	339.7	1007	TOTAL	175	PUMP #2	152/254	CIRC. TIME	55
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	97	M3/STK	0.0138	BOTTOMS UP	23
COLLAR #1(mm)	168.0	27					S.P.M.	230		
COLLAR #2(mm)	228.0	106					M3/MIN	3.1786		

HOLE DATA	CENTRIFUGE		DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF kg/m3	MUD WT.	1100-1150 Kg/m3
HOLE COND.-	UNDERFLOW WT.	kg/m3	VISCOSITY	54-56 s/L
DEVIATION-12.9	OVERFLOW WT.	kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-CONTROL DRILL	UNDERFLOW RT.	m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

84-84-84 84-84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES		DAILY PRODUCT USAGE							
TIME SAMPLE TAKEN	13:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	1172								
FLOWLINE TEMPERATURE (C)	43.3	BARITE	7920		20	378	7542	$390.00	$7,371.00
DENSITY	1115								
FUNNEL VISCOSITY (s/L)	52								
600 READING @ 60 C	43								
300 READING	32								
APPARENT VISCOSITY (mPa.s)	21.5								
PLASTIC VISCOSITY (mPa.s)	11								
YIELD POINT (Pa)	10.5								
GELS 0/10 min. (Pa)	6/7								
pH STRIP / METER									
FILTRATE @ 90C (cm3) / HTHP X	30								
FILTER CAKE (mm)	2								
Pom	3.6								
EXCESS LIME KG/M3	13.32								
TOTAL HARDNESS (mg/l) / Ca									
CHLORIDES (mg/L) / NaCl									
SAND CONTENT % X / FR.	0.6								
SOLIDS CONTENT % X / FR.	14								
OIL CONTENT %	83.0								
WATER CONTENT % X	3.0								
ELECTRICAL STABILITY	1650								
OIL WATER RATIO	97/3								
CaCl2 w/w%									
"n"	0.15								
"K"	9.46								

PREVIOUS COST	$456,951.10	STARTING VOLUME	267
DAILY COST	$390.00	VOL. BUILT	
CUM. COST	$457,341.10	VOL. LOST ON SURFACE	
CUM. ENG. COST	$26,880.00	VOL. LOST ON SUB SURFACE	
Discounted Total	$228,670.55 $255,550.55	END VOLUME	267
		CUM. VOL BUILT.	2

COMMENTS CONTROL DRILL OFF PLUG

MAINTAIN

START CIRCULATION OF 10 SX OF TRUVIS OVER 2 CIRCULATIONS

VISCOSITY @ 54-56 S/L WITH TRUVIS ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1100 - 1150 KG/M3 OR AS REQUIRED BY ADDING BARITE OR ALLOWING DRILLED SOLIDS TO BUILD . LOWER BY RUNNING CENTRIFUGE AS NECESSARY.

TRANSFER TRUDRILL AS REQ.D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M2 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
NO LIME ADDITIONS ARE REQUIRED FOR NOW.
ADD 5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX
KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. #5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger | Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE 6-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #26E | REPORT No 45

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST D/C	CUMULATIVE COST CUM/C
CAUSTIC 10	240		177	63	$0.00	$10,266.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 100	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	648		130	518	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 103	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 104	110		0	110	$0.00	$0.00
FLOPLEX 10	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 10	16		16	0	$0.00	$608.00
CALCARB "325" 104	224		14	210	$0.00	$140.00
CALCARB "SC" 104	336		33	303	$0.00	$330.00
CALCAARB "0" 104	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 10	7920	20	378	7542	$390.00	$7,371.00
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353		88	265	$0.00	$79,200.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360		155	205	$0.00	$47,833.00
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800		10	790	$0.00	$738.30
EMUL	32		3	29	$0.00	$3,420.00
INTER FL	32		3	29	$0.00	$4,590.00
OW	40		12	28	$0.00	$19,080.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		720	0	$0.00	$12,384.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400		0	400	$0.00	$0.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00
			TOTALS		$390.00	$457,341.10

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	7-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E		REPORT No	46
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	91	PUMP #1	152X254	OPPOSITE DP	50
BIT NUMBER	3CRR		508.0	263	HOLE	87	M3/STK	0.0138	OPPOSITE DC	91
DRILL PIPE #1(mm)	127.0	977	339.7	1007	TOTAL	178	PUMP #2	152X254	CIRC. TIME	56
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	97	M3/STK	0.0138	BOTTOMS UP	24
COLLAR #1(mm)	168.0	27					S.P.M.	230		
COLLAR #2(mm)	228.0	106					M3/MIN	3.1786		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1100–1150 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.		kg/m3	VISCOSITY	54–56 s/L
DEVIATION-14.9 @ 1167 AZ 203.7	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-SLIDING	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

84-84-84 84-84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES				DAILY PRODUCT USAGE					
TIME SAMPLE TAKEN	23:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	1192								
FLOWLINE TEMPERATURE (C)	68.9	BARITE	7920		40	418	7502	$ 780.00	$8,151.00
DENSITY	1140	TRUVIS	360		10	165	195	$ 3,086.00	$50,919.00
FUNNEL VISCOSITY (s/L)	50	INTERDRILL 'S'	800		5	15	785	$ 369.15	$1,107.45
600 READING @ 60 C	56	OW	40		2	14	26	$ 3,180.00	$22,260.00
300 READING	41	FIBER FLUID	400		5	5	395	$ 610.00	$610.00
APPARENT VISCOSITY (mPa.s)	28								
PLASTIC VISCOSITY (mPa.s)	15								
YIELD POINT (Pa)	13								
GELS 0/10 min. (Pa)	5/10								
pH STRIP / METER									
FILTRATE @ 90C (cm3) / HTHP X	9								
FILTER CAKE (mm)	2								
Pom	3.5								
EXCESS LIME KG/M3	13.32								
TOTAL HARDNESS (mg/l) / Ca									
CHLORIDES (mg/L) / NaCl									
SAND CONTENT % X / FR.	0.5								
SOLIDS CONTENT % X / FR.	15								
OIL CONTENT %	83.0								
WATER CONTENT % X	2.0								
ELECTRICAL STABILITY	1650	PREVIOUS COST	$457,341.10						
OIL WATER RATIO	97.6/2.4	DAILY COST	$7,925.15				STARTING VOLUME		267
CaCl2 w/w%		CUML COST	$465,266.25				VOL. BUILT		
"n"	0.13	CUML ENG. COST	$27,360.00				VOL. LOST ON SURFACE		
"K"	13.00	Discounted/ Total	$232,633.13	$259,993.13			VOL. LOST ON SUB SURFACE		
							END VOLUME		267
							CUML VOL BUILT.		2

COMMENTS DRILL AHEAD WEIGHT UP TO 1150 kg/m^3 CENTRIFUGE WAS RUN FOR ONE CIRC PRIOR TO ADDING BAR

MAINTAIN

START CIRCULATION OF 10 SX OF TRUVIS OVER 2 CIRCULATIONS

VISCOSITY @ 54-56 S/L WITH TRUVIS ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST

DENSITY AT 1150 KG/M3 OR AS REQUIRED BY ADDING BARITE. RUN THE CENTRIFUGE ONCE OR TWICE DAILY OVER FULL CIRCULATIONS.

TRANSFER TRUDRILL AS REQ,D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS

NO LIME ADDITIONS ARE REQUIRED FOR NOW.

ADD 5 SX OF INTERDRILL 'S' AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE 7-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #25E | REPORT No 46

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST D/C	CUMULATIVE COST CUM/C
CAUSTIC 10	240		177	63	$0.00	$10,266.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 10	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME	648		130	518	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 103	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 104	110		0	110	$0.00	$0.00
FLOPLEX 10	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 10	16		16	0	$0.00	$608.00
CALCARB "325" 104	224		14	210	$0.00	$140.00
CALCARB "SC" 104	336		33	303	$0.00	$330.00
CALCAARB "0" 104	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 10	7920	40	418	7502	$760.00	$8,151.00
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353		88	265	$0.00	$79,200.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360	10	165	195	$3,086.00	$50,919.00
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800	5	15	785	$369.15	$1,107.45
EMUL	32		3	29	$0.00	$3,420.00
INTER FL	32		3	29	$0.00	$4,590.00
OW	40	2	14	26	$3,180.00	$22,260.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		720	0	$0.00	$12,384.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400	5	5	395	$510.00	$510.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00
			TOTALS		$7,925.15	$465,266.25

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'	DATE 8-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E	REPORT No 47
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK	SPUD DATE 12-Jan-97

ASSEMBLY		CASING		MUD VOL. (M3)			PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	87	PUMP #1	152X254	OPPOSITE DP	50
BIT NUMBER	3CRR		508.0	263	HOLE	88	M3/STK	0.0138	OPPOSITE DC	91
DRILL PIPE #1(mm)	127.0	1009	339.7	1007	TOTAL	174	PUMP #2	152X254	CIRC. TIME	55
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	97	M3/STK	0.0138	BOTTOMS UP	24
COLLAR #1(mm)	168.0	27					S.P.M.	230		
COLLAR #2(mm)	228.0	106					M3/MIN	3.1786		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1100–1150 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.		kg/m3	VISCOSITY	54–56 s/L
DEVIATION-17.8	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

84-84-84 84-84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES					DAILY PRODUCT USAGE					
TIME SAMPLE TAKEN	23:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST	
SAMPLE FROM	FLOWLINE									
PRESENT DEPTH	1224									
FLOWLINE TEMPERATURE (C)	68.9	BARITE	7926		216	634	7286	4212	$	12,363.00
DENSITY	1170	TRUVIS	360		19	184	176	5863.4	$	56,782.40
FUNNEL VISCOSITY (s/L)	54	INTERDRILL S	800		10	25	775	738.3	$	1,845.75
600 READING @ 60 C	63	FIBER FLUID	400		10	15	385	1026	$	1,530.00
300 READING	47									
APPARENT VISCOSITY (mPa.s)	31.5									
PLASTIC VISCOSITY (mPa.s)	16									
YIELD POINT (Pa)	15.5									
GELS 0/10 min. (Pa)	9/12									
pH STRIP / METER										
FILTRATE @ 90C (cm3) HTHP X	8.5									
FILTER CAKE (mm)	1.75									
Pom	3.6									
EXCESS LIME KG/M3	13.32									
TOTAL HARDNESS (mg/l) Ca										
CHLORIDES (mg/L) NaCl										
SAND CONTENT % X FR.	0.55									
SOLIDS CONTENT % X FR.	16									
OIL CONTENT %	83.0									
WATER CONTENT % X	1.0									
ELECTRICAL STABILITY	2000+	PREVIOUS COST	$465,266.25				STARTING VOLUME	267		
OIL WATER RATIO	99/1	DAILY COST	$11,833.70				VOL. BUILT			
CaCl2 w/w%		CUM. COST	$477,099.95				VOL. LOST ON SURFACE			
"n"	0.14	CUM. ENG. COST	$27,840.00				VOL. LOST ON SUB SURFACE			
"k"	14.30	Discounted/ Total	$238,549.98	$266,389.98			END VOLUME	267		
COMMENTS	POH FOR MWD RIH WASH 1141-1195 DRILL AHEAD						CUM. VOL BUILT.	2		

MAINTAIN

VISCOSITY @ 54-56 S/L WITH TRUVIS ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1150 KG/M3 OR AS REQUIRED BY ADDING BARITE. **RUN THE CENTRIFUGE ONCE** OR **TWICE** DAILY OVER FULL CIRCULATIONS.

TRANSFER TRUDRILL AS REQ.D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
NO LIME ADDITIONS ARE REQUIRED FOR NOW.
ADD 5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE 8-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #26E | REPORT No 47

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST D/C	CUMULATIVE COST CUM/C
CAUSTIC 10	240		177	63	$0.00	$10,266.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 103	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	648		130	518	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	25		16	9	$0.00	$1,264.00
MICA COARSE 1034	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 1042	110		0	110	$0.00	$0.00
FLOPLEX 10	250		135	115	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 1045	224		14	210	$0.00	$140.00
CALCARB "SC" 1045	336		33	303	$0.00	$330.00
CALCAARB "0" 1045	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 10	7920	216	634	7286	$4,212.00	$12,363.00
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353		88	265	$0.00	$79,200.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	360	19	184	176	$5,863.40	$56,782.40
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800	10	25	775	$738.30	$1,845.75
EMUL	32		3	29	$0.00	$3,420.00
INTER FL	32		3	29	$0.00	$4,590.00
OW	40		14	26	$0.00	$22,260.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		720	0	$0.00	$12,384.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	400	10	15	385	$1,020.00	$1,530.00
FIBER FLUID "C"	200		0	200	$0.00	$0.00
				TOTALS	$11,833.70	$477,099.95

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'				DATE	8-Mar-97				
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E				REPORT No	48				
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK				SPUD DATE	12-Jan-97				
ASSEMBLY		**CASING**			**MUD VOL. (M3)**		**PUMP OUTPUT**		**ANNULAR VEL. m/min**	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH/m)	TANKS	93	PUMP #1	152X254	OPPOSITE DP	47
BIT NUMBER	3CRR		508.0	263	HOLE	91	M3/STK	0.0138	OPPOSITE DC	85
DRILL PIPE #1(mm)	127.0	1050	339.7	1007	TOTAL	185	PUMP #2	152X254	CIRC. TIME	62
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	82	M3/STK	0.0138	BOTTOMS UP	27
COLLAR #1(mm)	168.0	27					S.P.M.	216		
COLLAR #2(mm)	228.0	106					M3/MIN	2.9851		

HOLE DATA	**CENTRIFUGE**			**DRILLING FLUID SPECIFICATIONS**	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1100–1150 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.		kg/m3	VISCOSITY	54–56 s/L
DEVIATION-20.8	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

110x110x110 84-84-84 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES						**DAILY PRODUCT USAGE**					
TIME SAMPLE TAKEN		22:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM		FLOWLINE								
PRESENT DEPTH		1265								
FLOWLINE TEMPERATURE (C)		73.3	BARITE	9080		37	671	8409	$721.50	$13,084.50
DENSITY		1155	INTERDRILL S	800		10	35	765	$738.30	$2,584.05
FUNNEL VISCOSITY (s/L)		47	FIBER FLUID	500		10	25	475	$1,020.00	$2,550.00
600 READING @ 60 C		58								
300 READING		42								
APPARENT VISCOSITY (mPa.s)		29								
PLASTIC VISCOSITY (mPa.s)		16								
YIELD POINT (Pa)		13								
GELS 0/10 min. (Pa)		9/11								
pH STRIP	METER									
FILTRATE @ 90C (cm3)	HTHP X	7								
FILTER CAKE (mm)		2								
Pom		3.9								
EXCESS LIME KG/M3		14.43								
TOTAL HARDNESS (mg/l)	Ca									
CHLORIDES (mg/L)	NaCl									
SAND CONTENT % X	FR.	0.55								
SOLIDS CONTENT % X	FR.	15								
OIL CONTENT %		84.0								
WATER CONTENT % X		1.5								
ELECTRICAL STABILITY		2000+								
OIL WATER RATIO		99/1								
CaCl2 w/w%										
"n"		0.10								
"K"		15.40								

		PREVIOUS COST	$477,099.95	STARTING VOLUME	267
		DAILY COST	$2,479.80	VOL. BUILT	
		CUM. COST	$479,579.75	VOL. LOST ON SURFACE	
		CUM. ENG. COST	$27,840.00	VOL. LOST ON SUB SURFACE	
		Discounted/ Total	$239,789.88 $267,629.88	END VOLUME	267
				CUM. VOL BUILT.	2

COMMENTS RIH DRILL TO 1265 m POH FOR BHA

MAINTAIN

ONCE ON BOTTOM START CIRCULATION OF INTERDRILL "OW" 1 BBL OVER 1 -2 CIRCULATIONS
VISCOSITY @ 54-56 S/L WITH TRUVIS ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1150 KG/M3 OR AS REQUIRED BY ADDING BARITE. **RUN THE CENTRIFUGE ONCE OR TWICE** DAILY OVER FULL CIRCULATIONS.

TRANSFER TRUDRILL AS REQ.D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
NO LIME ADDITIONS ARE REQUIRED FOR NOW.
ADD 5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. #5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger - Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE 8-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #26E | REPORT No 48

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST D/C	CUMULATIVE COST CUM/C
CAUSTIC 10	300		177	123	$0.00	$10,266.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 10	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	864		130	734	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	14.00
BICARB 10	50		16	34	$0.00	$1,264.00
MICA COARSE 1034	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 1042	110		0	110	$0.00	$0.00
FLOPLEX 1	350		135	215	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 1045	448		14	434	$0.00	$140.00
CALCARB "SC" 1045	336		33	303	$0.00	$330.00
CALCAARB "0" 1045	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 1	9080	37	671	8409	$721.50	$13,084.50
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353		88	265	$0.00	$79,200.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	480		184	296	$0.00	$56,782.40
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800	10	35	765	$738.30	$2,584.05
EMUL	44		3	41	$0.00	$3,420.00
INTER FL	44		3	41	$0.00	$4,590.00
OW	52		14	38	$0.00	$22,260.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 1	720		720	0	$0.00	$12,384.00
HSO 600 1	29		0	29	$0.00	$0.00
PTS 200 1	8		0	8	$0.00	$0.00
FIBER FLUID "F"	500	10	25	475	$1,020.00	$2,550.00
FIBER FLUID "C"	300		0	300	$0.00	$0.00
				TOTALS	$2,479.80	$479,579.75

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	9-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E		REPORT No	49
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY

		CASING		MUD VOL. (M3)			PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	96	PUMP #1	152X254	OPPOSITE DP	47
BIT NUMBER	3CRR		508.0	283	HOLE	97	M3/STK	0.0138	OPPOSITE DC	85
DRILL PIPE #1(mm)	127.0	1099	339.7	1007	TOTAL	193	PUMP #2	152X254	CIRC. TIME	85
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	67	M3/STK	0.0138	BOTTOMS UP	29
COLLAR #1(mm)	168.0	27					S.P.M.	216		
COLLAR #2(mm)	228.0	106					M3/MIN	2.9851		

HOLE DATA

	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1150 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.		kg/m3	VISCOSITY	48-52 @ 65 + DEG s/L
DEVIATION-25 @ 1292	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

110x110x110 140-140-140 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES

TIME SAMPLE TAKEN	22:30
SAMPLE FROM	FLOWLINE
PRESENT DEPTH	1314
FLOWLINE TEMPERATURE (C)	73.3
DENSITY	1140
FUNNEL VISCOSITY (s/L)	51
600 READING @ 60 C	62
300 READING	46
APPARENT VISCOSITY (mPa.s)	31
PLASTIC VISCOSITY (mPa.s)	16
YIELD POINT (Pa)	15
GELS 0/10 min. (Pa)	9/10
pH STRIP / METER	
FILTRATE @ 90C (cm3) / HTHP X	7
FILTER CAKE (mm)	1.5
Pom	4
EXCESS LIME KG/M3	14.8
TOTAL HARDNESS (mg/l) / Ca	
CHLORIDES (mg/L) / NaCl	
SAND CONTENT % X / FR.	0.5
SOLIDS CONTENT % X / FR.	16
OIL CONTENT %	84.0
WATER CONTENT % X	0.0
ELECTRICAL STABILITY	2000+
OIL WATER RATIO	100/0
CaCl2 w/w%	
"n"	0.13
"k"	14.50

DAILY PRODUCT USAGE

MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
BARITE	9080		40	711	8369	$ 780.00	$ 13,864.50
TRUDRILL	353		7	95	258	$ 6,300.00	$ 85,500.00
TRUVIS	480		17	201	279	$ 5,246.20	$ 62,028.60
INTERDRILL S	800		5	40	760	$ 369.15	$ 2,953.20
OW	52		3	17	35	$ 4,770.00	$ 27,030.00
FIBER FLUID	500		5	30	470	$ 510.00	$ 3,060.00
FIBER FLUID	300		5	5	295	$ 510.00	$ 510.00

PREVIOUS COST	$479,579.75		
DAILY COST	$18,485.35	STARTING VOLUME	267
CUM. COST	$498,065.10	VOL. BUILT	
CUM. ENG. COST	$28,320.00	VOL. LOST ON SURFACE	2
Discounted Total	$249,032.55 $277,352.55	VOL. LOST ON SUB SURFACE	5
		END VOLUME	260
		CUM. VOL BUILT.	2

COMMENTS DRILL AHEAD

MAINTAIN

VISCOSITY @ 48-52 S/L @ 65+DEG C FLOLINE TEMP WITH **TRUVIS** ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1150 KG/M3 OR AS REQUIRED BY ADDING BARITE . **RUN THE CENTRIFUGE ONCE OR TWICE** DAILY OVER FULL CIRCULATIONS.
ADD **INTERDRILL "OW"** @ 1 BBL OVER 2 CIRCULATIONS **IF** SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER
TRANSFER TRUDRILL AS REQ.D TO **BUILD/MAINTAIN** VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
NO LIME ADDITIONS ARE REQUIRED FOR NOW.
ADD 5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)			
PHONE	532-5078	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
		PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-65 | LOCATION LAT 60 40' LONG 123 30' | DATE 10-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #26E | REPORT No 49

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST D/C	CUMULATIVE COST CUM/C
CAUSTIC 10	300		177	123	$0.00	$10,266.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 100	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	864		130	734	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	50		16	34	$0.00	$1,264.00
MICA COARSE 1034	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 1042	110		0	110	$0.00	$0.00
FLOPLEX 1	350		135	215	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 1045	448		14	434	$0.00	$140.00
CALCARB "SC" 1045	336		33	303	$0.00	$330.00
CALCAARB "0" 1045	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 10	9080	40	711	8369	$780.00	$13,864.50
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353	7	95	258	$6,300.00	$85,500.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	480	17	201	279	$5,246.20	$62,028.60
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800	5	40	760	$369.15	$2,953.20
EMUL	44		3	41	$0.00	$3,420.00
INTER FL	44		3	41	$0.00	$4,590.00
OW	52	3	17	35	$4,770.00	$27,130.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		720	0	$0.00	$12,384.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	500	5	30	470	$510.00	$3,060.00
FIBER FLUID "C"	300	5	5	295	$510.00	$510.00
			TOTALS		$18,485.35	$498,065.10

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	11-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E		REPORT No	50
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY

			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	79	PUMP #1	152X254	OPPOSITE DP	47
BIT NUMBER	3CRR		508.0	263	HOLE	107	M3/STK	0.0138	OPPOSITE DC	85
DRILL PIPE #1(mm)	127.0	1154	339.7	1007	TOTAL	107	PUMP #2	152X254	CIRC. TIME	63
DRILL PIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	67	M3/STK	0.0138	BOTTOMS UP	32
COLLAR #1(mm)	168.0	27					S.P.M.	216		
COLLAR #2(mm)	228.0	106					M3/MIN	2.9851		

HOLE DATA

	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1150 Kg/m3
HOLE COND.-TIGHT	UNDERFLOW WT.		kg/m3	VISCOSITY	48-52 @ 65 + DEG s/L
DEVIATION-29.6 @ 1341 m 207.7 AZ	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-REAM & CLEAN	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

110x110x110 140-140-140 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES

TIME SAMPLE TAKEN	6:30
SAMPLE FROM	FLOWLINE
PRESENT DEPTH	1288
FLOWLINE TEMPERATURE (C)	54.4
DENSITY	1210
FUNNEL VISCOSITY (s/L)	70
600 READING @ 60 C	68
300 READING	48
APPARENT VISCOSITY (mPa.s)	34
PLASTIC VISCOSITY (mPa.s)	20
YIELD POINT (Pa)	14
GELS 0/10 min. (Pa)	10/12
pH STRIP / METER	
FILTRATE @ 90C (cm3) HTHP X	6.5
FILTER CAKE (mm)	1.5
Pom	4
EXCESS LIME KG/M3	14.8
TOTAL HARDNESS (mg/l) Ca	
CHLORIDES (mg/L) NaCl	
SAND CONTENT % X FR.	0.5
SOLIDS CONTENT % X FR.	18
OIL CONTENT %	82.0
WATER CONTENT % X	0.0
ELECTRICAL STABILITY	2000+
OIL WATER RATIO	100/0
CaCl2 w/w%	
"n"	0.09
"K"	17.21

DAILY PRODUCT USAGE

MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
BARITE	10200		120	831	9369	$ 2,340.00	$ 16,204.50
TRUDRILL	353		6	101	252	$ 5,400.00	$ 90,900.00
INTERDRILL S	800		5	45	755	$ 369.15	$ 3,322.35
FIBER FLUID	500		5	35	465	$ 510.00	$ 3,570.00
FIBER FLUID	300		5	10	290	$ 510.00	$ 1,020.00

PREVIOUS COST	$498,065.10		
DAILY COST	$9,129.15		
CUM. COST	$507,194.25		
CUM. ENG. COST	$29,280.00		
Discounted/ Total	$253,597.13	$282,877.13	

STARTING VOLUME	260
VOL. BUILT	
VOL. LOST ON SURFACE	2
VOL. LOST ON SUB SURFACE	4
END VOLUME	254
CUM. VOL BUILT.	2

COMMENTS DRILL TO 1369 M WIPER TRIP TO CSG HOLE SLOUGHING POH RIH SLICK

MAINTAIN

VISCOSITY @ 50-54 S/L @ 65+DEG C FLOLINE TEMP WITH **TRUVIS** ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1170 - 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE. **RUN THE CENTRIFUGE ONCE** OR **TWICE** DAILY OVER FULL CIRCULATIONS.
ADD **INTERDRILL "OW"** @ 1 BBL OVER 2 CIRCULATIONS **IF** SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER
TRANSFER TRUDRILL AS REQ.D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
NO LIME ADDITIONS ARE REQUIRED FOR NOW.
ADD 5 SX OF **INTERDRILL "S"** AND 5 **SACKS OF FIBER FLUID** (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. #5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE 11-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #25E | REPORT No 50

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST D/C	CUMULATIVE COST CUM/C
CAUSTIC 10	300		177	123	$0.00	$10,266.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 100	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	864		130	734	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	50		16	34	$0.00	$1,264.00
MICA COARSE 1034	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 1042	110		0	110	$0.00	$0.00
FLOPLEX 10	350		135	215	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 1045	448		14	434	$0.00	$140.00
CALCARB "SC" 1045	336		33	303	$0.00	$330.00
CALCAARB "0" 1045	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 10	10200	120	831	9369	$2,340.00	$16,204.50
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353	6	101	252	$5,400.00	$90,900.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	480		201	279	$0.00	$62,028.60
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800	5	45	755	$369.15	$3,322.35
EMUL	44		3	41	$0.00	$3,420.00
INTER FL	44		3	41	$0.00	$4,590.00
OW	52		17	35	$0.00	$27,030.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		720	0	$0.00	$12,384.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	500	5	35	465	$510.00	$3,570.00
FIBER FLUID "C"	300	5	10	290	$510.00	$1,020.00
				TOTALS	$9,129.15	$507,194.25

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'	DATE 11-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E	REPORT No 50b
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK	SPUD DATE 12-Jan-97

ASSEMBLY

			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	94	PUMP #1	152X254	OPPOSITE DP	47
BIT NUMBER	3CRR		508.0	263	HOLE	107	M3/STK	0.0138	OPPOSITE DC	85
DRILL PIPE #1(mm)	127.0	1154	339.7	1007	TOTAL	201	PUMP #2	152X254	CIRC. TIME	67
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	52	M3/STK	0.0138	BOTTOMS UP	32
COLLAR #1(mm)	168.0	27					S.P.M.	216		
COLLAR #2(mm)	228.0	106					M3/MIN	2.9851		

HOLE DATA	CENTRIFUGE		DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF kg/m3	MUD WT.	1150 Kg/m3
HOLE COND.-TIGHT	UNDERFLOW WT.	kg/m3	VISCOSITY	48-52 @ 65 + DEG s/L
DEVIATION-29.6 @ 1341 m 207.7 AZ	OVERFLOW WT.	kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-REAM & CLEAN	UNDERFLOW RT.	m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

110x110x110 140-140-140 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES / **DAILY PRODUCT USAGE**

		MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
TIME SAMPLE TAKEN	20:30								
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	1369								
FLOWLINE TEMPERATURE (C)	67.8								
DENSITY	1210								
FUNNEL VISCOSITY (s/L)	56								
600 READING @ 60 C	63								
300 READING	45								
APPARENT VISCOSITY (mPa.s)	31.5								
PLASTIC VISCOSITY (mPa.s)	18								
YIELD POINT (Pa)	13.5								
GELS 0/10 min. (Pa)	10/11								
pH STRIP / METER									
FILTRATE @ 90C (cm3) HTHP X	9								
FILTER CAKE (mm)	2								
Pom	3.5								
EXCESS LIME KG/M3	12.95								
TOTAL HARDNESS (mg/l) Ca									
CHLORIDES (mg/L) NaCl									
SAND CONTENT % X FR	0.5								
SOLIDS CONTENT % X FR	20								
OIL CONTENT %	80.0								
WATER CONTENT % X	0.0								
ELECTRICAL STABILITY	2000+								
OIL WATER RATIO	100/0								
CaCl2 w/w%									
"n"	0.08								
"K"	17.58								

PREVIOUS COST	$507,194.25	STARTING VOLUME	254
DAILY COST		VOL. BUILT	
CUM. COST	$507,194.25	VOL. LOST ON SURFACE	
CUM. ENG. COST	$29,280.00	VOL. LOST ON SUB SURFACE	
Discounted/ Total	$253,597.13 $282,877.13	END VOLUME	254
		CUM. VOL BUILT.	2

COMMENTS REAM AND CLEAN TO 1369 m PUMP HIVIS SWEEP PULL WIPER TRIP REAM TO 1369 CIRC POH

MAINTAIN

VISCOSITY @ 50-54 S/L @ 65+DEG C FLOLINE TEMP WITH TRUVIS ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1170 - 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE. **RUN THE CENTRIFUGE ONCE OR TWICE** DAILY OVER FULL CIRCULATIONS.
ADD **INTERDRILL "OW"** @ 1 BBL OVER 2 CIRCULATIONS **IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER**
TRANSFER TRUDRILL AS REQ,D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSITY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
NO LIME ADDITIONS ARE REQUIRED FOR NOW.
ADD **5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID** (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	12-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E		REPORT No	51
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY

			CASING		MUD VOL (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	94	PUMP #1	152X254	OPPOSITE DP	46
BIT NUMBER	3CRR		508.0	263	HOLE	108	M3/STK	0.0138	OPPOSITE DC	83
DRILL PIPE #1(mm)	127.0	1160	339.7	1007	TOTAL	202	PUMP #2	152X254	CIRC. TIME	69
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	52	M3/STK	0.0138	BOTTOMS UP	33
COLLAR #1(mm)	168.0	27					S.P.M.	212		
COLLAR #2(mm)	228.0	106					M3/MIN	2.9299		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1150 Kg/m3
HOLE COND.-FAIR	UNDERFLOW WT.		kg/m3	VISCOSITY	48-52 @ 65 + DEG s/L
DEVIATION-30.7 @ 1350 m 207.8 AZ	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
110x110x110 140-140-140 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES		DAILY PRODUCT USAGE							
TIME SAMPLE TAKEN	13:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	1375								
FLOWLINE TEMPERATURE (C)	71.1	CALCARB "3	448		108	122	326	$ 1,080.00	$ 1,220.00
DENSITY	1205	BARITE	11080		300	1131	9949	$ 6,850.00	$ 22,054.50
FUNNEL VISCOSITY (s/L)	56	TRUVIS	480		17	218	262	$ 5,246.20	$ 67,274.80
600 READING @ 60 C	66	OW	52		4	21	31	$ 6,360.00	$ 33,390.00
300 READING	47	FIBER FLUID	500		5	40	460	$ 510.00	$ 4,080.00
APPARENT VISCOSITY (mPa.s)	33	FIBER FLUID	300		5	15	285	$ 510.00	$ 1,530.00
PLASTIC VISCOSITY (mPa.s)	19								
YIELD POINT (Pa)	14								
GELS 0/10 min. (Pa)	10/11								
pH STRIP / METER									
FILTRATE @ 90C (cm3) HTHP X	8								
FILTER CAKE (mm)	2								
Pom	3.5								
EXCESS LIME KG/M3	12.95								
TOTAL HARDNESS (mg/l) / Ca									
CHLORIDES (mg/L) / NaCl									
SAND CONTENT % X FR.	0.5								
SOLIDS CONTENT % X FR.	20								
OIL CONTENT %	79.0								
WATER CONTENT % X	1.0								
ELECTRICAL STABILITY	2000+								
OIL WATER RATIO	99/1								
CaCl2 w/w%									
"n"	0.09								
"K"	17.27								

PREVIOUS COST	$507,194.25	STARTING VOLUME	254
DAILY COST	$19,556.20	VOL. BUILT	
CUM. COST	$526,750.45	VOL. LOST ON SURFACE	
CUM. ENG. COST	$29,760.00	VOL. LOST ON SUB SURFACE	
Discounted/ Total	$263,375.23 $293,135.23	END VOLUME	254
		CUM. VOL. BUILT.	2

COMMENTS RIH TO 1007 SLIP & CUT RIH CLEAN 1307 - 1369 m SURVEY DRILL AHEAD

MAINTAIN

VISCOSITY @ 50-54 S/L @ 65+DEG C FLOLINE TEMP WITH TRUVIS ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1170 - 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE. **RUN THE CENTRIFUGE ONCE OR TWICE** DAILY OVER FULL CIRCULATIONS.
ADD **INTERDRILL "OW"** @ 1 BBL OVER 2 CIRCULATIONS **IF** SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER
TRANSFER TRUDRILL AS REQ.D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
NO LIME ADDITIONS ARE REQUIRED FOR NOW.
ADD **5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID** (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE 12-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #26E | REPORT No 51

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST D/C	CUMULATIVE COST CUM/C
CAUSTIC 10	300		177	123	$0.00	$10,266.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 100	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	864		130	734	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	50		16	34	$0.00	$1,264.00
MICA COARSE 103	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 104	110		0	110	$0.00	$0.00
FLOPLEX 1	350		135	215	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 104	448	108	122	326	$1,080.00	$1,220.00
CALCARB "SC" 1045	336		33	303	$0.00	$330.00
CALCAARB "0" 1045	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 10	11080	300	1131	9949	$5,850.00	$22,054.50
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353		101	252	$0.00	$90,900.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	480	17	218	262	$5,246.20	$67,274.80
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800		45	755	$0.00	$3,322.35
EMUL	44		3	41	$0.00	$3,420.00
INTER FL	44		3	41	$0.00	$4,590.00
OW	52	4	21	31	$6,360.00	$33,390.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		720	0	$0.00	$12,384.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	500	5	40	460	$510.00	$4,080.00
FIBER FLUID "C"	300	5	15	285	$510.00	$1,530.00
				TOTALS	$19,556.20	$526,750.45

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. UARD P-66	LOCATION P-66 LAT 60 47 LONG 123 30'		DATE	13-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E		REPORT No	52
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY		CASING		MUD VOL. (M3)			PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	88	PUMP #1	152X254	OPPOSITE DP	46
BIT NUMBER	3CRR		508.0	263	HOLE	113	M3/STK	0.0138	OPPOSITE DC	83
DRILL PIPE #1(mm)	127.0	1196	339.7	1007	TOTAL	201	PUMP #2	152X254	CIRC. TIME	69
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	52	M3/STK	0.0138	BOTTOMS UP	35
COLLAR #1(mm)	168.0	27					S.P.M.	210		
COLLAR #2(mm)	228.0	106					M3/MIN	2.9022		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - TRUDRILL	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1200 Kg/m3
HOLE COND.-FAIR	UNDERFLOW WT.		kg/m3	VISCOSITY	48-52 @ 65+ DEG s/L
DEVIATION-33.5 @ 1389 204.8 AZ	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

110x110x110 140-140-140 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES				DAILY PRODUCT USAGE						
TIME SAMPLE TAKEN		5:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM		FLOWLINE								
PRESENT DEPTH		1411								
FLOWLINE TEMPERATURE (C)		82.2	INTERDRILL S	800		5	50	750	$ 369.15	$ 3,691.50
DENSITY		1220	FIBER FLUID	500		5	45	455	$ 510.00	$ 4,590.00
FUNNEL VISCOSITY (s/L)		59								
600 READING @ 60 C		70								
300 READING		50								
APPARENT VISCOSITY (mPa.s)		35								
PLASTIC VISCOSITY (mPa.s)		20								
YIELD POINT (Pa)		15								
GELS 0/10 min. (Pa)		10/12								
pH STRIP	METER									
FILTRATE @ 80C (cm3)	HTHP X	7								
FILTER CAKE (mm)		1.5								
Pom		3.6								
EXCESS LIME KG/M3		13.32								
TOTAL HARDNESS (mg/l)	Ca									
CHLORIDES (mg/L)	NaCl									
SAND CONTENT %	X FR.	0.5								
SOLIDS CONTENT %	X FR.	21								
OIL CONTENT %		79.0								
WATER CONTENT %	X	0.0								
ELECTRICAL STABILITY		2000+								
OIL WATER RATIO		100/1								
CaCl2 w/w%										
"n"		0.11								
"K"		16.74								

		PREVIOUS COST	$526,750.45	STARTING VOLUME	254
		DAILY COST	$879.15	VOL. BUILT	
		CUM. COST	$527,629.60	VOL. LOST ON SURFACE	
		CUM. ENG. COST	$30,240.00	VOL. LOST ON SUB SURFACE	
		Discounted Total	$263,814.80 $294,054.80	END VOLUME	254
				CUM. VOL BUILT.	2

COMMENTS DRILL AHEAD

MAINTAIN

VISCOSITY @ 50-54 S/L @ 65+DEG C FLOLINE TEMP WITH **TRUVIS** ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1170 - 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE. **RUN THE CENTRIFUGE ONCE** PER TOUR OVER FULL CIRCULATIONS.
ADD **INTERDRILL "OW"** @ 1 BBL OVER 2 CIRCULATIONS **IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER**
TRANSFER TRUDRILL AS REQ,D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
NO LIME ADDITIONS ARE REQUIRED FOR NOW.
ADD 5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. #5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE 13-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #26E | REPORT No 52

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. TERRY GORGICHUK | SPUD DATE 12-Jan-97

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST D/C	CUMULATIVE COST CUM/C
CAUSTIC 10	300		177	123	$0.00	$10,266.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 10	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	864		130	734	$0.00	$2,015.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	50		16	34	$0.00	$1,264.00
MICA COARSE 103	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 104	110		0	110	$0.00	$0.00
FLOPLEX 1	350		135	215	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 104	448		122	326	$0.00	$1,220.00
CALCARB "SC" 104	336		33	303	$0.00	$330.00
CALCAARB "0" 104	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE 10	11080		1131	9949	$0.00	$22,054.50
CALC CHLORIDE	393		0	393	$0.00	$0.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		525	875	$0.00	$3,412.50
CALC CARB "FG"	0		0	0	$0.00	$0.00
TRUDRILL	353		101	252	$0.00	$90,900.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	480		218	262	$0.00	$67,274.80
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800	5	50	750	$369.15	$3,691.50
EMUL	44		3	41	$0.00	$3,420.00
INTER FL	44		3	41	$0.00	$4,590.00
OW	52		21	31	$0.00	$33,390.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		720	0	$0.00	$12,384.00
HSO 600 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	500	5	45	455	$510.00	$4,590.00
FIBER FLUID "C"	300		15	285	$0.00	$1,530.00
				TOTALS	$879.15	$527,629.60

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	15-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #25E		REPORT No	54
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	109	PUMP #1	152/254	OPPOSITE DP	44
BIT NUMBER	3CRR		508.0	263	HOLE	76	M3/STK	0.0138	OPPOSITE DC	78
DRILL PIPE #1(mm)	127.0	790	339.7	1007	TOTAL	185	PUMP #2	152/254	CIRC. TIME	64
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	52	M3/STK	0.0138	BOTTOMS UP	23
COLLAR #1(mm)	168.0	27					S.P.M.	210		
COLLAR #2(mm)	228.0	106					M3/MIN	2.9022		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - INVERT	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1200 Kg/m3
HOLE COND.-	UNDERFLOW WT.		kg/m3	VISCOSITY	48-52 @ 65 + DEG s/L
DEVIATION-33.5 @ 1389 204.8 AZ	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-CIRC AND COND.	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

110x110x110 110-110-110 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES				DAILY PRODUCT USAGE						
TIME SAMPLE TAKEN			18:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			1005								
FLOWLINE TEMPERATURE (C)			60.0	LIME	854		40	170	694	$ 620.00	$ 2,635.00
DENSITY			1255	BARITE	12080		40	1171	10909	$ 780.00	$ 22,834.50
FUNNEL VISCOSITY (s/L)			77	INTERDRILL 'S'	900		5	55	745	$ 369.15	$ 4,060.65
600 READING @ 60 C			88	EMUL	48		10	13	35	$ 11,400.00	$ 14,820.00
300 READING			53	INTER FL	48		2	5	43	$ 3,060.00	$ 7,650.00
APPARENT VISCOSITY (mPa.s)			44	OW	68		3	24	44	$ 4,770.00	$ 38,160.00
PLASTIC VISCOSITY (mPa.s)			25	FIBER FLUID	500		5	50	450	$ 510.00	$ 5,100.00
YIELD POINT (Pa)			19	CACL2 BRINE	42		20	20	22	$ 12,000.00	$12,000.00
GELS 0/10 min. (Pa)			12/14								
pH STRIP		METER									
FILTRATE @ 90C (cm3)		HTHP	X 4								
FILTER CAKE (mm)			2								
Pom			2.7								
EXCESS LIME KG/M3			9.99								
TOTAL HARDNESS (mg/l)		Ca									
CHLORIDES (mg/L)	X	NaCl	258,222								
SAND CONTENT %	X	FR.	0.5								
SOLIDS CONTENT %	X	FR.	18								
OIL CONTENT %			72.0								
WATER CONTENT %		X	10.0								
ELECTRICAL STABILITY			1240								
OIL WATER RATIO			88/12								
CaCl2 w/w%			31.22								
"n"			0.12								
"K"			19.50								

		PREVIOUS COST	$527,629.60	STARTING VOLUME	254
		DAILY COST	$33,509.15	VOL. BUILT	20
		CUM. COST	$561,138.75	VOL. LOST ON SURFACE	
		CUM. ENG. COST	$31,680.00	VOL. LOST ON SUB SURFACE	
		Discounted/ Total	$280,569.38 $312,249.38	END VOLUME	274
				CUM. VOL BUILT.	2

COMMENTS CIRC AND CONDITION WAIT ON TOP DRIVE

MAINTAIN

VISCOSITY @ 50-54 S/L @ 65+DEG C FLOLINE TEMP WITH TRUVIS ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1170 - 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE. **RUN THE CENTRIFUGE ONCE** PER TOUR OVER FULL CIRCULATIONS.
ADD **INTERDRILL "OW"** @ 1 BBL OVER 2 CIRCULATIONS IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER
TRANSFER TRUDRILL AS REQ.D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
NO LIME ADDITIONS ARE REQUIRED FOR NOW.
ADD **5 SX OF INTERDRILL 'S' AND 5 SACKS OF FIBER FLUID** (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. #5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	15-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #2SE		REPORT No	54
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY

			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	109	PUMP #1	152/254	OPPOSITE DP	44
BIT NUMBER	3CRR		508.0	263	HOLE	76	M3/STK	0.0138	OPPOSITE DC	78
DRILL PIPE #1(mm)	127.0	790	339.7	1007	TOTAL	185	PUMP #2	152/254	CIRC. TIME	64
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	52	M3/STK	0.0138	BOTTOMS UP	23
COLLAR #1(mm)	168.0	27					S.P.M.	210		
COLLAR #2(mm)	228.0	106					M3/MIN	2.9022		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - INVERT	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1200 Kg/m3
HOLE COND.-	UNDERFLOW WT.		kg/m3	VISCOSITY	48-52 @ 65 + DEG s/L
DEVIATION-33.5 @ 1389 204.8 AZ	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-CIRC AND COND.	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

110x110x110 110-110-110 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES

TIME SAMPLE TAKEN	18:30
SAMPLE FROM	FLOWLINE
PRESENT DEPTH	1905
FLOWLINE TEMPERATURE (C)	60.0
DENSITY	1255
FUNNEL VISCOSITY (s/L)	77
600 READING @ 60 C	88
300 READING	63
APPARENT VISCOSITY (mPa.s)	44
PLASTIC VISCOSITY (mPa.s)	25
YIELD POINT (Pa)	19
GELS 0/10 min. (Pa)	12/14
pH STRIP / METER	
FILTRATE @ 90C (cm3) HTHP X	4
FILTER CAKE (mm)	2
Pom	2.7
EXCESS LIME KG/M3	9.99
TOTAL HARDNESS (mg/l) Ca	
CHLORIDES (mg/L) X NaCl	258,222
SAND CONTENT % X FR.	0.5
SOLIDS CONTENT % X FR.	18
OIL CONTENT %	72.0
WATER CONTENT % X	10.0
ELECTRICAL STABILITY	1240
OIL WATER RATIO	88/12
CaCl2 w/w%	31.22
"n"	0.12
"k"	19.60

DAILY PRODUCT USAGE

MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
LIME	864		40	170	694	$ 620.00	$ 2,635.00
BARITE	12080		40	1171	10909	$ 780.00	$ 22,834.50
INTERDRILL S	800		5	55	745	$ 369.15	$ 4,060.65
EMUL	48		10	13	35	$ 11,400.00	$ 14,820.00
INTER FL	48		2	5	43	$ 3,060.00	$ 7,650.00
OW	68		3	24	44	$ 4,770.00	$ 38,160.00
FIBER FLUID	500		5	50	450	$ 510.00	$ 5,100.00
CACL2 BRINE	42		20	20	22	$ 12,000.00	$12,000.00

PREVIOUS COST	$527,629.60	STARTING VOLUME	254
DAILY COST	$33,509.15	VOL. BUILT	20
CUM. COST	$561,138.75	VOL. LOST ON SURFACE	
CUM. ENG. COST	$31,680.00	VOL. LOST ON SUB SURFACE	
Discounted/ Total	$280,569.38 $312,249.38	END VOLUME	274
		CUM. VOL BUILT.	2

COMMENTS CIRC AND CONDITION WAIT ON TOP DRIVE

MAINTAIN

VISCOSITY @ 50-54 S/L @ 65+DEG C FLOLINE TEMP WITH TRUVIS ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1170 - 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE. RUN THE CENTRIFUGE ONCE PER TOUR OVER FULL CIRCULATIONS.
ADD INTERDRILL "OW" @ 1 BBL OVER 2 CIRCULATIONS IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER
TRANSFER TRUDRILL AS REQ.D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
NO LIME ADDITIONS ARE REQUIRED FOR NOW.
ADD 5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

KEEP ALL SOURCES OF WATER AWAY FROM THE MUD TANKS

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	DAN MAJOCHA	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	17-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E		REPORT No	55
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. TERRY GORGICHUK		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	109	PUMP #1	152/254	OPPOSITE DP	44
BIT NUMBER	3CRR		508.0	263	HOLE	76	M3/STK	0.0138	OPPOSITE DC	78
DRILL PIPE #1(mm)	127.0	790	339.7	1007	TOTAL	185	PUMP #2	152/254	CIRC. TIME	64
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	122	M3/STK	0.0138	BOTTOMS UP	23
COLLAR #1(mm)	168.0	27					S.P.M.	210		
COLLAR #2(mm)	228.0	106					M3/MIN	2.9022		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - INVERT	FLOWLINE WT. OFF	OFF	kg/m3	MUD WT.	1200 Kg/m3
HOLE COND.-	UNDERFLOW WT.		kg/m3	VISCOSITY	48-52 @ 65+ DEG s/L
DEVIATION-33.5 @ 1389 204.8 AZ	OVERFLOW WT.		kg/m3	FILTRATE	<20 cm3/30 min.
CURRENT OP.-WAIT ON TOP DRIVE	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE
110x110x110 110-110-110 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES			DAILY PRODUCT USAGE						
TIME SAMPLE TAKEN	19:00	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	1005								
FLOWLINE TEMPERATURE (C)	65.6	BARITE	12080		30	1201	10879	$ 585.00	$ 23,419.50
DENSITY	1255								
FUNNEL VISCOSITY (s/L)	77								
600 READING @ 60 C	88								
300 READING	63								
APPARENT VISCOSITY (mPa.s)	44								
PLASTIC VISCOSITY (mPa.s)	25								
YIELD POINT (Pa)	19								
GELS 0/10 min. (Pa)	12/14								
pH STRIP / METER									
FILTRATE @ 90C (cm3) HTHP X	4								
FILTER CAKE (mm)	2								
Pom	2.7								
EXCESS LIME KG/M3	9.99								
TOTAL HARDNESS (mg/l) / Ca									
CHLORIDES (mg/L) X NaCl	250,428								
SAND CONTENT % X FR.	0.5								
SOLIDS CONTENT % X FR.	18								
OIL CONTENT %	72.0								
WATER CONTENT % X	10.0								
ELECTRICAL STABILITY	1240								
OIL WATER RATIO	88/12								
CaCl2 w/w%	30.47								
"n"	0.12								
"K"	19.60								

PREVIOUS COST	$561,138.75		
DAILY COST	$585.00	STARTING VOLUME	344
CUM. COST	$561,723.75	VOL. BUILT	
CUM. ENG. COST	$33,120.00	VOL. LOST ON SURFACE	
Discounted/ Total	$280,861.88 $313,981.88	VOL. LOST ON SUB SURFACE	
		END VOLUME	344
		CUM. VOL BUILT.	22

COMMENTS INSTALLING TOP DRIVE

MAINTAIN **RETORT FROM CENTRIFUGE UFLOW 60% SOLIDS,35% OIL,5% WATER WEIGHT 2500KG//M3**

VISCOSITY @ 50-54 S/L @ 65+DEG C FLOUNE TEMP WITH **TRUVIS** ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE. **RUN THE CENTRIFUGE ONCE** PER TOUR OVER FULL CIRCULATIONS.
ADD **INTERDRILL "OW"** @ 1 BBL OVER 2 CIRCULATIONS IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER
TRANSFER TRUDRILL AS REQ,D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
NO LIME ADDITIONS ARE REQUIRED FOR NOW.
ADD **5 SX OF INTERDRILL "S"** AND **5 SACKS OF FIBER FLUID** (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'			DATE	18-Mar-97			
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E			REPORT No	56			
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. DENNIS BROWN			SPUD DATE	12-Jan-97			
ASSEMBLY		CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	102	PUMP #1	152/254	OPPOSITE DP	43
BIT NUMBER	3CRR		508.0	263	HOLE	101	M3/STK	0.0138	OPPOSITE DC	77
DRILL PIPE #1(mm)	127.0	1109	339.7	1007	TOTAL	203	PUMP #2	152/254	CIRC. TIME	75
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	122	M3/STK	0.0138	BOTTOMS UP	33
COLLAR #1(mm)	168.0	27					S.P.M.	196		
COLLAR #2(mm)	228.0	106					M3/MIN	2.7087		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - INVERT	FLOWLINE WT.	OFF	kg/m3	MUD WT.	1200 Kg/m3
HOLE COND.-GOOD TO FISH	UNDERFLOW WT.		kg/m3	VISCOSITY	48-52 @ 65+ DEG s/L
DEVIATION-33.5 @ 1389 204.8 AZ	OVERFLOW WT.		kg/m3	FILTRATE	<10 cm3/30 min.
CURRENT OP.-CIRC ABOVE FISH	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

110x110x110 110-110-110 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES					DAILY PRODUCT USAGE					
TIME SAMPLE TAKEN	19:55	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	1324								
FLOWLINE TEMPERATURE (C)	46.1	BARITE	12080		30	1231	$10,849.00	$585.00	$ 24,004.50
DENSITY	1225								
FUNNEL VISCOSITY (s/L)	105								
600 READING @ 60 C	103								
300 READING	75								
APPARENT VISCOSITY (mPa.s)	51.5								
PLASTIC VISCOSITY (mPa.s)	28								
YIELD POINT (Pa)	23.5								
GELS 0/10 min. (Pa)	14/16								
pH STRIP / METER									
FILTRATE @ 90C (cm3) / HTHP X	5.5								
FILTER CAKE (mm)	2								
Pom	2.2								
EXCESS LIME KG/M3	8.14								
TOTAL HARDNESS (mg/l) / Ca									
CHLORIDES (mg/L) X / NaCl	258,222								
SAND CONTENT % X / FR.	0.5								
SOLIDS CONTENT % X / FR.	15								
OIL CONTENT %	75.0								
WATER CONTENT % X	10.0								
ELECTRICAL STABILITY	1220								
OIL WATER RATIO	88/12								
CaCl2 w/w%	31.22								
"n"	0.14								
"K"	22.37								

PREVIOUS COST	$561,723.75	STARTING VOLUME	344
DAILY COST	$585.00	VOL. BUILT	
CUM. COST	$562,308.75	VOL. LOST ON SURFACE	
CUM. ENG. COST	$33,600.00	VOL. LOST ON SUB SURFACE	
Discounted/ Total	$281,154.38 $314,754.38	END VOLUME	344
		CUM. VOL BUILT.	22

COMMENTS INSTALLING TOP DRIVE

MAINTAIN **RETORT FROM CENTRIFUGE UFLOW 60% SOLIDS,35% OIL,5% WATER WEIGHT 2500KG//M3**

VISCOSITY @ 50-54 S/L @ 65+DEG C FLOLINE TEMP WITH **TRUVIS** ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE . **RUN THE CENTRIFUGE ONCE** PER TOUR OVER FULL CIRCULATIONS.
ADD **INTERDRILL "OW"** @ 1 BBL OVER 2 CIRCULATIONS IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER
TRANSFER TRUDRILL AS REQ,D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
ADD INTERDRILL "OW" @ 1 BBL OVER 2 CIRCULATIONS IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER
ADD 5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. #5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-66 | LOCATION LAT 60 40' LONG 123 30' | DATE 19-Mar-97

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #26E | REPORT No 56

REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. DENNIS BROWN | SPUD DATE 12-Jan-97

	PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST DMC	CUMULATIVE COST CUMC
12	CAUSTIC 10	300		177	123	$0.00	$10,266.00
	X-CIDE 207 10	96		0	96	$0.00	$0.00
	NAT BENTONITE 103	1960		1790	170	$0.00	$28,478.90
	LIGNITE 1	56		18	38	$0.00	$360.00
	LIME 1	864		170	694	$0.00	$2,635.00
	SODA ASH 10	40		4	36	$0.00	$144.00
	BICARB 10	50		16	34	$0.00	$1,264.00
	MICA COARSE 1034	48		30	18	$0.00	$1,110.00
	IDF-FLR 1	7		0	7	$0.00	$0.00
	VISPLEX II 1	541		541	0	$0.00	$198,547.00
	ID FREE 208L 10	4		0	4	$0.00	$0.00
	CELLOPHANE 103	100		34	66	$0.00	$1,428.00
	MICA MEDIUM 1042	110		0	110	$0.00	$0.00
	FLOPLEX 1	350		135	215	$0.00	$25,920.00
26	P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
	P. SEAL "M" 104	16		16	0	$0.00	$608.00
28	CALCARB "325" 1045	448		122	326	$0.00	$1,220.00
	CALCARB "SC" 1045	336		33	303	$0.00	$330.00
	CALCAARB "0" 1045	448		0	448	$0.00	$0.00
	DETERGENT 10	52		0	52	$0.00	$0.00
	BARITE	12080	30	1231	10849	$585.00	$24,004.50
	CALC CHLORIDE	393		0	393	$0.00	$0.00
	MAGNA FIBER	32		8	24	$0.00	$1,024.00
	MICA FINE	239		39	200	$0.00	$1,443.00
	SAWDUST	1400		525	875	$0.00	$3,412.50
	CALC CARB "FG"	0		0	0	$0.00	$0.00
	TRUDRILL	423		101	322	$0.00	$90,900.00
	NATURAL GEL	240		240	0	$0.00	$4,334.40
40	TRUVIS	480		218	262	$0.00	$67,274.80
	HYMUL	32		0	32	$0.00	$0.00
	XCD	160		0	160	$0.00	$0.00
	INTERDRILL S	800		55	745	$0.00	$4,060.65
44	EMUL	48		13	35	$0.00	$14,820.00
45	INTER FL	48		5	43	$0.00	$7,650.00
46	OW	68		24	44	$0.00	$38,160.00
	ZINC CARB	80		0	80	$0.00	$0.00
	BARITE 10	720		720	0	$0.00	$12,384.00
	HSO 600 10	29		0	29	$0.00	$0.00
	PTS 200 10	8		0	8	$0.00	$0.00
	FIBER FLUID "F"	500		50	450	$0.00	$5,100.00
	FIBER FLUID "C"	300		15	285	$0.00	$1,530.00
					TOTALS	$585.00	$550,308.75

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'	DATE 19-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #CSE	REPORT No 57
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. DENNIS BROWN	SPUD DATE 12-Jan-97

ASSEMBLY

			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	105	PUMP #1	152X254	OPPOSITE DP	42
BIT NUMBER	3CRR		508.0	263	HOLE	101	M3/STK	0.0138	OPPOSITE DC	76
DRILL PIPE #1(mm)	127.0	1109	339.7	1007	TOTAL	206	PUMP #2	152X254	CIRC. TIME	78
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	122	M3/STK	0.0138	BOTTOMS UP	34
COLLAR #1(mm)	168.0	27					S.P.M.	192		
COLLAR #2(mm)	228.0	106					M3/MIN	2.6535		

HOLE DATA

		CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - INVERT	FLOWLINE WT.	OFF	OFF	kg/m3	MUD WT.	1200 Kg/m3
HOLE COND.-GOOD TO FISH	UNDERFLOW WT.			kg/m3	VISCOSITY	75-90 @ 50C s/L
DEVIATION-33.5 @ 1389 204.8 AZ	OVERFLOW WT.			kg/m3	FILTRATE	<10 cm3/30 min.
CURRENT OP.-CIRC WASH PIPE	UNDERFLOW RT.			m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XXX CENTRIFUGE

110x110x110 110-110-110 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES

TIME SAMPLE TAKEN			10:30	**DAILY PRODUCT USAGE**							
SAMPLE FROM			FLOWLINE	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
PRESENT DEPTH			1312								
FLOWLINE TEMPERATURE (C)			51.7								
DENSITY			1240								
FUNNEL VISCOSITY (s/L)			93								
600 READING @ 60 C			95								
300 READING			70								
APPARENT VISCOSITY (mPa.s)			47.5								
PLASTIC VISCOSITY (mPa.s)			25								
YIELD POINT (Pa)			22.5								
GELS 0/10 min. (Pa)			13/13.5								
pH	STRIP	METER									
FILTRATE @ 90C (cm3)		HTHP X	4								
FILTER CAKE (mm)			2								
Pom			2.2								
EXCESS LIME KG/M3			8.14								
TOTAL HARDNESS (mg/l)		Ca									
CHLORIDES (mg/L)	X	NaCl	273,577								
SAND CONTENT %	X	FR.	0.7								
SOLIDS CONTENT %	X	FR.	15								
OIL CONTENT %			75.0								
WATER CONTENT %		X	10.0								
ELECTRICAL STABILITY			1220	PREVIOUS COST		$561,723.75			STARTING VOLUME		344
OIL WATER RATIO			88/12	DAILY COST		$585.00			VOL. BUILT		
CaCl2 w/w%			32.67	CUM. COST		$562,308.75			VOL. LOST ON SURFACE		
"n"			0.14	CUM. ENG. COST		$34,080.00			VOL. LOST IN SUB SURFACE		
"k"			20.54	Discounted/ Total		$281,154.38	$315,234.38		END VOLUME		344
									CUM. VOL BUILT.		22

COMMENTS ATTEMPTING TO WASH OVER FISH

MAINTAIN

ONCE BACK CIRCULATING ADD 15 SACKS OF LIME AT 10 MINUTES PER SACK

VISCOSITY @ 50-54 S/L @ 65+DEG C FLOWLINE TEMP WITH **TRUVIS** ADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST

DENSITY AT 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE. **RUN THE CENTRIFUGE ONCE** PER TOUR OVER FULL CIRCULATIONS.

ADD **INTERDRILL "OW"** @ 1 BBL OVER 2 CIRCULATIONS **IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER**

TRANSFER TRUDRILL AS REQ.D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS

ADD INTERDRILL "OW" @ 1 BBL OVER 2 CIRCULATIONS IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER

ADD **5 SX OF INTERDRILL 'S' AND 5 SACKS OF FIBER FLUID (FINE)** PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	21-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #25E		REPORT No	58
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. DENNIS BROWN		SPUD DATE	12-Jan-97

ASSEMBLY

			CASING		**MUD VOL. (M3)**		**PUMP OUTPUT**		**ANNULAR VEL. m/min**	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	151	PUMP #1	152X254	OPPOSITE DP	43
BIT NUMBER	3CRR		508.0	263	HOLE	79	M3/STK	0.0138	OPPOSITE DC	
DRILL PIPE #1(mm)	127.0	1034	339.7	1007	TOTAL	230	PUMP #2	152X254	CIRC. TIME	82
DRILLPIPE #2(mm)			LINER	TOP/BOT.	STAND BY	122	M3/STK	0.0138	BOTTOMS UP	25
COLLAR #1(mm)							S.P.M.	204		
COLLAR #2(mm)							M3/MIN	2.8193		

HOLE DATA	**CENTRIFUGE**			**DRILLING FLUID SPECIFICATIONS**	
MUD TYPE - INVERT	FLOWLINE WT. 0FF	OFF	kg/m3	MUD WT.	1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.		kg/m3	VISCOSITY	75-90 @ 50C s/L
DEVIATION-	OVERFLOW WT.		kg/m3	FILTRATE	<10 cm3/30 min.
CURRENT OP.-CIRC TO CEMENT	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XX CENTRIFUGE

110x110x110 110-110-110 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES

TIME SAMPLE TAKEN			15:15	**DAILY PRODUCT USAGE**							
SAMPLE FROM			FLOWLINE	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
PRESENT DEPTH			1034								
FLOWLINE TEMPERATURE (C)			43.3	BARITE	12080		80	1311	10769	$1,560.00	$25,564.50
DENSITY			1230	SAWDUST	1400		50	625	775	$325.00	$4,062.50
FUNNEL VISCOSITY (s/L)			115								
600 READING @ 60 C			88								
300 READING			65								
APPARENT VISCOSITY (mPa.s)			44								
PLASTIC VISCOSITY (mPa.s)			23								
YIELD POINT (Pa)			21								
GELS 0/10 min. (Pa)			12.5/14								
pH	STRIP		METER								
FILTRATE @ 90C (cm3)			HTHP X 4								
FILTER CAKE (mm)			2								
Pom			2.2								
EXCESS LIME KG/M3			8.14								
TOTAL HARDNESS (mg/l)		Ca									
CHLORIDES (mg/L)	X	NaCl	239,914								
SAND CONTENT %	X	FR.	0.75								
SOLIDS CONTENT %	X	FR.	14								
OIL CONTENT %			74.0								
WATER CONTENT %	X		12.0								
ELECTRICAL STABILITY			1070	PREVIOUS COST		$562,308.75			STARTING VOLUME		344
OIL WATER RATIO			86.0/14.0	DAILY COST		$1,885.00			VOL. BUILT		13
CaCl2 w/w%			29.44	CUM. COST		$564,518.75			VOL. LOST ON SURFACE		
"n"			0.14	CUM. ENG. COST		$35,040.00			VOL. LOST ON SUB SURFACE		5
"K"			29.04	Discounted/ Total		$282,259.38	$317,299.38		END VOLUME		352
									CUM. VOL BUILT.		35

COMMENTS SET 2ND CEMENT PLUG SYSTEM TAKEN ON S L

MAINTAIN

ONCE BACK CIRCULATING ADD 15 SACKS OF LIME AT 10 MINUTES PER SAC **,ADD 1 DRUM OF OW.**

VISCOSITY AT 75-90S/L AT 65C FLOWLINE TEMP WITH TRUVISADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST

DENSITY AT 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE. **RUN THE CENTRIFUGE ONCE** PER TOUR OVER FULL CIRCULATIONS.

ADD **INTERDRILL "OW"** @ 1 BBL OVER 2 CIRCULATIONS **IF** SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER

TRANSFER TRUDRILL AS REQ,D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK

15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS

ADD **5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID** (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL

MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

SYSTEM HAS TAKEN ON SOME WATER ADD 40 SX OF CALCIUM CHLORIDE, MIX THROUGH HOPPER AT 5 MIN/SACK.

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	22-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #2SE		REPORT No	59
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. DENNIS BROWN		SPUD DATE	12-Jan-97

ASSEMBLY		CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	163	PUMP #1	152X254	OPPOSITE DP	44
BIT NUMBER	4C		508.0	263	HOLE	73	M3/STK	0.0138	OPPOSITE DC	83
DRILL PIPE #1(mm)	127.0	819	339.7	1007	TOTAL	236	PUMP #2	152X254	CIRC. TIME	81
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	122	M3/STK	0.0138	BOTTOMS UP	22
COLLAR #1(mm)	168.0	27					S.P.M.	210		
COLLAR #2(mm)	228.0	87					M3/MIN	2.9022		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - INVERT	FLOWLINE WT.	OFF	kg/m3	MUD WT.	1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.		kg/m3	VISCOSITY	75-90 @ 50C s/L
DEVIATION-	OVERFLOW WT.		kg/m3	FILTRATE	<10 cm3/30 min
CURRENT OP.-DRILLING	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XX CENTRIFUGE

110x110x110 110-110-110 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES		DAILY PRODUCT USAGE							
TIME SAMPLE TAKEN	19:45	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	1043								
FLOWLINE TEMPERATURE (C)	51.7	BARITE	12080		50	1361	10719	$975.00	$26,539.50
DENSITY	1230	LIME	864		14	184	680	$217.00	$2,852.00
FUNNEL VISCOSITY (s/L)	84	CALCIUM CHL	393		40	40	353	$2,240.00	$2,240.00
600 READING @ 60 C	85	TRUDRILL	423		7	108	315	$6,300.00	$97,200.00
300 READING	64	EMUL	48		1	14	34	$1,140.00	$15,960.00
APPARENT VISCOSITY (mPa.s)	42.5	OW	68		1	25	43	$1,590.00	$39,750.00
PLASTIC VISCOSITY (mPa.s)	21								
YIELD POINT (Pa)	21.5								
GELS 0/10 min. (Pa)	12.0/13.5								
pH STRIP	METER								
FILTRATE @ 90C (cm3)	HTHP X 4								
FILTER CAKE (mm)	2								
Pom	3.2								
EXCESS LIME KG/M3	11.84								
TOTAL HARDNESS (mg/l) Ca									
CHLORIDES (mg/L) X NaCl	271,821								
SAND CONTENT % X FR.	1								
SOLIDS CONTENT % X FR.	14								
OIL CONTENT %	73.0								
WATER CONTENT % X	13.0	PREVIOUS COST	$564,518.75				STARTING VOLUME		344
ELECTRICAL STABILITY	980	DAILY COST	$12,462.00				VOL. BUILT		5
OIL WATER RATIO	85.0/15.0	CUM. COST	$576,960.75				VOL. LOST ON SURFACE		1
CaCl2 w/w%	32.50	CUM. ENG. COST	$35,520.00				VOL. LOST ON SUB SURFACE		6
"n"	0.15	Discounted/ Total	$288,490.38	$324,010.38			END VOLUME		342
"K"	18.75						CUM. VOL BUILT.		40

COMMENTS DRILL CEMENT TO 1040M DRILL FORMATION

MAINTAIN

ADD INTERDRILL "OW" @ 1 BBL OVER 2 CIRCULATIONS IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER
VISCOSITY AT 75-90S/L AT 65C FLOWLINE TEMP WITH TRUVISADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE. **RUN THE CENTRIFUGE ONCE** PER TOUR OVER FULL CIRCULATIONS.
ADD 1DRUM OF OW AND 1 DRUM OF EMUL NOW OVER 85 MINUTES
TRANSFER TRUDRILL AS REQ.D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSITY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS

ADD 5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	23-Mar-97
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E		REPORT No	60
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. DENNIS BROWN		SPUD DATE	12-Jan-97

ASSEMBLY			CASING		MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min	
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	145	PUMP #1	152X254	OPPOSITE DP	46
BIT NUMBER	4C		508.0	263	HOLE	84	M3/STK	0.0138	OPPOSITE DC	83
DRILL PIPE #1(mm)	127.0	978	339.7	1007	TOTAL	229	PUMP #2	152X254	CIRC. TIME	79
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	122	M3/STK	0.0138	BOTTOMS UP	25
COLLAR #1(mm)	168.0	27					S.P.M.	210		
COLLAR #2(mm)	228.0	87					M3/MIN	2.9022		

HOLE DATA	CENTRIFUGE			DRILLING FLUID SPECIFICATIONS	
MUD TYPE - INVERT	FLOWLINE WT. running for 1.5	OFF	kg/m3	MUD WT.	1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT.		kg/m3	VISCOSITY	75-90 @ 50C s/L
DEVIATION-1.2 at 1136m	OVERFLOW WT.		kg/m3	FILTRATE	<10 cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT.		m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XX CENTRIFUGE

110x110x110 110-110-110 XX DOUBLE DECK OP. HIGH SPEED SHAKER

MUD PROPERTIES					DAILY PRODUCT USAGE					
TIME SAMPLE TAKEN			21:35	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM			FLOWLINE								
PRESENT DEPTH			1172								
FLOWLINE TEMPERATURE (C)			70.0	OW	68		1	26	42	$1,590.00	$41,340.00
DENSITY			1240	EMUL	48		1	15	33	$1,140.00	$17,100.00
FUNNEL VISCOSITY (s/L)			74	TRUDRILL	423		7	115	308	$6,300.00	$103,500.00
600 READING @ 60 C			92								
300 READING			69								
APPARENT VISCOSITY (mPa.s)			46								
PLASTIC VISCOSITY (mPa.s)			23								
YIELD POINT (Pa)			23								
GELS 0/10 min. (Pa)			13/14								
pH	STRIP		METER								
FILTRATE @ 90C (cm3)			HTHP X	4							
FILTER CAKE (mm)				2							
Pom				3.2							
EXCESS LIME KG/M3				11.84							
TOTAL HARDNESS (mg/l)			Ca								
CHLORIDES (mg/L)		X	NaCl	277,659							
SAND CONTENT	%	X	FR.	1.2							
SOLIDS CONTENT	%	X	FR.	15							
OIL CONTENT	%			72.0							
WATER CONTENT	%		X	13.0	PREVIOUS COST	$576,960.75			STARTING VOLUME		344
ELECTRICAL STABILITY				935	DAILY COST	$9,030.00			VOL. BUILT		
OIL WATER RATIO				85.0/15.0	CUM. COST	$586,010.75			VOL. LOST ON SURFACE		2
CaCl2 w/w%				33.85	CUM. ENG. COST	$36,000.00			VOL. LOST ON SUB SURFACE		5
"n"				0.15	Discounted/ Total	$293,005.38	$329,005.38		END VOLUME		337
"K"				20.41					CUM. VOL BUILT.		40

COMMENTS WIPER TRIP AT 1117M GOOD

MAINTAIN

ADD INTERDRILL "OW" @ 1 BBL OVER 2 CIRCULATIONS IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER
VISCOSITY AT 75-90S/L AT 65C FLOWLINE TEMP WITH TRUVISADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE. RUN THE CENTRIFUGE ONCE PER TOUR OVER FULL CIRCULATIONS.
ADD 1DRUM OF OW AND 1 DRUM OF EMUL NOW OVER 85 MINUTES
TRANSFER TRUDRILL AS REQ,D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
TO INCREASE MUD WEIGHT 20KG/M ADD 160 SX OF BARITE AND 1 DRUM OF OW
ADD 5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION	P-66 LAT 60 40' LONG 123 30'			DATE	23-Mar-97				
OPERATOR	RANGER OIL LTD.	CONTRACTOR	CACTUS #26E			REPORT No	60				
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr.	DENNIS BROWN			SPUD DATE	12-Jan-97				
ASSEMBLY		CASING			MUD VOL. (M3)		PUMP OUTPUT		ANNULAR VEL. m/min		
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	145	PUMP #1	152X254	OPPOSITE DP	46	
BIT NUMBER	4C		508.0	263	HOLE	84	M3/STK	0.0138	OPPOSITE DC	83	
DRILL PIPE #1(mm)	127.0	976	339.7	1007	TOTAL	229	PUMP #2	152X254	CIRC. TIME	79	
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	122	M3/STK	0.0138	BOTTOMS UP	25	
COLLAR #1(mm)	168.0	27					S.P.M.	210			
COLLAR #2(mm)	228.0	87					M3/MIN	2.9022			
HOLE DATA		CENTRIFUGE					DRILLING FLUID SPECIFICATIONS				
MUD TYPE - INVERT		FLOWLINE WT.	running for 1.5	OFF	kg/m3		MUD WT.			1200 Kg/m3	
HOLE COND.-GOOD		UNDERFLOW WT.			kg/m3		VISCOSITY			75-80 @ 50C s/L	
DEVIATION-1.2 at 1136m		OVERFLOW WT.			kg/m3		FILTRATE			<10 cm3/30 min.	
CURRENT OP.-DRILLING		UNDERFLOW RT.			m3/min		pH				

EQUIPMENT: XX DEGASSER DESILTER DESANDER XX CENTRIFUGE

110x110x110 110-110-110 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES		DAILY PRODUCT USAGE							
TIME SAMPLE TAKEN	21:35	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	1172								
FLOWLINE TEMPERATURE (C)	70.0	OW	68		1	26	42	$1,560.00	$41,340.00
DENSITY	1240	EMUL	48		1	15	33	$1,140.00	$17,100.00
FUNNEL VISCOSITY (s/L)	74	TRUDRILL	423		7	115	308	$6,300.00	$103,500.00
600 READING @ 60 C	92								
300 READING	69								
APPARENT VISCOSITY (mPa.s)	46								
PLASTIC VISCOSITY (mPa.s)	23								
YIELD POINT (Pa)	23								
GELS 0/10 min. (Pa)	13/14								
pH STRIP	METER								
FILTRATE @ 90C (cm3)	HTHP X 4								
FILTER CAKE (mm)	2								
Pom	3.2								
EXCESS LIME KG/M3	11.84								
TOTAL HARDNESS (mg/l) Ca									
CHLORIDES (mg/L) X NaCl	277,659								
SAND CONTENT % X FR.	1.2								
SOLIDS CONTENT % X FR.	15								
OIL CONTENT %	72.0								
WATER CONTENT % X	13.0								
ELECTRICAL STABILITY	935	PREVIOUS COST	$576,980.75				STARTING VOLUME		344
OIL WATER RATIO	85.0/15.0	DAILY COST	$9,030.00				VOL. BUILT		
CaCl2 w/w%	33.05	CUM. COST	$586,010.75				VOL. LOST ON SURFACE		2
"n"	0.15	CUM. ENG. COST	$36,000.00				VOL. LOST ON SUB SURFACE		5
"K"	20.41	Discounted/ Total	$293,005.38	$329,005.38			END VOLUME		337
COMMENTS	WIPER TRIP AT 1117M GOOD						CUM. VOL BUILT.		40

MAINTAIN L

ADD INTERDRILL "OW" @ 1 BBL OVER 2 CIRCULATIONS IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER
VISCOSITY AT 75-90S/L AT 65C FLOWLINE TEMP WITH TRUVISADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE . RUN THE CENTRIFUGE ONCE PER TOUR OVER FULL CIRCULATIONS.
ADD 1DRUM OF OW AND 1 DRUM OF EMUL NOW OVER 85 MINUTES
TRANSFER TRUDRILL AS REQ.D TO BUILD/MAINTAIN VOLUME RECORD ALL TRANSFERS FROM THE 400 BBL TANKS IN THE TOUR BOOK
15 M3 OF TRUDRILL TRANSFERRED FROM 400'S WILL REDUCE DENSTY 10 POINTS 50 SX OF BAR WILL RAISE DENSITY 10 POINTS
TO INCREASE MUD WEIGHT 20KG/M ADD 160 SX OF BARITE AND 1 DRUM OF OW
ADD 5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFLICT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger

DAILY MUD REPORT

WELL NAME	RANGER FT. LIARD P-66	LOCATION P-66 LAT 60 40' LONG 123 30'		DATE	24-Mar-75
OPERATOR	RANGER OIL LTD.	CONTRACTOR CACTUS #26E		REPORT No	61
REPORT FOR Mr.	ART SCHRITT	REPORT FOR Mr. DENNIS BROWN		SPUD DATE	12-Jan-67

ASSEMBLY			CASING		MUD VOL (M3)		PUMP OUTPUT			ANNULAR VEL. m/min
BIT SIZE (mm)	311.0	LENGTH (m)	SIZE (mm)	LENGTH(m)	TANKS	133	PUMP #1	152X254	OPPOSITE DP	46
BIT NUMBER	4C		508.0	263	HOLE	90	M3/STK	0.0138	OPPOSITE DC	83
DRILL PIPE #1(mm)	127.0	1061	339.7	1007	TOTAL	223	PUMP #2	152X254	CIRC. TIME	77
DRILLPIPE #2(mm)	127.0	82	LINER	TOP/BOT.	STAND BY	122	M3/STK	0.0138	BOTTOMS UP	27
COLLAR #1(mm)	168.0	27					S.P.M.	210		
COLLAR #2(mm)	228.0	87					M3/MIN	2.9022		

HOLE DATA	CENTRIFUGE		DRILLING FLUID SPECIFICATIONS	
MUD TYPE - INVERT	FLOWLINE WT. OFF	RIGGED OUT kg/m3	MUD WT.	1200 Kg/m3
HOLE COND.-GOOD	UNDERFLOW WT. 2490	kg/m3	VISCOSITY	65-85s/l at 50C s/L
DEVIATION-1.3 at 1252m 102 AZ	OVERFLOW WT. 1125	kg/m3	FILTRATE	<10 cm3/30 min.
CURRENT OP.-DRILLING	UNDERFLOW RT. 3-4L/MIN	m3/min	pH	

EQUIPMENT: XX DEGASSER DESILTER DESANDER XX CENTRIFUGE

110x110x110 110-110-110 XX DOUBLE DECK OR HIGH SPEED SHAKER

MUD PROPERTIES		DAILY PRODUCT USAGE							
TIME SAMPLE TAKEN	19:30	MATERIALS	MATERIALS RECEIVED TO DATE	RECEIVED LAST 24 HOURS	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST	CUMULATIVE COST
SAMPLE FROM	FLOWLINE								
PRESENT DEPTH	1277								
FLOWLINE TEMPERATURE (C)	75.0	TRUDRILL	423		8	123	300	$7,200.00	$110,700.00
DENSITY	1220	INTERDRILL S	500		5	60	740	$369.15	$4,429.80
FUNNEL VISCOSITY (s/L)	69	EMUL	60		2	17	43	$2,260.00	$19,300.00
600 READING @ 60 C	92	INTER FL	52		1	6	46	$1,530.00	$9,180.00
300 READING	69	OW	80		1	27	53	$1,590.00	$42,930.00
APPARENT VISCOSITY (mPa.s)	46	FIBER FLUID "	500		5	55	445	$510.00	$5,610.00
PLASTIC VISCOSITY (mPa.s)	23								
YIELD POINT (Pa)	23								
GELS 0/10 min. (Pa)	13/15								
pH STRIP / METER									
FILTRATE @ 90C (cm3) / HTHP X	3								
FILTER CAKE (mm)	2								
Pom	3								
EXCESS LIME KG/M3	11.1								
TOTAL HARDNESS (mg/l) / Ca									
CHLORIDES (mg/L) X / NaCl	277,659								
SAND CONTENT % X / FR.	0.75								
SOLIDS CONTENT % X / FR.	14								
OIL CONTENT %	73.0								
WATER CONTENT % X	13.0								
ELECTRICAL STABILITY	915								
OIL WATER RATIO	85.0/15.0								
CaCl2 w/w%	33.85								
"n"	0.15								
"k"	20.41								

		PREVIOUS COST	$586,010.75	STARTING VOLUME	423
		DAILY COST	$13,399.15	VOL. BUILT	
		CUM. COST	$599,409.90	VOL. LOST ON SURFACE	4
		CUM. ENG. COST	$36,480.00	VOL. LOST ON SUB SURFACE	4
		Discounted/ Total	$299,704.95 $336,184.95	END VOLUME	345
				CUM. VOL BUILT.	45

COMMENTS WIPER TRIP TOCSG @ 1258M 1.5M FILL

MAINTAIN

ADD INTERDRILL "OW" @ 1 BBL OVER 2 CIRCULATIONS IF SHALE DROPS OFF WET OR FLUID IS RUNNING OFF THE SHAKER
VISCOSITY AT 75-90S/L AT 65C FLOWLINE TEMP WITH TRUVISADDED AT 10 MIN PER SACK AS PER ENGINEERS REQUEST
DENSITY AT 1200 KG/M3 OR AS REQUIRED BY ADDING BARITE . **RUN THE CENTRIFUGE ONCE** PER TOUR OVER FULL CIRCULATIONS.
ADD 1 DRUM OW AND 3 DRUMS EMUL OVER 150 MINUTES
BUILD VOLUME IF TANKS ARE LESS THAN 100M3 USING INVERT STORED IN 400 BBL TANK 15-20 M3 AS REQUIRED

TO INCREASE MUD WEIGHT 20KG/M ADD 160 SX OF BARITE AND 1 DRUM OF OW
ADD 5 SX OF INTERDRILL "S" AND 5 SACKS OF FIBER FLUID (FINE) PER TOUR ADD COARSE FIBER FLUID IF LOSSES ARE HIGHER THAN NORMAL
MONITOR SURFACE VOLUMES FOR ANY CHANGES THAT MAY INDICATE DOWN HOLE LOSSES OR AN INFLUX

STOCK POINT	GRANDE PRAIRIE (FORMULA)	DOWELL ENGINEER	JOE SMITH	ON LOCATION
PHONE	532-5078	PHONE NUMBER	CAMP RM. # 5	

BUT WE CANNOT ASSUME RESPONSIBILITY FOR ANY LOSS OR ACCIDENT THAT MAY RESULT FROM ITS USE. FURTHERMORE, NOTHING CONTAINED HEREIN SHALL BE CONSIDERED AS A RECOMMENDATION TO USE ANY PRODUCT IN CONFUCT WITH EXISTING PATENTS COVERING ANY MATERIALS OR USE.

Schlumberger Dowell

INVENTORY

WELL NAME RANGER FT. LIARD P-65 | LOCATION LAT 60 40' LONG 123 30' | DATE 24-Mar-75

OPERATOR RANGER OIL LTD. | CONTRACTOR CACTUS #25E | REPORT No 61

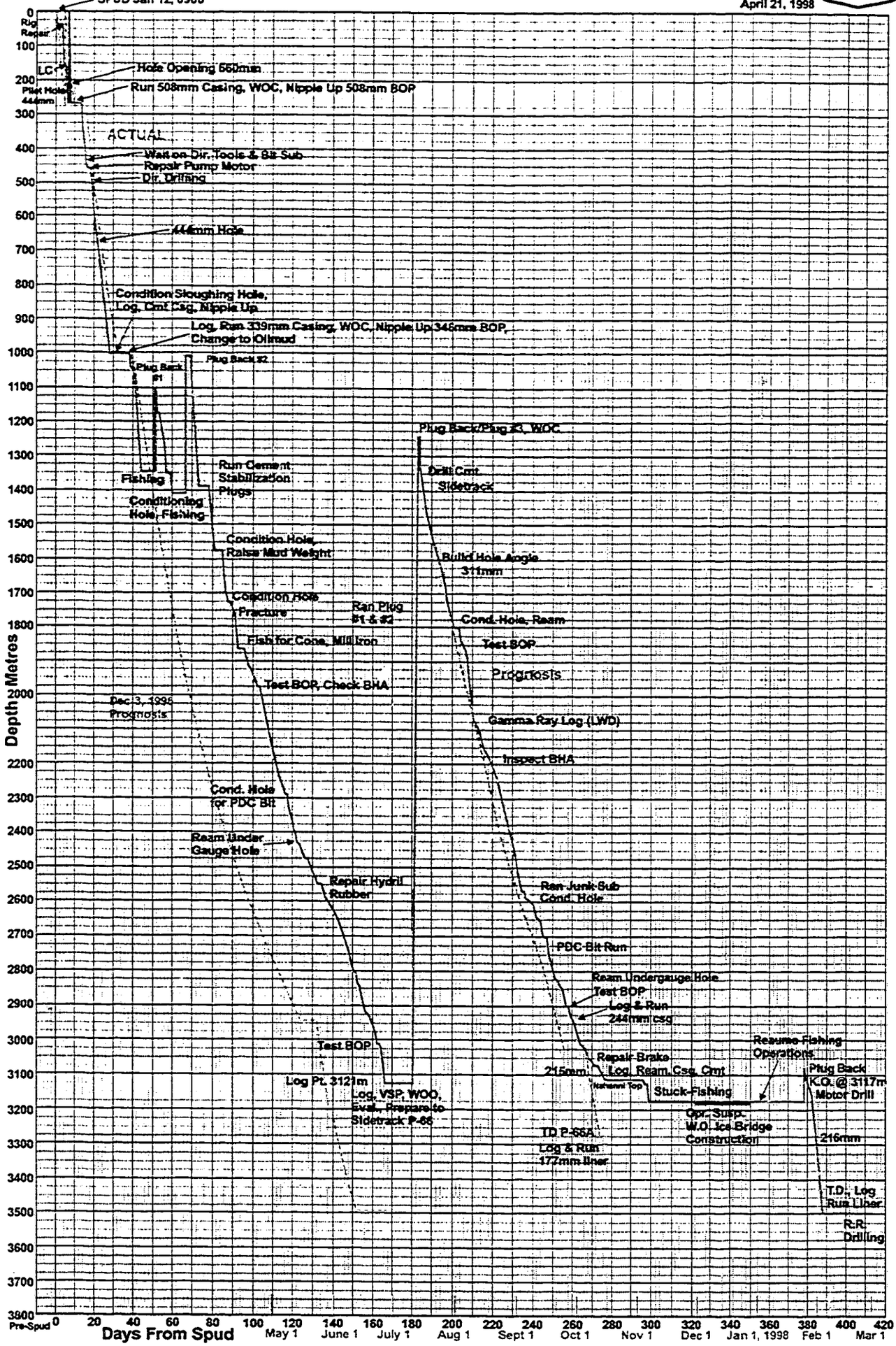
REPORT FOR Mr. ART SCHRITT | REPORT FOR Mr. DENNIS BROWN | SPUD DATE 12-Jan-67

PRODUCTS	MATERIALS RECEIVED TO DATE	MATERIALS USED LAST 24 HOURS	MATERIALS USED TO DATE	MATERIAL REMAINING ON LOCATION	DAILY COST D/C	CUMULATIVE COST CUM/C
CAUSTIC 10	360		177	183	$0.00	$10,266.00
X-CIDE 207 10	96		0	96	$0.00	$0.00
NAT BENTONITE 10	1960		1790	170	$0.00	$28,478.90
LIGNITE 1	56		18	38	$0.00	$360.00
LIME 1	864		184	680	$0.00	$2,852.00
SODA ASH 10	40		4	36	$0.00	$144.00
BICARB 10	50		16	34	$0.00	$1,264.00
MICA COARSE 103	48		30	18	$0.00	$1,110.00
IDF-FLR 1	7		0	7	$0.00	$0.00
VISPLEX II 1	541		541	0	$0.00	$198,547.00
ID FREE 208L 10	4		0	4	$0.00	$0.00
CELLOPHANE 103	100		34	66	$0.00	$1,428.00
MICA MEDIUM 104	110		0	110	$0.00	$0.00
FLOPLEX 1	400		135	265	$0.00	$25,920.00
P. SEAL "C" 10	50		50	0	$0.00	$1,900.00
P. SEAL "M" 104	16		16	0	$0.00	$608.00
CALCARB "325" 104	560		122	438	$0.00	$1,220.00
CALCARB "SC" 104	336		33	303	$0.00	$330.00
CALCAARB "0" 104	448		0	448	$0.00	$0.00
DETERGENT 10	52		0	52	$0.00	$0.00
BARITE	12720		1361	11359	$0.00	$26,539.50
CALCIUM CHLORIDE	393		40	353	$0.00	$2,240.00
MAGNA FIBER	32		8	24	$0.00	$1,024.00
MICA FINE	239		39	200	$0.00	$1,443.00
SAWDUST	1400		625	775	$0.00	$4,062.50
~~CALS CARB "C"~~	0		0	0	$0.00	$0.00
TRUDRILL	423	8	123	300	$7,200.00	$110,700.00
NATURAL GEL	240		240	0	$0.00	$4,334.40
TRUVIS	600		218	382	$0.00	$67,274.80
HYMUL	32		0	32	$0.00	$0.00
XCD	160		0	160	$0.00	$0.00
INTERDRILL S	800	5	60	740	$369.15	$4,429.80
EMUL	60	2	17	43	$2,280.00	$19,300.00
INTER FL	52	1	6	46	$1,530.00	$9,180.00
OW	80	1	27	53	$1,590.00	$42,930.00
ZINC CARB	80		0	80	$0.00	$0.00
BARITE 10	720		720	0	$0.00	$12,384.00
HSC 500 10	29		0	29	$0.00	$0.00
PTS 200 10	8		0	8	$0.00	$0.00
FIBER FLUID "F"	500	5	55	445	$510.00	$5,610.00
FIBER FLUID "C"	300		15	285	$0.00	$1,530.00
				TOTALS	$13,479.15	$587,409.90

RANGER FORT LIARD P-66 & P-66A DRILLING TIME CURVE

RANGER OIL

April 21, 1998



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HALLIBURTON®

HALLIBURTON ENERGY SERVICES

333 - 5th Avenue Southwest / Suite 1000 / Calgary, Alberta Canada T2P 3B6 / Tel: 403-231-9300 / Fax: 403-231-9420

RANGER OIL LIMITED

RANGER FORT LIARD P-66-A
IN UNIT P SECTION 66

POST WELL REPORT

by

SHERRY CLAUSEN
Halliburton Drilling Systems
1000, 333 5th Avenue S.W.
Calgary, Alberta
(403) 231-9488

Contents

Surveys
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Distribution

MR. DON SORKILMO

Distribution (HDS)

Lino Vella-Gregory
Garry Burns
Brian Dewald
Leon Ceh
Ken Stenerson

Job Numbers

Calgary: 96D164
Edmonton: 97D006

FEB. 18, 1998
UID:300P666040123300

Halliburton Drilling Systems

Survey Report

Job No: 97d007s4
Date: 12/02/98
Time: 3:14 pm
Wellpath ID: 97d007s4
Date Created: 27/01/97
Last Revision: 12/02/98

Calculated using the Minimum Curvarture Method
Computed using PDS VER2.2.4
Vertical Section Plane: 225.00 deg.

Survey Reference: WELLHEAD
Reference World Coordinates: Lat. 60.35.44 N - Lon. 123.41.25 W
Reference GRID System: UTM Zone: 10, Cent. Merid.: 123.0.0 W
Reference GRID Coordinates: (m.): 6718093.95 N 462189.98 E
North Aligned to: GRID NORTH
Vertical Section Reference: WELLHEAD
Closure Reference: WELLHEAD
TVD Reference: WELLHEAD

RANGER OIL LIMITED
RANGER FORT LIARD P - 66 - A
IN UNIT P SECTION 66
UID: 300P666040123300

Measured Depth (m)	Incl (deg.)	Drift Dir. (deg.)	Course Length (m)	TVD (m)	Vertical Section (m)	Subsea Depth (m)	TOTAL Rectangular Offsets (m)	(m)	DLS (dg/30m)
0.00	0.00	0.00	0.00	0.00	0.00	406.00	0.00N	0.00E	0.00
First Single-Shot Directional Survey 199m									
199.00	0.50	36.40	199.00	199.00	-0.86	207.00	0.70N	0.52E	0.08
226.00	1.75	25.00	27.00	225.99	-1.36	180.01	1.17N	0.76E	1.40
253.00	1.50	20.40	27.00	252.98	-2.07	153.02	1.87N	1.06E	0.31
283.00	1.75	67.40	30.00	282.97	-2.85	123.03	2.42N	1.62E	1.32
312.00	1.90	70.40	29.00	311.96	-3.70	94.04	2.75N	2.48E	0.18
343.00	2.00	70.40	31.00	342.94	-4.65	63.06	3.10N	3.47E	0.10
374.00	2.25	59.40	31.00	373.92	-5.73	32.08	3.59N	4.51E	0.46
403.00	3.00	68.40	29.00	402.89	-6.97	3.11	4.16N	5.70E	0.88
433.00	3.30	70.90	30.00	432.84	-8.47	-26.84	4.73N	7.25E	0.33
MWD SURVEY'S									
451.00	4.40	71.30	18.00	450.80	-9.56	-44.80	5.12N	8.39E	1.83
460.00	4.30	71.10	9.00	459.77	-10.17	-53.77	5.34N	9.04E	0.34
470.00	4.30	74.20	10.00	469.75	-10.83	-63.75	5.57N	9.75E	0.70
480.00	4.30	79.10	10.00	479.72	-11.47	-73.72	5.74N	10.48E	1.10
490.00	4.20	87.40	10.00	489.69	-12.05	-83.69	5.83N	11.21E	1.87
499.00	4.10	93.10	9.00	498.67	-12.51	-92.67	5.83N	11.87E	1.41
509.00	4.10	99.30	10.00	508.64	-12.96	-102.64	5.75N	12.58E	1.33
518.00	4.00	107.10	9.00	517.62	-13.29	-111.62	5.60N	13.19E	1.86
528.00	3.80	114.70	10.00	527.60	-13.57	-121.60	5.36N	13.83E	1.66
538.00	3.50	123.60	10.00	537.58	-13.75	-131.58	5.06N	14.38E	1.92
547.00	3.20	129.50	9.00	546.56	-13.82	-140.56	4.74N	14.81E	1.52
557.00	2.80	129.60	10.00	556.55	-13.87	-150.55	4.41N	15.21E	1.20

Halliburton Drilling Systems

Survey Report

Measured Depth (m)	Incl (deg.)	Drift Dir. (deg.)	Course Length (m)	TVD (m)	Vertical Section (m)	Subsea Depth (m)	TOTAL Rectangular Offsets (m)		DLS (dg/30m)
566.00	2.40	130.80	9.00	565.54	-13.91	-159.54	4.15 N	15.52 E	1.35
576.00	2.10	128.60	10.00	575.53	-13.94	-169.53	3.90 N	15.82 E	0.94
586.00	1.90	122.80	10.00	585.52	-14.00	-179.52	3.69 N	16.10 E	0.85
596.00	1.70	107.60	10.00	595.52	-14.10	-189.52	3.56 N	16.39 E	1.55
605.00	1.90	97.90	9.00	604.51	-14.25	-198.51	3.50 N	16.66 E	1.21
614.00	2.00	92.80	9.00	613.51	-14.45	-207.51	3.47 N	16.97 E	0.67
624.00	2.20	88.10	10.00	623.50	-14.71	-217.50	3.47 N	17.33 E	0.79
634.00	2.20	92.00	10.00	633.49	-14.98	-227.49	3.47 N	17.72 E	0.45
644.00	2.20	101.00	10.00	643.49	-15.22	-237.49	3.42 N	18.10 E	1.04
654.00	2.30	103.80	10.00	653.48	-15.43	-247.48	3.34 N	18.48 E	0.45
663.00	2.40	113.60	9.00	662.47	-15.59	-256.47	3.22 N	18.83 E	1.38
673.00	2.50	124.30	10.00	672.46	-15.71	-266.46	3.01 N	19.20 E	1.40
683.00	2.40	130.50	10.00	682.45	-15.76	-276.45	2.75 N	19.54 E	0.85
693.00	2.20	136.30	10.00	692.45	-15.78	-286.45	2.48 N	19.83 E	0.92
702.00	1.90	144.50	9.00	701.44	-15.75	-295.44	2.23 N	20.04 E	1.40
712.00	1.60	151.30	10.00	711.43	-15.68	-305.43	1.98 N	20.20 E	1.09
722.00	1.20	151.40	10.00	721.43	-15.61	-315.43	1.76 N	20.32 E	1.20
731.00	0.80	165.00	9.00	730.43	-15.55	-324.43	1.62 N	20.38 E	1.54
741.00	0.40	183.40	10.00	740.43	-15.49	-334.43	1.52 N	20.39 E	1.32
751.00	0.10	158.00	10.00	750.43	-15.45	-344.43	1.47 N	20.39 E	0.94
760.00	0.30	45.00	9.00	759.43	-15.48	-353.43	1.48 N	20.41 E	1.17
770.00	0.70	53.90	10.00	769.43	-15.57	-363.43	1.54 N	20.48 E	1.22
780.00	0.90	64.60	10.00	779.43	-15.70	-373.43	1.61 N	20.60 E	0.75
789.00	1.00	79.60	9.00	788.43	-15.84	-382.43	1.65 N	20.74 E	0.89
799.00	1.10	111.10	10.00	798.43	-15.95	-392.43	1.63 N	20.92 E	1.73
808.00	1.30	135.40	9.00	807.42	-15.98	-401.42	1.53 N	21.07 E	1.81
818.00	1.40	155.00	10.00	817.42	-15.94	-411.42	1.34 N	21.20 E	1.41
827.00	2.00	182.50	9.00	826.42	-15.78	-420.42	1.08 N	21.24 E	3.32
837.00	2.50	208.80	10.00	836.41	-15.45	-430.41	0.71 N	21.13 E	3.40
847.00	2.80	220.10	10.00	846.40	-14.99	-440.40	0.34 N	20.87 E	1.80
857.00	2.90	219.60	10.00	856.39	-14.50	-450.39	0.04 S	20.55 E	0.31
866.00	2.40	211.50	9.00	865.38	-14.09	-459.38	0.38 S	20.31 E	2.08
876.00	2.10	185.40	10.00	875.37	-13.74	-469.37	0.74 S	20.18 E	3.17
886.00	2.00	153.30	10.00	885.36	-13.55	-479.36	1.08 S	20.24 E	3.41
896.00	2.20	123.50	10.00	895.36	-13.53	-489.36	1.34 S	20.48 E	3.29
905.00	2.70	118.00	9.00	904.35	-13.63	-498.35	1.54 S	20.81 E	1.84
914.00	2.70	110.50	9.00	913.34	-13.78	-507.34	1.71 S	21.20 E	1.18
924.00	2.70	111.50	10.00	923.33	-13.97	-517.33	1.88 S	21.63 E	0.14
934.00	2.50	130.60	10.00	933.32	-14.08	-527.32	2.11 S	22.02 E	2.65

Halliburton Drilling Systems

Survey Report

Measured Depth (m)	Incl (deg.)	Drift Dir. (deg.)	Course Length (m)	TVD (m)	Vertical Section (m)	Subsea Depth (m)	TOTAL Rectangular Offsets (m)	(m)	DLS (dg/30m)
944.00	3.20	153.20	10.00	943.31	-14.01	-537.31	2.50 S	22.31 E	3.93
954.00	3.60	163.70	10.00	953.29	-13.77	-547.29	3.05 S	22.53 E	2.22
963.00	4.40	164.20	9.00	962.27	-13.47	-556.27	3.65 S	22.70 E	2.67
973.00	5.30	170.50	10.00	972.23	-13.01	-566.23	4.48 S	22.88 E	3.13
983.00	5.60	176.90	10.00	982.19	-12.42	-576.19	5.42 S	22.98 E	2.03
989.00	5.50	178.70	6.00	988.16	-12.02	-582.16	6.00 S	23.00 E	1.00
INTERPOLATED 13 3/4 CAS. POINT									
1007.00	5.39	179.13	18.00	1006.08	-10.84	-600.08	7.71 S	23.04 E	0.20
1019.00	4.80	179.30	12.00	1018.03	-10.10	-612.03	8.77 S	23.05 E	1.48
1029.00	4.40	176.80	10.00	1028.00	-9.55	-622.00	9.57 S	23.08 E	1.34
1039.00	4.00	174.50	10.00	1037.97	-9.07	-631.97	10.30 S	23.13 E	1.30
1048.00	3.50	170.40	9.00	1046.95	-8.71	-640.95	10.89 S	23.21 E	1.89
1058.00	3.00	169.30	10.00	1056.93	-8.39	-650.93	11.45 S	23.31 E	1.51
1068.00	2.60	166.80	10.00	1066.92	-8.12	-660.92	11.92 S	23.41 E	1.25
1077.00	2.00	160.40	9.00	1075.91	-7.95	-669.91	12.27 S	23.51 E	2.17
1087.00	1.60	144.50	10.00	1085.91	-7.85	-679.91	12.55 S	23.65 E	1.91
1097.00	1.20	128.50	10.00	1095.91	-7.84	-689.91	12.73 S	23.81 E	1.67
1106.00	1.20	115.70	9.00	1104.90	-7.88	-698.90	12.83 S	23.97 E	0.89
1116.00	1.10	106.10	10.00	1114.90	-7.96	-708.90	12.90 S	24.16 E	0.65
1126.00	1.20	105.30	10.00	1124.90	-8.06	-718.90	12.95 S	24.35 E	0.30
1136.00	1.20	114.10	10.00	1134.90	-8.15	-728.90	13.02 S	24.55 E	0.55
1146.00	1.20	108.80	10.00	1144.90	-8.23	-738.90	13.10 S	24.74 E	0.33
1156.00	1.30	109.60	10.00	1154.89	-8.33	-748.89	13.17 S	24.95 E	0.30
1165.00	1.30	101.40	9.00	1163.89	-8.43	-757.89	13.23 S	25.14 E	0.62
1175.00	1.60	98.00	10.00	1173.89	-8.57	-767.89	13.27 S	25.39 E	0.94
1185.00	1.60	95.40	10.00	1183.88	-8.75	-777.88	13.30 S	25.67 E	0.22
1193.00	1.30	97.90	8.00	1191.88	-8.87	-785.88	13.32 S	25.87 E	1.15
TIE-IN FOR SIDETRACK # 3									
1203.00	1.20	94.50	10.00	1201.88	-9.01	-795.88	13.35 S	26.09 E	0.37
1233.00	1.30	94.10	30.00	1231.87	-9.43	-825.87	13.40 S	26.74 E	0.10
1262.00	1.40	107.80	29.00	1260.86	-9.81	-854.86	13.53 S	27.40 E	0.35
TIE-IN FOR SIDETRACK #4									
1291.00	1.10	112.40	29.00	1289.86	-10.08	-883.86	13.74 S	28.00 E	0.33
1310.00	0.40	110.50	19.00	1308.86	-10.18	-902.86	13.84 S	28.23 E	1.11
1320.00	1.20	117.10	10.00	1318.85	-10.23	-912.85	13.90 S	28.36 E	2.41
INTERPOLATED - KICK OFF POINT									
1327.00	1.66	125.42	7.00	1325.85	-10.26	-919.85	13.99 S	28.50 E	2.16
1329.00	1.80	127.00	2.00	1327.85	-10.27	-921.85	14.02 S	28.55 E	2.22
1339.00	2.50	120.40	10.00	1337.84	-10.35	-931.84	14.23 S	28.87 E	2.22
1349.00	2.90	115.50	10.00	1347.83	-10.49	-941.83	14.45 S	29.28 E	1.38

Halliburton Drilling Systems

Survey Report

Measured Depth (m)	Incl (deg.)	Drift Dir. (deg.)	Course Length (m)	TVD (m)	Vertical Section (m)	Subsea Depth (m)	TOTAL Rectangular Offsets (m)	(m)	DLS (dg/30m)
1358.00	3.10	114.40	9.00	1356.82	-10.65	-950.82	14.65 S	29.71 E	0.69
1368.00	3.20	118.40	10.00	1366.81	-10.83	-960.81	14.89 S	30.20 E	0.72
1378.00	3.00	123.50	10.00	1376.79	-10.96	-970.79	15.17 S	30.67 E	1.02
1388.00	3.20	136.50	10.00	1386.78	-11.00	-980.78	15.51 S	31.08 E	2.19
1398.00	3.60	151.50	10.00	1396.76	-10.91	-990.76	15.99 S	31.42 E	2.92
1408.00	4.40	169.70	10.00	1406.73	-10.60	-1000.73	16.65 S	31.64 E	4.47
1417.00	5.20	182.00	9.00	1415.70	-10.10	-1009.70	17.39 S	31.68 E	4.33
1427.00	6.20	190.40	10.00	1425.65	-9.33	-1019.65	18.38 S	31.57 E	3.90
1436.00	6.90	197.40	9.00	1434.60	-8.45	-1028.60	19.37 S	31.32 E	3.54
1446.00	8.00	205.30	10.00	1444.51	-7.26	-1038.51	20.57 S	30.84 E	4.50
1456.00	9.30	211.40	10.00	1454.40	-5.82	-1048.40	21.89 S	30.13 E	4.77
1465.00	10.70	214.80	9.00	1463.26	-4.29	-1057.26	23.20 S	29.27 E	5.06
1474.00	11.60	217.20	9.00	1472.09	-2.57	-1066.09	24.61 S	28.25 E	3.37
1484.00	12.40	218.80	10.00	1481.87	-0.51	-1075.87	26.24 S	26.96 E	2.60
1494.00	12.60	219.30	10.00	1491.63	1.64	-1085.63	27.93 S	25.60 E	0.68
1503.00	12.80	220.00	9.00	1500.41	3.61	-1094.41	29.45 S	24.34 E	0.84
1513.00	12.90	220.20	10.00	1510.16	5.83	-1104.16	31.15 S	22.91 E	0.33
1523.00	13.30	219.40	10.00	1519.90	8.09	-1113.90	32.89 S	21.46 E	1.32
1533.00	13.70	219.60	10.00	1529.63	10.41	-1123.63	34.69 S	19.97 E	1.21
1543.00	14.50	220.60	10.00	1539.33	12.84	-1133.33	36.56 S	18.40 E	2.51
1553.00	15.10	221.00	10.00	1548.99	15.38	-1142.99	38.49 S	16.73 E	1.83
1562.00	15.80	223.20	9.00	1557.67	17.78	-1151.67	40.27 S	15.12 E	3.04
1572.00	16.70	222.30	10.00	1567.27	20.57	-1161.27	42.32 S	13.22 E	2.80
1582.00	17.50	222.80	10.00	1576.83	23.51	-1170.83	44.49 S	11.24 E	2.44
1592.00	17.90	224.70	10.00	1586.35	26.55	-1180.35	46.68 S	9.13 E	2.11
1602.00	18.10	225.30	10.00	1595.86	29.64	-1189.86	48.87 S	6.95 E	0.82
1612.00	18.10	225.60	10.00	1605.37	32.75	-1199.37	51.05 S	4.73 E	0.28
1621.00	18.60	225.00	9.00	1613.91	35.58	-1207.91	53.04 S	2.72 E	1.78
1631.00	19.70	225.60	10.00	1623.36	38.86	-1217.36	55.35 S	0.39 E	3.35
1640.00	20.60	226.80	9.00	1631.81	41.96	-1225.81	57.49 S	1.85W	3.30
1650.00	21.40	226.00	10.00	1641.14	45.54	-1235.14	59.96 S	4.44W	2.55
1659.00	22.70	226.00	9.00	1649.49	48.92	-1243.49	62.31 S	6.87W	4.33
1668.00	24.10	225.80	9.00	1657.74	52.50	-1251.74	64.80 S	9.44W	4.67
1677.00	25.90	226.70	9.00	1665.90	56.30	-1259.90	67.43 S	12.19W	6.13
1687.00	27.60	226.80	10.00	1674.83	60.80	-1268.83	70.51 S	15.47W	5.10
1697.00	28.80	226.80	10.00	1683.64	65.52	-1277.64	73.75 S	18.91W	3.60
1707.00	29.60	227.20	10.00	1692.37	70.40	-1286.37	77.07 S	22.48W	2.47
1717.00	30.50	226.90	10.00	1701.03	75.40	-1295.03	80.49 S	26.15W	2.74
1727.00	31.20	226.50	10.00	1709.61	80.53	-1303.61	84.00 S	29.88W	2.19

Halliburton Drilling Systems

Survey Report

Measured Depth (m)	Incl (deg.)	Drift Dir. (deg.)	Course Length (m)	TVD (m)	Vertical Section (m)	Subsea Depth (m)	TOTAL Rectangular Offsets (m)	(m)	DLS (dg/30m)
1736.00	32.50	226.60	9.00	1717.26	85.27	-1311.26	87.27 S	33.32W	4.34
1746.00	33.80	226.70	10.00	1725.63	90.74	-1319.63	91.02 S	37.30W	3.90
1755.00	35.10	226.20	9.00	1733.05	95.83	-1327.05	94.53 S	40.99W	4.43
1764.00	36.10	225.50	9.00	1740.37	101.07	-1334.37	98.18 S	44.75W	3.60
1774.00	37.20	224.00	10.00	1748.39	107.04	-1342.39	102.42 S	48.95W	4.25
1784.00	38.40	223.50	10.00	1756.29	113.16	-1350.29	106.85 S	53.19W	3.72
1793.00	39.60	223.80	9.00	1763.29	118.83	-1357.29	110.95 S	57.10W	4.05
1803.00	40.80	225.00	10.00	1770.93	125.28	-1364.93	115.56 S	61.61W	4.28
1813.00	41.60	223.90	10.00	1778.45	131.87	-1372.45	120.26 S	66.23W	3.24
1826.00	43.10	224.50	13.00	1788.06	140.62	-1382.06	126.54 S	72.33W	3.58
1836.00	43.40	224.20	10.00	1795.34	147.47	-1389.34	131.44 S	77.12W	1.09
1847.00	43.40	225.40	11.00	1803.33	155.03	-1397.33	136.80 S	82.45W	2.25
1857.00	43.70	224.70	10.00	1810.58	161.92	-1404.58	141.67 S	87.32W	1.70
1866.00	44.60	225.90	9.00	1817.04	168.19	-1411.04	146.08 S	91.78W	4.09
1876.00	44.90	225.60	10.00	1824.14	175.23	-1418.14	150.99 S	96.82W	1.10
1885.00	45.70	226.40	9.00	1830.47	181.62	-1424.47	155.43 S	101.42W	3.27
1895.00	46.20	228.20	10.00	1837.42	188.81	-1431.42	160.30 S	106.71W	4.16
1904.00	46.50	228.80	9.00	1843.64	195.31	-1437.64	164.62 S	111.58W	1.76
1914.00	46.80	228.50	10.00	1850.50	202.56	-1444.50	169.42 S	117.04W	1.11
1923.00	47.10	229.40	9.00	1856.65	209.12	-1450.65	173.74 S	122.00W	2.41
1933.00	47.50	231.30	10.00	1863.43	216.44	-1457.43	178.43 S	127.66W	4.36
1942.00	48.40	231.40	9.00	1869.46	223.08	-1463.46	182.61 S	132.88W	3.01
1952.00	48.50	231.20	10.00	1876.09	230.52	-1470.09	187.28 S	138.72W	0.54
1962.00	48.60	231.20	10.00	1882.71	237.97	-1476.71	191.98 S	144.56W	0.30
1971.00	49.00	231.60	9.00	1888.64	244.70	-1482.64	196.21 S	149.85W	1.67
1981.00	48.50	231.70	10.00	1895.23	252.17	-1489.23	200.87 S	155.75W	1.52
1990.00	47.90	231.70	9.00	1901.23	258.83	-1495.23	205.03 S	161.02W	2.00
2000.00	48.00	232.60	10.00	1907.93	266.20	-1501.93	209.58 S	166.88W	2.03
2010.00	48.30	232.40	10.00	1914.60	273.59	-1508.60	214.12 S	172.79W	1.00
2019.00	47.80	232.30	9.00	1920.61	280.22	-1514.61	218.21 S	178.09W	1.69
2028.00	47.40	231.30	9.00	1926.68	286.82	-1520.68	222.32 S	183.31W	2.80
2038.00	47.70	231.30	10.00	1933.43	294.16	-1527.43	226.93 S	189.07W	0.90
2048.00	47.90	230.50	10.00	1940.15	301.53	-1534.15	231.60 S	194.82W	1.88
2065.00	47.40	229.60	17.00	1951.60	314.04	-1545.60	239.67 S	204.45W	1.47
2075.00	46.50	229.30	10.00	1958.43	321.33	-1552.43	244.42 S	210.00W	2.78
2084.00	45.90	228.50	9.00	1964.66	327.81	-1558.66	248.69 S	214.90W	2.78
2094.00	46.70	229.80	10.00	1971.57	335.02	-1565.57	253.42 S	220.37W	3.70
2104.00	47.50	230.20	10.00	1978.37	342.31	-1572.37	258.13 S	225.98W	2.56
2113.00	47.40	231.40	9.00	1984.46	348.91	-1578.46	262.32 S	231.12W	2.97

Halliburton Drilling Systems

Survey Report

Measured Depth (m)	Incl (deg.)	Drift Dir. (deg.)	Course Length (m)	TVD (m)	Vertical Section (m)	Subsea Depth (m)	TOTAL Rectangular Offsets (m)	(m)	DLS (dg/30m)
2123.00	47.20	230.50	10.00	1991.24	356.22	-1585.24	266.95 S	236.82W	2.07
2133.00	47.20	230.80	10.00	1998.04	363.52	-1592.04	271.60 S	242.50W	0.66
2142.00	47.60	231.50	9.00	2004.13	370.11	-1598.13	275.76 S	247.66W	2.17
2152.00	47.80	232.60	10.00	2010.86	377.45	-1604.86	280.30 S	253.49W	2.51
2162.00	46.90	232.70	10.00	2017.63	384.74	-1611.63	284.77 S	259.34W	2.71
2171.00	45.90	232.90	9.00	2023.84	391.19	-1617.84	288.71 S	264.53W	3.37
2181.00	46.00	233.00	10.00	2030.79	398.31	-1624.79	293.04 S	270.26W	0.37
2191.00	46.40	233.90	10.00	2037.71	405.45	-1631.71	297.34 S	276.06W	2.29
2201.00	46.60	232.90	10.00	2044.60	412.63	-1638.60	301.66 S	281.88W	2.26
2211.00	46.20	233.00	10.00	2051.49	419.80	-1645.49	306.02 S	287.66W	1.22
2221.00	45.60	232.10	10.00	2058.45	426.92	-1652.45	310.39 S	293.37W	2.65
2231.00	45.00	231.60	10.00	2065.49	433.98	-1659.49	314.78 S	298.95W	2.09
2240.00	44.40	231.80	9.00	2071.88	440.26	-1665.88	318.70 S	303.92W	2.05
2249.00	43.90	230.20	9.00	2078.34	446.50	-1672.34	322.65 S	308.79W	4.07
2259.00	43.60	228.70	10.00	2085.57	453.39	-1679.57	327.14 S	314.05W	3.24
2269.00	43.90	227.90	10.00	2092.79	460.29	-1686.79	331.74 S	319.21W	1.89
2278.00	44.90	226.60	9.00	2099.22	466.59	-1693.22	336.02 S	323.83W	4.51
2288.00	46.10	226.00	10.00	2106.23	473.72	-1700.23	340.95 S	328.99W	3.82
2298.00	47.40	225.40	10.00	2113.08	481.00	-1707.08	346.03 S	334.20W	4.11
2307.00	48.00	225.70	9.00	2119.14	487.66	-1713.14	350.69 S	338.96W	2.13
2317.00	48.00	225.50	10.00	2125.83	495.09	-1719.83	355.89 S	344.27W	0.45
2327.00	47.70	226.00	10.00	2132.54	502.50	-1726.54	361.07 S	349.58W	1.43
2336.00	47.60	226.70	9.00	2138.60	509.15	-1732.60	365.66 S	354.39W	1.76
2346.00	47.10	227.50	10.00	2145.38	516.50	-1739.38	370.67 S	359.78W	2.32
2356.00	46.60	227.80	10.00	2152.22	523.79	-1746.22	375.58 S	365.17W	1.64
2365.00	46.10	228.60	9.00	2158.43	530.29	-1752.43	379.92 S	370.02W	2.55
2375.00	45.70	227.40	10.00	2165.39	537.46	-1759.39	384.73 S	375.36W	2.85
2384.00	45.20	226.70	9.00	2171.70	543.87	-1765.70	389.10 S	380.05W	2.35
2393.00	45.30	226.30	9.00	2178.04	550.26	-1772.04	393.50 S	384.69W	1.00
2403.00	45.70	224.50	10.00	2185.05	557.39	-1779.05	398.50 S	389.77W	4.03
2419.00	46.30	224.10	16.00	2196.16	568.90	-1790.16	406.74 S	397.81W	1.25
2429.00	46.80	223.50	10.00	2203.04	576.16	-1797.04	411.98 S	402.83W	1.99
2439.00	46.80	224.10	10.00	2209.89	583.45	-1803.89	417.24 S	407.88W	1.31
2448.00	46.30	224.10	9.00	2216.07	589.98	-1810.07	421.93 S	412.42W	1.67
2457.00	46.00	225.50	9.00	2222.31	596.47	-1816.31	426.54 S	417.00W	3.51
2467.00	45.70	225.90	10.00	2229.28	603.64	-1823.28	431.55 S	422.13W	1.25
2477.00	45.40	226.80	10.00	2236.28	610.78	-1830.28	436.48 S	427.30W	2.13
2487.00	45.50	228.20	10.00	2243.29	617.90	-1837.29	441.29 S	432.55W	3.01
2496.00	45.50	228.20	9.00	2249.60	624.31	-1843.60	445.57 S	437.34W	0.00

Halliburton Drilling Systems

Survey Report

Measured Depth (m)	Incl (deg.)	Drift Dir. (deg.)	Course Length (m)	TVD (m)	Vertical Section (m)	Subsea Depth (m)	TOTAL Rectangular Offsets (m)	(m)	DLS (dg/30m)
2506.00	45.40	228.10	10.00	2256.62	631.42	-1850.62	450.33 S	442.64W	0.37
2516.00	45.60	229.70	10.00	2263.63	638.54	-1857.63	455.01 S	448.02W	3.48
2525.00	45.60	229.40	9.00	2269.92	644.95	-1863.92	459.19 S	452.91W	0.71
2535.00	45.50	229.00	10.00	2276.93	652.07	-1870.93	463.85 S	458.32W	0.91
2544.00	45.30	230.30	9.00	2283.25	658.46	-1877.25	468.00 S	463.20W	3.16
2555.00	45.20	230.30	11.00	2290.99	666.23	-1884.99	472.99 S	469.21W	0.27
2564.00	44.80	230.20	9.00	2297.35	672.57	-1891.35	477.06 S	474.10W	1.35
2574.00	44.80	229.00	10.00	2304.45	679.60	-1898.45	481.62 S	479.47W	2.54
2583.00	45.30	228.10	9.00	2310.81	685.95	-1904.81	485.84 S	484.24W	2.70
2593.00	45.90	227.10	10.00	2317.80	693.09	-1911.80	490.66 S	489.52W	2.80
2603.00	46.70	225.50	10.00	2324.71	700.32	-1918.71	495.65 S	494.74W	4.22
2612.00	46.70	224.10	9.00	2330.89	706.87	-1924.89	500.30 S	499.36W	3.40
2622.00	46.50	223.50	10.00	2337.76	714.13	-1931.76	505.55 S	504.39W	1.44
2632.00	46.60	224.10	10.00	2344.63	721.39	-1938.63	510.79 S	509.41W	1.34
2641.00	46.30	224.50	9.00	2350.84	727.91	-1944.84	515.45 S	513.97W	1.39
2651.00	45.70	223.80	10.00	2357.78	735.10	-1951.78	520.61 S	518.98W	2.35
2660.00	44.90	223.40	9.00	2364.11	741.50	-1958.11	525.25 S	523.39W	2.83
2670.00	44.30	223.30	10.00	2371.23	748.52	-1965.23	530.35 S	528.21W	1.81
2680.00	44.30	224.70	10.00	2378.39	755.50	-1972.39	535.38 S	533.06W	2.93
2689.00	44.30	224.70	9.00	2384.83	761.79	-1978.83	539.84 S	537.48W	0.00
2699.00	44.50	225.30	10.00	2391.98	768.78	-1985.98	544.79 S	542.43W	1.40
2709.00	44.60	225.80	10.00	2399.10	775.80	-1993.10	549.70 S	547.44W	1.09
2718.00	44.70	225.40	9.00	2405.50	782.12	-1999.50	554.13 S	551.96W	0.99
2728.00	44.80	226.60	10.00	2412.61	789.16	-2006.61	559.02 S	557.02W	2.55
2738.00	45.10	227.60	10.00	2419.68	796.22	-2013.68	563.83 S	562.20W	2.30
2747.00	45.40	228.00	9.00	2426.02	802.60	-2020.02	568.12 S	566.93W	1.38
2756.00	45.40	229.30	9.00	2432.34	809.00	-2026.34	572.36 S	571.74W	3.09
2766.00	44.80	230.00	10.00	2439.40	816.06	-2033.40	576.94 S	577.14W	2.34
2776.00	43.80	229.30	10.00	2446.56	823.02	-2040.56	581.46 S	582.46W	3.34
2785.00	43.00	229.80	9.00	2453.09	829.18	-2047.09	585.48 S	587.17W	2.90
2795.00	42.50	227.90	10.00	2460.44	835.96	-2054.44	589.94 S	592.28W	4.15
2804.00	42.20	228.20	9.00	2467.09	842.01	-2061.09	593.99 S	596.79W	1.21
2814.00	42.20	227.00	10.00	2474.50	848.72	-2068.50	598.52 S	601.75W	2.42
2827.00	42.40	226.80	13.00	2484.11	857.47	-2078.11	604.50 S	608.14W	0.56
2836.00	43.20	227.60	9.00	2490.72	863.58	-2084.72	608.66 S	612.62W	3.22
2845.00	43.40	226.90	9.00	2497.27	869.74	-2091.27	612.85 S	617.16W	1.73
2855.00	43.30	226.50	10.00	2504.54	876.60	-2098.54	617.55 S	622.15W	0.88
2864.00	43.10	226.10	9.00	2511.10	882.76	-2105.10	621.81 S	626.61W	1.13
2874.00	43.30	226.50	10.00	2518.39	889.61	-2112.39	626.54 S	631.56W	1.02

Halliburton Drilling Systems

Survey Report

Measured Depth (m)	Incl (deg.)	Drift Dir. (deg.)	Course Length (m)	TVD (m)	Vertical Section (m)	Subsea Depth (m)	TOTAL Rectangular Offsets (m)	(m)	DLS (dg/30m)
2883.00	43.40	226.40	9.00	2524.93	895.78	-2118.93	630.80 S	636.03W	0.40
2893.00	43.30	225.80	10.00	2532.20	902.65	-2126.20	635.56 S	640.98W	1.27
2903.00	43.70	224.80	10.00	2539.46	909.53	-2133.46	640.40 S	645.87W	2.39
2913.00	44.00	224.10	10.00	2546.67	916.46	-2140.67	645.34 S	650.72W	1.71
2921.00	44.80	222.40	8.00	2552.39	922.05	-2146.39	649.42 S	654.56W	5.38
2931.00	45.30	222.20	10.00	2559.45	929.12	-2153.45	654.66 S	659.32W	1.56
2940.00	45.80	223.80	9.00	2565.75	935.54	-2159.75	659.35 S	663.70W	4.16
2950.00	46.10	222.50	10.00	2572.71	942.72	-2166.71	664.60 S	668.62W	2.94
2959.00	46.40	222.10	9.00	2578.93	949.22	-2172.93	669.41 S	672.99W	1.39
2969.00	46.30	220.90	10.00	2585.83	956.44	-2179.83	674.82 S	677.79W	2.62
2978.00	45.40	220.60	9.00	2592.10	962.88	-2186.10	679.72 S	682.00W	3.08
2988.00	44.80	220.00	10.00	2599.16	969.94	-2193.16	685.12 S	686.58W	2.21
2998.00	44.80	220.10	10.00	2606.26	976.96	-2200.26	690.51 S	691.12W	0.21
3013.00	45.20	220.40	15.00	2616.86	987.53	-2210.86	698.61 S	697.97W	0.91
3023.00	45.20	220.60	10.00	2623.91	994.60	-2217.91	704.00 S	702.58W	0.43
3032.00	44.90	219.70	9.00	2630.27	1000.95	-2224.27	708.87 S	706.69W	2.35
3036.00	44.80	219.70	4.00	2633.10	1003.76	-2227.10	711.04 S	708.49W	0.75
3045.00	44.90	219.60	9.00	2639.48	1010.08	-2233.48	715.93 S	712.54W	0.41
3054.00	44.60	219.50	9.00	2645.88	1016.39	-2239.88	720.81 S	716.57W	1.03
3064.00	44.50	219.20	10.00	2653.00	1023.37	-2247.00	726.24 S	721.02W	0.70
3073.00	44.30	219.40	9.00	2659.43	1029.63	-2253.43	731.11 S	725.01W	0.81
3085.00	44.30	219.60	12.00	2668.02	1037.98	-2262.02	737.58 S	730.34W	0.35
3095.00	43.90	219.80	10.00	2675.20	1044.91	-2269.20	742.93 S	734.79W	1.27
3122.00	40.40	214.70	27.00	2695.22	1062.85	-2289.22	757.33 S	745.77W	5.44
3138.00	36.90	208.80	16.00	2707.72	1072.57	-2301.72	765.81 S	751.03W	9.52
3157.00	37.00	208.70	19.00	2722.90	1083.53	-2316.90	775.82 S	756.53W	0.18
3185.00	37.80	209.50	28.00	2745.15	1099.89	-2339.15	790.68 S	764.80W	1.00
3195.00	38.10	209.90	10.00	2753.03	1105.82	-2347.03	796.02 S	767.85W	1.16
3204.00	38.10	207.60	9.00	2760.12	1111.15	-2354.12	800.89 S	770.52W	4.73
3214.00	38.40	207.70	10.00	2767.97	1117.06	-2361.97	806.37 S	773.39W	0.92
3224.00	38.50	208.10	10.00	2775.80	1123.00	-2369.80	811.87 S	776.30W	0.80
3253.00	34.70	206.30	29.00	2799.08	1139.47	-2393.08	827.24 S	784.21W	4.08
3282.00	33.40	202.80	29.00	2823.11	1154.68	-2417.11	842.00 S	790.96W	2.43
3311.00	34.60	204.90	29.00	2847.15	1169.80	-2441.15	856.82 S	797.52W	1.74
3340.00	35.30	204.80	29.00	2870.92	1185.40	-2464.92	871.90 S	804.51W	0.73
3369.00	35.40	205.00	29.00	2894.57	1201.15	-2488.57	887.12 S	811.57W	0.16
3397.00	35.60	205.30	28.00	2917.37	1216.45	-2511.37	901.84 S	818.48W	0.28
3416.00	35.60	204.80	19.00	2932.82	1226.84	-2526.82	911.86 S	823.16W	0.46
3426.00	35.50	203.90	10.00	2940.95	1232.28	-2534.95	917.15 S	825.56W	1.60

Halliburton Drilling Systems

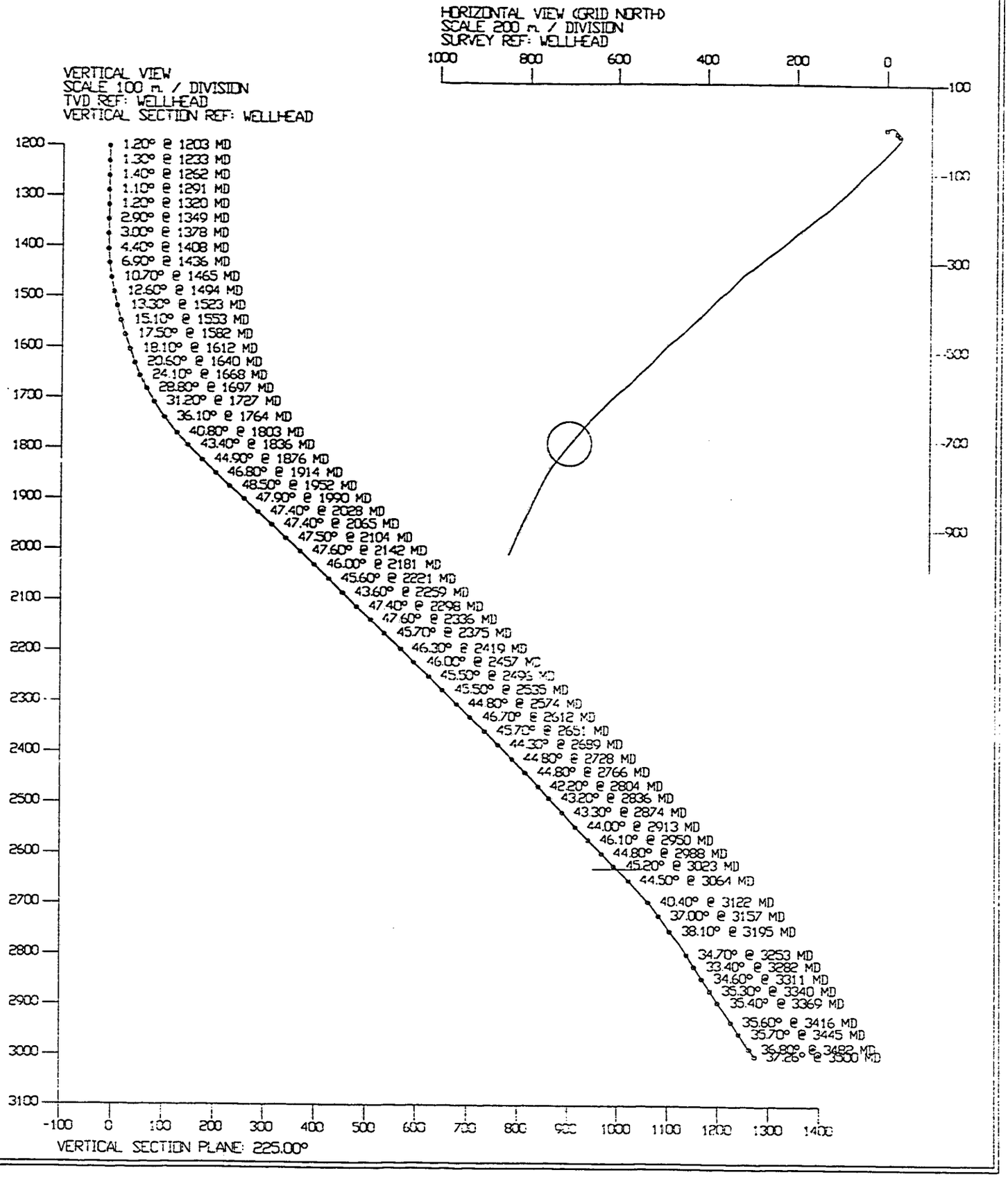
Survey Report

Measured Depth (m)	Incl (deg.)	Drift Dir. (deg.)	Course Length (m)	TVD (m)	Vertical Section (m)	Subsea Depth (m)	TOTAL Rectangular Offsets (m)	(m)	DLS (dg/30m)
3436.00	35.50	204.50	10.00	2949.09	1237.71	-2543.09	922.45 S	827.94W	1.05
3445.00	35.70	205.70	9.00	2956.41	1242.64	-2550.41	927.19 S	830.16W	2.42
3455.00	36.00	204.50	10.00	2964.52	1248.14	-2558.52	932.50 S	832.65W	2.29
3465.00	36.30	204.30	10.00	2972.59	1253.67	-2566.59	937.87 S	835.08W	0.97
3474.00	36.60	205.20	9.00	2979.83	1258.68	-2573.83	942.72 S	837.32W	2.04
3482.00	36.80	204.70	8.00	2986.25	1263.17	-2580.25	947.06 S	839.34W	1.35
EXTRAPOLATED TO T.D.									
3500.00	37.26	203.59	18.00	3000.62	1273.30	-2594.62	956.95 S	843.77W	1.35

RANGER OIL LIMITED
RANGER FORT LIARD P - 66 - A
IN UNIT P SECTION 66
UID: 300P666040123300

HALLIBURTON

18/02/98 8:21 am



HALLIBURTON

POST WELL SUMMARY

From January 23, 1998 To February 5, 1998

2/12/98 3:22:48 pm
Version VER2.2.4

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

Company Man: ART SCHRITT

METERAGE DRILLED	DRILLING HOURS	AVERAGE ROP	DRILLING DAYS	AVERAGE MTG/DAY	AVERAGE DRILLING HRS/DAY
383.50	135.75	2.83	12.46	30.77	10.89

RUN No.	BHA No.	DEPTH IN	ANGLE IN	DEPTH OUT	ANGLE OUT	METERAGE DRILLED	DRILLING HOURS	AVERAGE ROP	AVERAGE BUILD	FLOW m3/min	ON-BOTTOM kpa	MAX. BH TEMP °C	MOTOR SERIAL No.
1	1	3115.00	41.29	3115.00	41.29	0.00	0.00	0.00	——	0	0	——	625-17006
1	2	3116.50	41.09	3140.00	36.91	23.50	29.83	0.79	-5.34	0	7000	——	625-14-043
1	3	3140.00	36.91	3246.00	35.61	106.00	32.08	3.30	-0.37	0	7624	——	HT64051X
1	4	3246.00	35.61	3500.00	37.26	254.00	73.83	3.44	0.19	0	8470	——	HT64051X

RUN No.	BHA No.	BIT SIZE(mm)	BIT MODEL	BIT NOZZLES (mm)	MOTOR Description_CAP	STAB O.D.	DISTANCE CTR TO BIT	REASON FOR TRIP
1	1	215.000	D12ST		161.000 mm HIGH SPEED X 1.83° bend	——	——	<undefined>
1	2	215.000	D12ST		158.000 mm HIGH SPEED X 1.83° bend	——	——	<undefined>
1	3	215.900	EHP51A	11.1 11.1 11.9	164.000 mm F2000 X 1.50° bend	——	——	<undefined>
1	4	215.900	SS86F	11.1 11.1 11.1	164.000 mm F2000 X 1.50° bend	——	——	<undefined>

RUN No.	BHA No.	SLIDE MTG	ROTATE MTG	SLIDE HRS	ROTATE HRS	SLIDE ROP	ROTATE ROP	CIRCULATE HRS	COMMENTS
1	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1	2	23.50	0.00	29.83	0.00	0.79	0.00	30.58	
1	3	4.00	102.00	1.50	30.58	2.67	3.34	38.25	
1	4	3.00	251.00	1.17	72.67	2.57	3.45	81.58	

HALLIBURTON

BHA REPORT

From January 23, 1998 To February 3, 1998

Job No.: 97d007s4 | AFE No.: E6D-015 | Company Man: ART SCHRITT
Operator: RANGER OIL LIMITED. | Location:
Field: FORT LIARD | MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Well: 97d007s4 | Dir'l Driller(s): JIM MCFARLANE
Run No.: 1 | BHA No.: 1 | Hole Size: 215.900 mm

BOTTOM HOLE ASSEMBLY

Motor Size / Type: 161.000 mm / HIGH SPEED | Serial No.: 625-17006 | Circulating: 0.00 hrs

No.	Serial No.	Tool Description	OD (mm)	ID (mm)	Length (m)	Total Length (m)	Connections Up	Down	Conn
1	JQ7603	(BIT) SMITH,D12ST,Natural Diamond	215.000		0.30	0.30	4 1/2 Reg		P
2	625-17006	(MTR) VECTOR,HIGH SPEED, 1.830° Bend	161.000		7.80	8.10	4 1/2 Reg	4 1/2 Reg	B/B
3	XO6019	(SUB) Cross-Over Sub	159.000	62.000	0.33	8.43	4 1/2 Reg	4 1/2 Reg	P/P
4	PC5327	(MWD) PULSER D.C. battery(b0024), das(das-4793), inter. plug/tandem sub(dipl-1272), muleshoe stinger(ml-001), pulser, mud operated(tp-4339), collar(pc-5327), float sub(xs-4096), muleshoe sub(ml-4104)	166.000		5.09	13.52	4 1/2 IF	4 1/2 Reg	B/B
5	6650-3055	(DC) Flex Non-Mag Drill Collar	163.000	73.000	9.20	22.72	4 1/2 IF	4 1/2 IF	B/P
6	6250-304685	(DC) Flex Non-Mag Drill Collar	154.000	74.000	9.26	31.98	4 1/2 IF	4 1/2 IF	B/P
7	10708	(JAR) FASTER Jar	174.000	72.000	6.09	38.07	4 1/2 IF	4 1/2 IF	B/P
8	RIG	(HW) 24 jts, Hevi-Wate Drill Pipe	161.000	73.000	220.06	258.13	4 1/2 IF	4 1/2 IF	B/P

BIT DATA

Manufacturer: SMITH | IADC: | Model: D12ST | Length: 0.30 m
Bit Type: Natural Diamond | Depth In: 3115.00 - 3115.00 (0.00) m | Gage Length: 0.00 mm
Serial No.: JQ7603 | Nozzles: mm | TFA: 0.000 mm2
Hours On Bit: 0.00 | MTG On Bit: 0.00

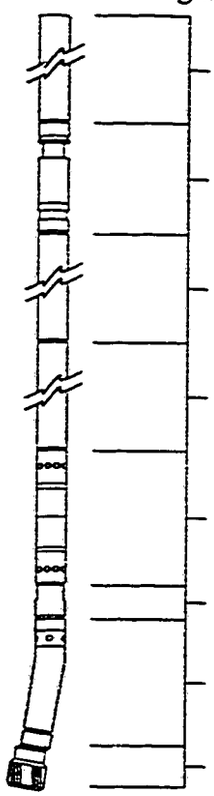
HALLIBURTON

Bottom Hole Assembly #1
215.900 mm Hole Size

Company: H.D.S.
Field: FORT LIARD
Location:
Well: 97d007s4
Run No.: 1
Company Man: ART SCHRITT
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Directional Driller(s): JIM MCFARLANE

Assembly Type: <undefined>

Total Length = 258.13 m



4 1/2 IF B

(HW) Hevi-Wate Drill Pipe Serial No.: RIG
OD=161.000 mm, ID=73.000 mm, Length=220.06 m

4 1/2 IF P
4 1/2 IF B

(IAR) Jar Serial No.: 10708
OD=174.000 mm, ID=72.000 mm, Length=6.09 m

4 1/2 IF P
4 1/2 IF B

(DC) Flex Non-Mag Drill Collar Serial No.: 6250-304685
OD=154.000 mm, ID=74.000 mm, Length=9.26 m

4 1/2 IF P
4 1/2 IF B

(DC) Flex Non-Mag Drill Collar Serial No.: 6650-3055
OD=163.000 mm, ID=73.000 mm, Length=9.20 m

4 1/2 IF P
4 1/2 IF B

(MWD) PULSER D.C. Serial No.: PC5327
OD=166.000 mm, Length=5.09 m

4 1/2 Reg B
4 1/2 Reg P
4 1/2 Reg P
4 1/2 Reg B

(SUB) Cross-Over Serial No.: XO6019
OD=159.000 mm, ID=62.000 mm, Length=0.33 m

(MTR) HIGH SPEED 1.830 deg. Bent Hsg. Serial No.: 625-17006
OD=161.000 mm, Length=7.80 m

4 1/2 Reg B
4 1/2 Reg P

(BIT) Natural Diamond,D12ST Serial No.: JQ7603
TFA=0.000 mm2, OD=215.000 mm, Length=0.30 m

HALLIBURTON

BHA REPORT

From January 27, 1998 To January 28, 1998

Job No.: 97d007s4 | AFE No.: E6D-015 | Company Mgr: ART SCHRITT
Operator: RANGER OIL LIMITED. | Location:
Field: FORT LIARD | MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Well: 97d007s4 | Dir'l Driller(s): JIM MCFARLANE
Run No.: 1 | BHA No.: 2 | Hole Size: 215.900 mm

BOTTOM HOLE ASSEMBLY

Motor Size / Type: 158.000 mm / HIGH SPEED | Serial No.: 625-14-043 | Circulating: 30.58 hrs
Sliding(100.0%): 23.50 m @ 29.83 hrs ⟹ 0.79 m/hr | Flow Rate: 1.20 m3/min
Rotating(0.0%): 0.00 m @ 0.00 hrs ⟹ 0.00 m/hr | SPM: 103.00
Total Drilled: 23.50 m @ 29.83 hrs ⟹ 0.79 m/hr

No.	Serial No.	Tool Description	OD (mm)	ID (mm)	Length (m)	Total Length (m)	Connections Up	Down	Conn
1	JQ7603	(BIT) SMITH,D12ST,Natural Diamond	215.000		0.30	0.30	4 1/2 Reg		P
2	625-14-043	(MTR) VECTOR,HIGH SPEED, 1.830° Bend	158.000		7.62	7.92	4 1/2 Reg	4 1/2 Reg	B/B
3	XO6019	(SUB) Cross-Over Sub	159.000	62.000	0.33	8.25	4 1/2 Reg	4 1/2 Reg	P/P
4	PC5327	(MWD) PULSER D.C. battery(b0024), das(das-4793), inter. plug/tandem sub(dipl-1272), muleshoe stinger(ml-001), pulser, mud operated(tp-4339), collar(pc-5327), float sub(xs-4096), muleshoe sub(ml-4104)	166.000		5.09	13.34	4 1/2 IF	4 1/2 Reg	B/B
5	6650-3055	(DC) Flex Non-Mag Drill Collar	163.000	73.000	9.20	22.54	4 1/2 IF	4 1/2 IF	B/P
6	6250-304685	(DC) Flex Non-Mag Drill Collar	154.000	74.000	9.26	31.80	4 1/2 IF	4 1/2 IF	B/P
7	10708	(JAR) FASTER Jar	174.000	72.000	6.09	37.89	4 1/2 IF	4 1/2 IF	B/P
8	RIG	(HW) 24 jts, Hevi-Wate Drill Pipe	161.000	73.000	220.06	257.95	4 1/2 IF	4 1/2 IF	B/P

BIT DATA

Manufacturer: SMITH | IADC: | Model: D12ST | Length: 0.30 m
Bit Type: Natural Diamond | Depth In: 3116.50 - 3140.00 (23.50) m | Gage Length: 0.00 mm
Serial No.: JQ7603 | Nozzles: mm | TFA: 0.000 mm2
Hours On Bit: 29.83 | MTG On Bit: 23.50

HALLIBURTON

PERFORMANCE REPORT

From January 27, 1998 To January 28, 1998

2/12/98 3:23:50 pm
Version VER2.2.4

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4
Run No.: 1

AFE No.: E6D-015
Location:
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE
BHA No.: 2

Company Man: ART SCHRITT

Hole Size: 215.900 mm

Interval End Time	Depth m	Incl deg	Azi deg	Interval Change Build deg/30m	Interval Change Turn deg/30m	DLS	S/R	Tool Face deg	RPM	Rotary Torque Min N-m	Rotary Torque Max N-m	Rotary Torque Off N-m	Hookload WOB dN	Hookload PU dN	Hookload SO dN	Hookload Rot dN	Pumps SPM	Pumps Flow m3/min	Pressure On kpa	Pressure Off kpa	Comments
January 27, 1998																					
12:15	3126	39.5	213.3	-6.77	-10.44	9.52	S	240	0	0	0	0	2000	140	120	127	0	0	0	0	TIME DRILLING OFF CEMENT PLUG
24:00	3134	37.7	210.4	0.13	-0.41	0.00	S	240	0	0	0	0	2000	140	120	127	103	1	7000	6000	
January 28, 1998																					
02:15	3136	37.3	209.6	0.04	-0.11	0.00	S	240	0	0	0	0	2000	140	120	127	103	1	7000	6000	
06:25	3140	36.9	208.8	6.76	10.79	9.34	S	240	0	0	0	0	2000	140	120	127	103	1	7000	6000	

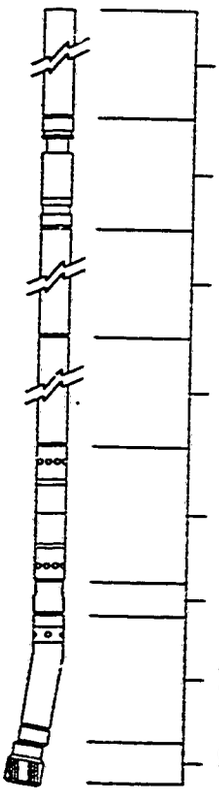
HALLIBURTON

Bottom Hole Assembly #2
215.900 mm Hole Size

Company: H.D.S.
Field: FORT LIARD
Location:
Well: 97d007s4
Run No.: 1
Company Man: ART SCHRITT
MWD Operator(s): DEAN MCNEIL, DEON GAULTO
Directional Driller(s): JIM MCFARLANE

Assembly Type: <undefined>

Total Length = 257.95 m



4 1/2 IF B

4 1/2 IF P
4 1/2 IF B

4 1/2 IF P
4 1/2 IF B

4 1/2 IF P
4 1/2 IF B

4 1/2 IF P
4 1/2 IF B

4 1/2 Reg B
4 1/2 Reg P
4 1/2 Reg P
4 1/2 Reg B

4 1/2 Reg B
4 1/2 Reg P

(HW) Hevi-Wate Drill Pipe Serial No.: RIG
OD=161.000 mm, ID=73.000 mm, Length=220.06 m

(JAR) Jar Serial No.: 10708
OD=174.000 mm, ID=72.000 mm, Length=6.09 m

(DC) Flex Non-Mag Drill Collar Serial No.: 6250-304685
OD=154.000 mm, ID=74.000 mm, Length=9.26 m

(DC) Flex Non-Mag Drill Collar Serial No.: 6650-3055
OD=163.000 mm, ID=73.000 mm, Length=9.20 m

(MWD) PULSER D.C. Serial No.: PCS327
OD=166.000 mm, Length=5.09 m

(SUB) Cross-Over Serial No.: XO6019
OD=159.000 mm, ID=62.000 mm, Length=0.33 m

(MTR) HIGH SPEED 1.830 deg. Bent Hsg. Serial No.: 625-14-043
OD=158.000 mm, Length=7.62 m

(BIT) Natural Diamond,D12ST Serial No.: JQ7603
TFA=0.000 mm2, OD=215.000 mm, Length=0.30 m

HALLIBURTON

BHA REPORT

From January 28, 1998 To January 31, 1998

Job No.: 97d007s4 | AFE No.: E6D-015 | Company Man: ART SCHRITT
Operator: RANGER OIL LIMITED. | Location:
Field: FORT LIARD | MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Well: 97d007s4 | Dir'l Driller(s): JIM MCFARLANE
Run No.: 1 | BHA No.: 3 | Hole Size: 215.900 mm

BOTTOM HOLE ASSEMBLY

Motor Size / Type: 164.000 mm / F2000 | Serial No.: HT64051X | Circulating: 38.25 hrs
Sliding(4.7%): 4.00 m @ 1.50 hrs ⟹ 2.67 m/hr | Flow Rate: 1.20 m3/min
Rotating(95.3%): 102.00 m @ 30.58 hrs ⟹ 3.34 m/hr | SPM: 103.00
Total Drilled: 106.00 m @ 32.08 hrs ⟹ 3.30 m/hr

No.	Serial No.	Tool Description	OD (mm)	ID (mm)	Length (m)	Total Length (m)	Connections Up	Down	Conn
1	TB6005	(BIT) REED,EHPS1A,TCI	215.900		0.25	0.25	4 1/2 Reg		P
2	HT64051X	(MTR) H.D.S.,F2000, 1.50° Bend	164.000		6.92	7.17	4 1/2 Reg	4 1/2 Reg	B/B
3	XO6019	(SUB) Cross-Over Sub	159.000	62.000	0.33	7.50	4 1/2 Reg	4 1/2 Reg	P/P
4	PCS327	(MWD) PULSER D.C. battery(b0024), das(das-4793), inter. plug/tandem sub(dipl-1272), muleshoe stinger(ml-001), pulser, mud operated(tp-4339), collar(pc-5327), float sub(xs-4096), muleshoe sub(ml-4104)	166.000		5.09	12.59	4 1/2 IF	4 1/2 Reg	B/B
5	6650-3055	(DC) Flex Non-Mag Drill Collar	163.000	73.000	9.20	21.79	4 1/2 IF	4 1/2 IF	B/P
6	6250-304685	(DC) Flex Non-Mag Drill Collar	154.000	74.000	9.26	31.05	4 1/2 IF	4 1/2 IF	B/P
7	10708	(JAR) FASTER Jar	174.000	72.000	6.09	37.14	4 1/2 IF	4 1/2 IF	B/P
8	RIG	(HW) 24 jts, Hevi-Wate Drill Pipe	161.000	73.000	220.06	257.20	4 1/2 IF	4 1/2 IF	B/P

BIT DATA

Manufacturer: REED | IADC: 537 | Model: EHPS1A | Length: 0.25 m
Bit Type: TCI | Depth In: 3140.00 - 3246.00 (106.00) m | Gage Length: 0.00 mm
Serial No.: TB6005 | Nozzles: 11.1(2),11.9 mm | TFA: 304.758 mm2
Hours On Bit: 32.08 | MTG On Bit: 116.60

HALLIBURTON

PERFORMANCE REPORT

From January 28, 1998 To January 31, 1998

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4
Run No.: 1

AFE No.: E6D-015
Location:
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE
BHA No.: 3

Company Man: ART SCHRITT

Hole Size: 215.900 mm

Interval End Time	Depth m	Incl deg	Azi deg	Interval Change Build deg/30m	Turn deg/30m	DLS	S/R	Tool Face deg	RPM	Rotary Torque Min N-m	Max N-m	Off N-m	Hookload WOB dN	PU dN	SO dN	Rot dN	Pumps SPM	Flow m3/min	Pressure On kpa	Off kpa	Comments
January 29, 1998																					
06:35	3154	37.0	208.7	0.16	-0.16	0.18	R	0	0	0	0	0	2000	140	120	127	103	1	7000	6000	
07:00	3156	37.0	208.7	0.00	0.00	0.00	R	0	0	0	0	0	2000	140	120	127	103	1	7000	6000	
09:05	3164	37.2	208.9	0.70	1.03	0.82	R	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	
12:30	3165	37.2	208.9	0.00	0.00	0.00	R	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	
15:20	3175	37.5	209.2	0.00	-0.01	0.00	R	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	
18:10	3184	37.8	209.5	0.00	-0.01	0.00	R	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	
20:55	3193	38.0	209.8	0.04	0.34	0.16	R	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	
24:00	3194	38.1	209.9	0.00	0.00	0.00	R	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	
January 30, 1998																					
03:15	3203	38.1	207.9	-0.91	-8.87	3.57	R	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	
07:20	3213	38.4	207.7	0.91	7.97	3.81	R	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	
10:25	3222	38.5	208.0	-0.60	0.90	0.11	R	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	
17:00	3232	37.4	207.6	-4.24	-2.95	3.28	R	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	
18:35	3236	36.9	207.4	0.00	-0.02	0.00	S	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	
19:55	3242	36.1	207.0	0.00	-0.03	0.00	R	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	
21:20	3246	35.6	206.8	0.00	-0.02	0.00	R	0	35	0	0	0	6000	140	120	127	103	1	7800	7000	

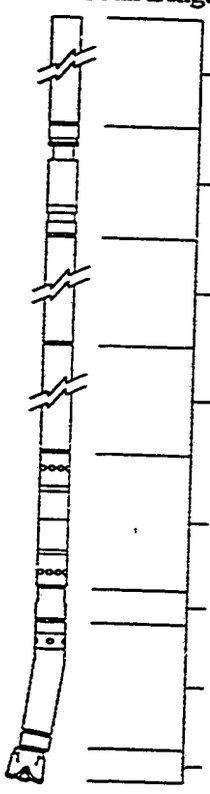
HALLIBURTON

Bottom Hole Assembly #3
215.900 mm Hole Size

Company: H.D.S.
Field: FORT LIARD
Location:
Well: 97d007s4
Run No.: 1
Company Man: ART SCHRITT
MWD Operator(s): DEAN MCNEIL, DEON GAULT(
Directional Driller(s): JIM MCFARLANE

Assembly Type: <undefined>

Total Length = 257.20 m



4 1/2 IF B
4 1/2 IF P
4 1/2 IF B
4 1/2 IF P
4 1/2 IF B
4 1/2 IF P
4 1/2 IF B
4 1/2 IF P
4 1/2 IF B
4 1/2 Reg B
4 1/2 Reg P
4 1/2 Reg B
4 1/2 Reg B
4 1/2 Reg P

(HW) Hevi-Wate Drill Pipe Serial No.: RIG
OD=161.000 mm, ID=73.000 mm, Length=220.06 m

(JAR) Jar Serial No.: 10708
OD=174.000 mm, ID=72.000 mm, Length=6.09 m

(DC) Flex Non-Mag Drill Collar Serial No.: 6250-304685
OD=154.000 mm, ID=74.000 mm, Length=9.26 m

(DC) Flex Non-Mag Drill Collar Serial No.: 6650-3055
OD=163.000 mm, ID=73.000 mm, Length=9.20 m

(MWD) PULSER D.C. Serial No.: PC5327
OD=166.000 mm, Length=5.09 m

(SUB) Cross-Over Serial No.: XO6019
OD=159.000 mm, ID=62.000 mm, Length=0.33 m

(MTR) F2000 1.500 deg. Bent Hsg. Serial No.: HT64051X
OD=164.000 mm, Length=6.92 m

(BIT) 517,TCI,EHP51A Serial No.: TB6005
TFA=304.758 mm2, OD=215.900 mm, Length=0.25 m

HALLIBURTON

BHA REPORT

From January 31, 1998 To February 5, 1998

2/12/98 3:25:59 pm
Version VER2.2.4

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4
Run No.: 1

AFE No.: E6D-015
Location:
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE
BHA No.: 4

Company Man: ART SCHRITT

Hole Size: 215.900 mm

BOTTOM HOLE ASSEMBLY

Motor Size / Type: 164.000 mm / F2000
Serial No.: HT640S1X

Sliding(1.6%):	3.00 m @	1.17 hrs ⟹	2.57 m/hr	
Rotating(98.4%):	251.00 m @	72.67 hrs ⟹	3.45 m/hr	
Total Drilled:	254.00 m @	73.83 hrs ⟹	3.44 m/hr	

Circulating: 81.58 hrs
Flow Rate: 1.20 m3/min
SPM: 103.00

No.	Serial No.	Tool Description	OD (mm)	ID (mm)	Length (m)	Total Length (m)	Connections Up	Down	Conn
1	629161	(BIT) SECURITY,SS86F,TCI	215.900		0.25	0.25	4 1/2 Reg		P
2	HT64051X	(MTR) H.D.S.,F2000, 1.500° Bend	164.000		6.92	7.17	4 1/2 Reg	4 1/2 Reg	B/B
3	XO6019	(SUB) Cross-Over Sub	159.000	62.000	0.33	7.50	4 1/2 Reg	4 1/2 Reg	P/P
4	PC5327	(MWD) PULSER D.C. battery(b0024), das(das-4793), inter. plug/tandem sub(dipl-1272), muleshoe stinger(ml-001), pulser, mud operated(tp-4339), collar(pc-5327), float sub(xs-4096), muleshoe sub(ml-4104)	166.000		5.09	12.59	4 1/2 IF	4 1/2 Reg	B/B
5	6650-3055	(DC) Flex Non-Mag Drill Collar	163.000	73.000	9.20	21.79	4 1/2 IF	4 1/2 IF	B/P
6	6250-304685	(DC) Flex Non-Mag Drill Collar	154.000	74.000	9.26	31.05	4 1/2 IF	4 1/2 IF	B/P
7	10708	(JAR) FASTER Jar	174.000	72.000	6.09	37.14	4 1/2 IF	4 1/2 IF	B/P
8	RIG	(HW) 24 jts, Hevi-Wate Drill Pipe	161.000	73.000	220.06	257.20	4 1/2 IF	4 1/2 IF	B/P

BIT DATA

Manufacturer: SECURITY
Bit Type: TCI
Serial No.: 629161
Hours On Bit: 73.83

IADC: 537
Depth In: 3246.00 - 3500.00 (254.00) m
Nozzles: 11.1(3) mm
MTG On Bit: 254.00

Model: SS86F

Length: 0.25 m
Gage Length: 0.00 mm
TFA: 290.307 mm2

HALLIBURTON

PERFORMANCE REPORT

From January 31, 1998 To February 5, 1998

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4
Run No.: 1

AFE No.: E6D-015
Location:
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE
BHA No.: 4

Company Man: ART SCHRITT

Hole Size: 215.900 mm

Interval End Time	Depth m	Incl deg	Azi deg	Interval Change Build deg/30m	Turn deg/30m	DLS	S/R	Tool Face deg	RPM	Rotary Torque Min N-m	Max N-m	Off N-m	Hookload WOB dN	PU dN	SO dN	Rot dN	Pumps SPM	Flow m3/min	Pressure On kpa	Off kpa	Comments
January 31, 1998																					
15:45	3251	35.0	206.4	-3.93	-1.85	4.08	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
16:10	3252	34.8	206.4	0.00	-0.01	0.00	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
18:35	3261	34.3	205.4	2.55	-1.68	1.65	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
20:35	3271	33.9	204.2	0.02	-0.04	0.00	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
23:20	3279	33.5	203.2	0.01	-0.03	0.00	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
23:55	3280	33.5	203.0	0.00	0.00	0.00	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
February 1, 1998																					
02:05	3290	33.7	203.4	2.58	5.83	0.70	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
03:20	3293	33.9	203.6	0.00	-0.01	0.00	S	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
03:20	3293	33.9	203.6	0.00	0.00	0.00	S	0	0	0	0	0	6000	170	117	150	103	1	8500	7400	
05:05	3300	34.1	204.1	0.00	-0.02	0.00	R	0	0	0	0	0	6000	170	117	150	103	1	8500	7400	
07:30	3309	34.5	204.8	0.01	-0.02	0.00	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
14:55	3319	34.8	204.9	-0.52	-2.28	1.01	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
17:45	3329	35.0	204.8	0.00	0.00	0.00	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
21:05	3337	35.2	204.8	0.00	0.00	0.00	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
21:25	3338	35.3	204.8	0.00	0.00	0.00	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
24:00	3345	35.3	204.8	-0.62	0.31	0.57	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
February 2, 1998																					
01:20	3348	35.3	204.9	0.00	0.00	0.00	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
04:55	3358	35.4	204.9	0.00	0.00	0.00	R	0	35	0	0	0	6000	170	117	150	103	1	8500	7400	
08:10	3367	35.4	205.0	0.00	0.00	0.00	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
12:05	3377	35.5	205.1	0.11	0.12	0.13	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
14:25	3387	35.5	205.2	0.00	0.00	0.00	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
16:35	3396	35.6	205.3	0.00	0.00	0.00	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
23:30	3406	35.6	205.1	-0.22	-1.11	0.18	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
24:00	3408	35.6	205.0	0.00	0.00	0.00	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
February 3, 1998																					
01:45	3415	35.6	204.8	0.00	0.00	0.00	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
04:00	3424	35.5	204.1	-0.30	-1.91	1.14	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
04:15	3425	35.5	204.0	0.00	0.00	0.00	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
06:15	3434	35.5	204.4	0.30	4.50	0.55	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
08:30	3444	35.7	205.6	0.66	2.20	1.38	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
10:10	3450	35.8	205.1	0.22	-7.62	0.13	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
11:35	3456	36.0	204.6	0.01	0.01	0.00	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
15:30	3463	36.2	204.3	0.00	3.00	1.33	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
18:30	3473	36.6	205.1	0.10	3.60	1.08	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
21:45	3482	36.8	204.7	-0.25	-4.87	0.70	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
22:10	3483	36.8	204.6	0.01	0.01	0.00	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
24:00	3488	37.0	204.3	0.00	0.01	0.00	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	
February 4, 1998																					
01:15	3492	37.1	204.1	0.00	0.00	0.00	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	

HALLIBURTON

PERFORMANCE REPORT

From January 31, 1998 To February 5, 1998

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4
Run No.: 1

AFE No.: E6D-015
Location:
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE
BHA No.: 4

Company Man: ART SCHRITT
Hole Size: 215.900 mm

Interval End Time	Depth m	Incl deg	Azi deg	Interval Change Build deg/30m	Turn deg/30m	DLS	S/R	Tool Face deg	RPM	Rotary Torque Min N-m	Max N-m	Off N-m	Hookload WOB dN	PU dN	SO dN	Rot dN	Pumps SPM	Flow m3/min	Pressure On kpa	Off kpa	Comments
04:10	3500	37.3	203.6	0.00	0.01	0.00	R	0	35	0	0	0	7000	170	117	150	103	1	8500	7400	

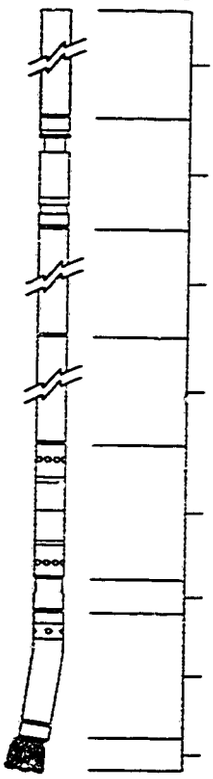
HALLIBURTON

Bottom Hole Assembly #4
215.900 mm Hole Size

Company: H.D.S.
Field: FORT LIARD
Location:
Well: 97d007s4
Run No.: 1
Company Man: ART SCHRITT
MWD Operator(s): DEAN MCNEIL, DEON GAULTO
Directional Driller(s): JIM MCFARLANE

Assembly Type: <undefined>

Total Length = 257.20 m



4 1/2 IF B

(HW) Hevi-Wate Drill Pipe Serial No.: RIG
OD=161.000 mm, ID=73.000 mm, Length=220.06 m

4 1/2 IF P
4 1/2 IF B

(JAR) Jar Serial No.: 10708
OD=174.000 mm, ID=72.000 mm, Length=6.09 m

4 1/2 IF P
4 1/2 IF B

(DC) Flex Non-Mag Drill Collar Serial No.: 6250-304685
OD=154.000 mm, ID=74.000 mm, Length=9.26 m

4 1/2 IF P
4 1/2 IF B

(DC) Flex Non-Mag Drill Collar Serial No.: 6650-3055
OD=163.000 mm, ID=73.000 mm, Length=9.20 m

4 1/2 IF P
4 1/2 IF B

(MWD) PULSER D.C. Serial No.: PC5327
OD=166.000 mm, Length=5.09 m

4 1/2 Reg B
4 1/2 Reg P
4 1/2 Reg P
4 1/2 Reg B

(SUB) Cross-Over Serial No.: XO6019
OD=159.000 mm, ID=62.000 mm, Length=0.33 m

(MTR) F2000 1.500 deg. Bent Hsg. Serial No.: HT64051X
OD=164.000 mm, Length=6.92 m

4 1/2 Reg B
4 1/2 Reg P

(BIT) 537,TCI,SS86F Serial No.: 629161
TFA=290.307 mm2, OD=215.900 mm, Length=0.25 m

HALLIBURTON

DAILY REPORT

January 23, 1998

2/12/98 3:23:08 pm
Version VER2.2.4

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E65-015
Location:
Company Man: ART SCHRITT
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
0.00	0.00	0.00	0.00	0.00(E)	0.00(W)	0.00	0.00

BIT DATA

Manufacturer: SMITH
Bit Type: Natural Diamond
Serial No.: JQ7603
Hours On Bit: 0.00

IADC:
Depth In: 0.00 - 0.00 (0.00) m
Nozzles: mm
MTG On Bit: 0.00

Model: D12ST

Length: 0.30 m
Gage Length: 0.00 mm
TFA: 0.000 mm2

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 161.000 mm / HIGH SPEED

BHA No.: 1
Serial No.: 625-17066

Hole Size: 215.900 mm
Circulating: 0.00 hrs

ACTIVITY LOG

Date From: January 23, 1998
Date To: January 23, 1998

Time From: 00:00
Time To: 24:00
Total Hours Logged: 16.00

Start Depth: 0.00 m
End Depth: 0.00 m
Total Drilled: 0.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
23/01/98	08:00-15:00	0.00	0.00		OTHER	FLY TO FT. NELSON, RIG TRUCK TO RIG.
23/01/98	15:00-24:00	0.00	0.00		OTHER	WAIT ON RIG TO TRIP TO RUN ANOTHER CEMENT PLUG

Today's Cost: $ _____
Total Cost To Date: $ _____

Operator: _____
Directional Driller: _____

HALLIBURTON

DAILY REPORT

January 24, 1998

2/12/98 3:23:08 pm
Version VER2.2.4

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
Company Man: ART SCHRITT
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
0.00	0.00	0.00	0.00	0.00(E)	0.00(W)	0.00	0.00

BIT DATA

Manufacturer: SMITH
Bit Type: Natural Diamond
Serial No.: JQ7603
Hours On Bit: 0.00
IADC:
Depth In: 0.00 - 0.00 (0.00) m
Nozzles: mm
MTG On Bit: 0.00
Model: D12ST
Length: 0.30 m
Gage Length: 0.00 mm
TFA: 0.000 mm2

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 161.000 mm / HIGH SPEED
BHA No.: 1
Serial No.: 625-17006
Hole Size: 215.900 mm
Circulating: 0.00 hrs

ACTIVITY LOG

Date From: January 24, 1998
Date To: January 24, 1998
Time From: 00:00
Time To: 24:00
Total Hours Logged: 24.00
Start Depth: 0.00 m
End Depth: 0.00 m
Total Drilled: 0.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
24/01/98	00:00-24:00	0.00	0.00		WOC	RUN PLUG #2, 1ST PLUG NO GOOD, R.I.H. WITH BIT, W.O.C TO FEEL FOR PLUG.

Today's Cost: $ _____
Total Cost To Date: $ _____

Operator: _____
Directional Driller: _____

HALLIBURTON

DAILY REPORT

January 25, 1998

2/12/98 3:23:09 pm
Version VER2.2.4

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
Company Man: ART SCHRITT
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
2000.00	1907.93	48.00	232.60	209.58(E)	166.88(W)	266.20	2.03

BIT DATA

Manufacturer: SMITH
Bit Type: Natural Diamond
Serial No.: JQ7603
Hours On Bit: 0.00
IADC:
Depth In: 0.00 - 0.00 (0.00) m
Nozzles: mm
MTG On Bit: 0.00
Model: D12ST
Length: 0.30 m
Gage Length: 0.00 mm
TFA: 0.000 mm2

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 161.000 mm / HIGH SPEED
BHA No.: 1
Serial No.: 625-17006
Hole Size: 215.900 mm
Circulating: 0.00 hrs

ACTIVITY LOG

Date From: January 25, 1998
Date To: January 25, 1998
Time From: 00:00
Time To: 24:00
Total Hours Logged: 24.00
Start Depth: 0.00 m
End Depth: 2000.00 m
Total Drilled: 0.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
25/01/98	00:00-07:00	0.00	0.00		WOC	
25/01/98	07:00-10:30	0.00	0.00		OTHER	DRILL CEMENT AND POLISH PLUG TO 3116.50
25/01/98	10:30-12:00	0.00	0.00		OTHER	CIRC. BOTTOMS UP.
25/01/98	12:00-18:00	3116.50	0.00		POOH	
25/01/98	18:00-20:00	0.00	0.00		MAKBHA	
25/01/98	20:00-24:00	0.00	2000.00		TRIPIN	

Today's Cost: $ _____
Total Cost To Date: $ _____

Operator: _____
Directional Driller: _____

HALLIBURTON

DAILY REPORT

January 27, 1998

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
Company Man: ART SCHRITT
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
3122.00	2695.22	40.40	214.70	757.33(E)	745.77(W)	1062.85	5.44

BIT DATA

Manufacturer: SMITH
Bit Type: Natural Diamond
Serial No.: JQ7603
Hours On Bit: 23.58
IADC:
Depth In: 3116.50 - 3134.00 (17.50) m
Nozzles: mm
MTG On Bit: 17.50
Model: D12ST
Length: 0.30 m
Gage Length: 0.00 mm
TFA: 0.000 mm2

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 158.000 mm / HIGH SPEED
Sliding(100.0%): 17.50 m @ 23.58 hrs ⟹ 0.74 m/hr
Rotating(0.0%): 0.00 m @ 0.00 hrs ⟹ 0.00 m/hr
Total Drilled: 17.50 m @ 23.58 hrs ⟹ 0.74 m/hr
BHA No.: 2
Serial No.: 625-14-043
Press on Bot: 7000 kpa
Press off Bot: 6000 kpa
Hole Size: 215.900 mm
Circulating: 23.92 hrs
Flow Rate: 1.20 m3/min
SPM: 103.00

ACTIVITY LOG

Date From: January 27, 1998
Date To: January 27, 1998
Time From: 00:00
Time To: 24:00
Total Hours Logged: 24.00
Start Depth: 0.00 m
End Depth: 3134.00 m
Total Drilled: 17.50 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
27/01/98	00:00-00:15	0.00	0.00		CIRC	CIRC. AND SURVEY
27/01/98	00:15-12:15	3116.50	3126.00	0.79	SLIDE	TIME DRILLING OFF CEMENT PLUG
27/01/98	12:15-12:20	3126.00	3126.00		CONNCT	
27/01/98	12:20-12:25	3126.00	3126.00		CIRC	CIRC. AND SURVEY.
27/01/98	12:25-24:00	3126.00	3134.00	0.69	SLIDE	

Today's Cost: $ _____
Total Cost To Date: $ _____

Operator: _____
Directional Driller: _____

HALLIBURTON

DAILY REPORT

January 28, 1998

2/12/98 3:23:10 pm
Version VER2.2.4

Job No.: 97d007s4 | AFE No.: E6D-015 | Company Man: ART SCHRITT
Operator: RANGER OIL LIMITED. | Location:
Field: FORT LIARD | MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Well: 97d007s4 | Dir'l Driller(s): JIM MCFARLANE

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
3095.00	2675.20	43.90	219.80	742.93(E)	734.79(W)	1044.91	1.27

BIT DATA

Manufacturer: REED | IADC: 517 | Model: EHP51A | Length: 0.25 m
Bit Type: TCI | Depth In: 0.00 - 0.00 (0.00) m | Gage Length: 0.00 mm
Serial No.: TB6005 | Nozzles: 11.1(2),11.9 mm | TFA: 304.758 mm2
Hours On Bit: 0.00 | MTG On Bit: 0.00

BOTTOM HOLE ASSEMBLY

Run No.: 1 | BHA No.: 2 | Hole Size: 215.900 mm
Motor Size / Type: 158.000 mm / HIGH SPEED | Serial No.: 625-14-043 | Circulating: 6.67 hrs
Sliding(100.0%): 6.00 m @ 6.25 hrs ==> 0.96 m/hr | Flow Rate: 1.20 m3/min
Rotating(0.0%): 0.00 m @ 0.00 hrs ==> 0.00 m/hr | Press on Bot: 7000 kpa | SPM: 103.00
Total Drilled: 6.00 m @ 6.25 hrs ==> 0.96 m/hr | Press off Bot: 6000 kpa

ACTIVITY LOG

Date From: January 28, 1998 | Time From: 00:00 | Start Depth: 3134.00 m
Date To: January 28, 1998 | Time To: 24:00 | End Depth: 0.00 m
Total Hours Logged: 16.25 | Total Drilled: 6.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
28/01/98	00:00-02:15	3134.00	3136.00	0.89	SLIDE	
28/01/98	02:15-02:20	3136.00	3136.00		CONNCT	
28/01/98	02:20-02:25	3136.00	3136.00		CIRC	CIRC. AND SURVEY.
28/01/98	02:25-06:25	3136.00	3140.00	1.00	SLIDE	
28/01/98	06:25-06:45	3140.00	3140.00		CIRC	CIRC. AND SURVEY.
28/01/98	06:45-16:15	3140.00	0.00		POOH	P.O.H. LAY DOWN HIGH SPEED MOTOR AND DIAMOND BIT.

BOTTOM HOLE ASSEMBLY

Run No.: 1 | BHA No.: 3 | Hole Size: 215.900 mm
Motor Size / Type: 164.000 mm / F2000 | Serial No.: HT64051X | Circulating: 0.00 hrs

ACTIVITY LOG

Date From: January 28, 1998 | Time From: 00:00 | Start Depth: 0.00 m
Date To: January 28, 1998 | Time To: 24:00 | End Depth: 3115.00 m
Total Hours Logged: 7.75 | Total Drilled: 0.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
28/01/98	16:15-18:45	0.00	0.00		MAKBHA	MAKE UP B.H.A. #3
28/01/98	18:45-24:00	0.00	3115.00		TRIPIN	

Today's Cost: $ _____ | Operator: _____
Total Cost To Date: $ _____ | Directional Driller: _____

HALLIBURTON

DAILY REPORT

January 29, 1998

2/12/98 3:23:11 pm
Version VER2.2.4

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

Company Man: ART SCHRITT

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
3185.00	2745.15	37.80	209.50	790.68(E)	764.80(W)	1099.89	1.00

BIT DATA

Manufacturer: REED
Bit Type: TCI
Serial No.: TB6005
Hours On Bit: 14.92

IADC: 517
Depth In: 3140.00 - 3194.00 (54.00) m
Nozzles: 11.1(2),11.9 mm
MTG On Bit: 54.00

Model: EHP51A

Length: 0.25 m
Gage Length: 0.00 mm
TFA: 304.758 mm2

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 164.000 mm / F2000
Sliding(0.0%): 0.00 m @ 0.00 hrs ==> 0.00 m/hr
Rotating(100.0%): 54.00 m @ 14.92 hrs ==> 3.62 m/hr
Total Drilled: 54.00 m @ 14.92 hrs ==> 3.62 m/hr

BHA No.: 3
Serial No.: HT64051X

Press on Bot: 7800 kpa
Press off Bot: 7000 kpa

Hole Size: 215.900 mm
Circulating: 19.33 hrs
Flow Rate: 1.20 m3/min
SPM: 103.00

ACTIVITY LOG

Date From: January 29, 1998
Date To: January 29, 1998

Time From: 00:00
Time To: 24:00
Total Hours Logged: 24.00

Start Depth: 3115.00 m
End Depth: 3194.00 m
Total Drilled: 54.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
29/01/98	00:00-01:00	3115.00	3140.00		CIRC	CIRC. AND CLEAN TO BOTTOM
29/01/98	01:00-01:20	3140.00	3140.00		OTHER	WORK ON PUMP
29/01/98	01:20-02:45	3140.00	3140.00		CIRC	CIRC. AND REPAIR PUMP
29/01/98	02:45-06:35	3140.00	3154.00	3.65	ROTATE	
29/01/98	06:35-06:40	3154.00	3154.00		CONNCT	
29/01/98	06:40-07:00	3154.00	3156.00	6.00	ROTATE	
29/01/98	07:00-07:05	3156.00	3156.00		CIRC	CIRC. AND SURVEY
29/01/98	07:05-09:05	3156.00	3164.00	4.00	ROTATE	
29/01/98	09:05-10:00	3164.00	3164.00		CIRC	
29/01/98	10:00-11:30	3164.00	3164.00		WIPER	
29/01/98	11:30-12:10	3164.00	3164.00		CIRC	
29/01/98	12:10-12:30	3164.00	3165.00	3.00	ROTATE	
29/01/98	12:30-12:35	3165.00	3165.00		CIRC	CIRC. AND SURVEY
29/01/98	12:35-15:20	3165.00	3175.00	3.64	ROTATE	
29/01/98	15:20-15:25	3175.00	3175.00		CIRC	CIRC. AND SURVEY.
29/01/98	15:25-18:10	3175.00	3184.00	3.27	ROTATE	
29/01/98	18:10-18:15	3184.00	3184.00		CIRC	CIRC. AND SURVEY
29/01/98	18:15-20:55	3184.00	3193.00	3.37	ROTATE	
29/01/98	20:55-21:00	3193.00	3193.00		CIRC	CIRC. AND SURVEY
29/01/98	21:00-23:45	3193.00	3193.00		WIPER	
29/01/98	23:45-24:00	3193.00	3194.00	4.00	ROTATE	

Today's Cost: $ _____
Total Cost To Date: $ _____

Operator: _____
Directional Driller: _____

HALLIBURTON

DAILY REPORT

January 30, 1998

2/12/98 3:23:11 pm
Version VER2.2.4

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

Company Man: ART SCHRITT

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
2496.00	2249.60	45.50	228.20	445.57(E)	437.34(W)	624.31	0.00

BIT DATA

Manufacturer: REED
Bit Type: TCI
Serial No.: TB6005
Hours On Bit: 17.17

IADC: 517
Depth In: 3194.00 - 3246.00 (52.00) m
Nozzles: 11.1(2),11.9 mm
MTG On Bit: 52.00

Model: EHP51A

Length: 0.25 m
Gage Length: 0.00 mm
TFA: 304.758 mm2

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 164.000 mm / F2000

Sliding(8.7%):	4.00 m	@	1.50 hrs	==>	2.67 m/hr
Rotating(91.3%):	48.00 m	@	15.67 hrs	==>	3.06 m/hr
Total Drilled:	52.00 m	@	17.17 hrs	==>	3.03 m/hr

BHA No.: 3
Serial No.: HT64051X

Press on Bot: 7800 kpa
Press off Bot: 7000 kpa

Hole Size: 215.900 mm
Circulating: 18.92 hrs
Flow Rate: 1.20 m3/min
SPM: 103.00

ACTIVITY LOG

Date From: January 30, 1998
Date To: January 30, 1998

Time From: 00:00
Time To: 24:00
Total Hours Logged: 24.00

Start Depth: 3194.00 m
End Depth: 2500.00 m
Total Drilled: 52.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
30/01/98	00:00-03:15	3194.00	3203.00	2.77	ROTATE	
30/01/98	03:15-03:20	3203.00	3203.00		CIRC	
30/01/98	03:20-07:20	3203.00	3213.00	2.50	ROTATE	
30/01/98	07:20-07:25	3213.00	3213.00		CIRC	CIRC. AND SURVEY.
30/01/98	07:25-10:25	3213.00	3222.00	3.00	ROTATE	
30/01/98	10:25-10:55	3222.00	3222.00		CIRC	CIRC. AND SURVEY
30/01/98	10:55-14:15	3222.00	3222.00		WIPER	
30/01/98	14:15-17:00	3222.00	3232.00	3.64	ROTATE	
30/01/98	17:00-17:05	3232.00	3232.00		CIRC	CIRC. AND SURVEY
30/01/98	17:05-18:35	3232.00	3236.00	2.67	SLIDE	
30/01/98	18:35-19:55	3236.00	3242.00	4.50	ROTATE	
30/01/98	19:55-20:00	3242.00	3242.00		CONNCT	
30/01/98	20:00-21:20	3242.00	3246.00	3.00	ROTATE	
30/01/98	21:20-22:20	3246.00	3246.00		CIRC	
30/01/98	22:20-24:00	3246.00	2500.00		POOH	

Today's Cost: $ _____
Total Cost To Date: $ _____

Operator: _____
Directional Driller: _____

HALLIBURTON

DAILY REPORT

January 31, 1998

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

Company Man: ART SCHRITT

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
3253.00	2799.08	34.70	206.30	827.24(E)	784.21(W)	1139.47	4.08

BIT DATA

Manufacturer: SECURITY
Bit Type: TCI
Serial No.: 629161
Hours On Bit: 8.67

IADC: 537
Depth In: 3246.00 - 3280.00 (34.00) m
Nozzles: 11.1(3) mm
MTG On Bit: 34.00

Model: SS86F

Length: 0.25 m
Gage Length: 0.00 mm
TFA: 290.307 mm2

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 164.000 mm / F2000

BHA No.: 3
Serial No.: HT64051X

Hole Size: 215.900 mm
Circulating: 0.00 hrs

ACTIVITY LOG

Date From: January 31, 1998
Date To: January 31, 1998

Time From: 00:00
Time To: 24:00
Total Hours Logged: 7.25

Start Depth: 2500.00 m
End Depth: 0.00 m
Total Drilled: 0.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
31/01/98	00:00-05:00	2500.00	0.00		POOH	
31/01/98	05:00-05:30	2500.00	0.00		POOH	
31/01/98	05:30-07:15	0.00	0.00		MAKBHA	

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 164.000 mm / F2000
Sliding(0.0%): 0.00 m @ 0.00 hrs ==> 0.00 m/hr
Rotating(100.0%): 34.00 m @ 8.67 hrs ==> 3.92 m/hr
Total Drilled: 34.00 m @ 8.67 hrs ==> 3.92 m/hr

BHA No.: 4
Serial No.: HT64051X

Press on Bot: 8500 kpa
Press off Bot: 7400 kpa

Hole Size: 215.900 mm
Circulating: 10.08 hrs
Flow Rate: 1.20 m3/min
SPM: 103.00

ACTIVITY LOG

Date From: January 31, 1998
Date To: January 31, 1998

Time From: 00:00
Time To: 24:00
Total Hours Logged: 16.75

Start Depth: 0.00 m
End Depth: 3280.00 m
Total Drilled: 34.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
31/01/98	07:15-09:00	0.00	700.00		TRIPIN	
31/01/98	09:00-09:45	700.00	700.00		CUTDRL	
31/01/98	09:45-13:45	700.00	3115.00		TRIPIN	
31/01/98	13:45-14:30	3115.00	3246.00		CIRC	WASH AND CLEAN TO BOTTOM.
31/01/98	14:30-15:45	3246.00	3251.00	4.00	ROTATE	
31/01/98	15:45-15:55	3251.00	3251.00		CIRC	CIRC. AND WORK PIPE
31/01/98	15:55-16:00	3251.00	3251.00		CONNCT	
31/01/98	16:00-16:10	3251.00	3252.00	6.00	ROTATE	
31/01/98	16:10-16:15	3252.00	3252.00		CIRC	CIRC. AND SURVEY.
31/01/98	16:15-18:35	3252.00	3261.00	3.86	ROTATE	
31/01/98	18:35-18:40	3261.00	3261.00		CIRC	CIRC. AND SURVEY
31/01/98	18:40-20:35	3261.00	3271.00	5.22	ROTATE	
31/01/98	20:35-20:40	3271.00	3271.00		CIRC	CIRC. AND SURVEY
31/01/98	20:40-23:20	3271.00	3279.00	3.00	ROTATE	
31/01/98	23:20-23:30	3279.00	3279.00		CIRC	CIRC. AND WORK PIPE
31/01/98	23:30-23:35	3279.00	3279.00		CONNCT	
31/01/98	23:35-23:55	3279.00	3280.00	3.00	ROTATE	
31/01/98	23:55-24:00	3280.00	3280.00		CIRC	CIRC. AND SURVEY.

HALLIBURTON

DAILY REPORT

February 1, 1998

2/12/98 3:23:14 pm
Version VER2.2.4

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

Company Man: ART SCHRITT

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
3340.00	2870.92	35.30	204.80	871.90(E)	804.51(W)	1185.40	0.73

BIT DATA

Manufacturer: SECURITY
Bit Type: TCI
Serial No.: 629161
Hours On Bit: 19.50

IADC: 537
Depth In: 3280.00 - 3345.00 (65.00) m
Nozzles: 11.1(3) mm
MTG On Bit: 65.00

Model: SS86F

Length: 0.25 m
Gage Length: 0.00 mm
TFA: 290.307 mm2

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 164.000 mm / F2000

Sliding(6.0%):	3.00 m @	1.17 hrs ⟹	2.57 m/hr	
Rotating(94.0%):	62.00 m @	18.33 hrs ⟹	3.38 m/hr	
Total Drilled:	65.00 m @	19.50 hrs ⟹	3.33 m/hr	

BHA No.: 4
Serial No.: HT64051X

Press on Bot: 8500 kpa
Press off Bot: 7400 kpa

Hole Size: 215.900 mm
Circulating: 20.58 hrs
Flow Rate: 1.20 m3/min
SPM: 103.00

ACTIVITY LOG

Date From: February 1, 1998
Date To: February 1, 1998

Time From: 00:00
Time To: 24:00
Total Hours Logged: 24.00

Start Depth: 3280.00 m
End Depth: 3345.00 m
Total Drilled: 65.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
01/02/98	00:00-02:05	3280.00	3290.00	4.80	ROTATE	
01/02/98	02:05-02:10	3290.00	3290.00		CIRC	CIRC. AND SURVEY
01/02/98	02:10-03:20	3290.00	3293.00	2.57	SLIDE	
01/02/98	03:20-03:20	3293.00	3293.00		SLIDE	
01/02/98	03:20-05:05	3293.00	3300.00	4.00	ROTATE	
01/02/98	05:05-05:10	3300.00	3300.00		CIRC	CIRC. AND SURVEY
01/02/98	05:10-07:30	3300.00	3309.00	3.86	ROTATE	
01/02/98	07:30-07:35	3309.00	3309.00		CIRC	CIRC. AND SURVEY
01/02/98	07:35-08:00	3309.00	3220.00		CIRC	CIRC. AND PULL UP INTO CASING
01/02/98	08:00-08:15	3220.00	3220.00		SRVC	
01/02/98	08:15-11:15	3220.00	3309.00		WIPER	
01/02/98	11:15-14:55	3309.00	3319.00	2.73	ROTATE	
01/02/98	14:55-15:00	3319.00	3319.00		CIRC	CIRC. AND SURVEY
01/02/98	15:00-17:45	3319.00	3329.00	3.64	ROTATE	
01/02/98	17:45-18:00	3329.00	3329.00		CIRC	CIRC. AND SURVEY.
01/02/98	18:00-21:05	3329.00	3337.00	2.59	ROTATE	
01/02/98	21:05-21:15	3337.00	3337.00		CONNCT	
01/02/98	21:15-21:25	3337.00	3338.00	6.00	ROTATE	
01/02/98	21:25-21:30	3338.00	3338.00		CIRC	CIRC. AND SURVEY.
01/02/98	21:30-24:00	3338.00	3345.00	2.80	ROTATE	

Today's Cost: $ _____
Total Cost To Date: $ _____

Operator: _____
Directional Driller: _____

HALLIBURTON

DAILY REPORT

February 2, 1998

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
Company Man: ART SCHRITT
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
3397.00	2917.37	35.60	205.30	901.84(E)	818.48(W)	1216.45	0.28

BIT DATA

Manufacturer: SECURITY
Bit Type: TCI
Serial No.: 629161
Hours On Bit: 18.92

IADC: 537
Depth In: 3345.00 - 3408.00 (63.00) m
Nozzles: 11.1(3) mm
MTG On Bit: 63.00

Model: SS86F

Length: 0.25 m
Gage Length: 0.00 mm
TFA: 290.307 mm2

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 164.000 mm / F2000

Sliding(0.0%):	0.00 m @	0.00 hrs ⟹	0.00 m/hr	
Rotating(100.0%):	63.00 m @	18.92 hrs ⟹	3.33 m/hr	
Total Drilled:	63.00 m @	18.92 hrs ⟹	3.33 m/hr	

BHA No.: 4
Serial No.: HT64051X
Press on Bot: 8500 kpa
Press off Bot: 7400 kpa

Hole Size: 215.900 mm
Circulating: 21.25 hrs
Flow Rate: 1.20 m3/min
SPM: 103.00

ACTIVITY LOG

Date From: February 2, 1998
Date To: February 2, 1998
Time From: 00:00
Time To: 24:00
Total Hours Logged: 24.00
Start Depth: 3345.00 m
End Depth: 3408.00 m
Total Drilled: 63.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
02/02/98	00:00-01:20	3345.00	3348.00	2.25	ROTATE	
02/02/98	01:20-01:25	3348.00	3348.00		CIRC	CIRC. AND SURVEY
02/02/98	01:25-04:55	3348.00	3358.00	2.86	ROTATE	
02/02/98	04:55-05:00	3358.00	3358.00		CIRC	CIRC. AND SURVEY.
02/02/98	05:00-08:10	3358.00	3367.00	2.84	ROTATE	
02/02/98	08:10-08:30	3367.00	3367.00		CIRC	CIRC. AND SURVEY.
02/02/98	08:30-08:40	3367.00	3367.00		CONNCT	
02/02/98	08:40-12:05	3367.00	3377.00	2.93	ROTATE	
02/02/98	12:05-12:20	3377.00	3377.00		CIRC	CIRC. AND SURVEY
02/02/98	12:20-14:25	3377.00	3387.00	4.80	ROTATE	
02/02/98	14:25-14:35	3387.00	3387.00		CIRC	CIRC. AND SURVEY.
02/02/98	14:35-16:35	3387.00	3396.00	4.50	ROTATE	
02/02/98	16:35-16:55	3396.00	3396.00		CIRC	CIRC. WORK PIPE, AND SURVEY.
02/02/98	16:55-17:25	3396.00	3396.00		CIRC	CIRC. AND TRIP UP INTO CASING.
02/02/98	17:25-20:00	3396.00	3396.00		WIPER	
02/02/98	20:00-20:30	3396.00	3396.00		CIRC	CIRC. AND CLEAN TO BOTTOM
02/02/98	20:30-23:30	3396.00	3406.00	3.33	ROTATE	
02/02/98	23:30-23:35	3406.00	3406.00		CIRC	CIRC. AND SURVEY.
02/02/98	23:35-24:00	3406.00	3408.00	4.80	ROTATE	

Today's Cost: $ _____
Total Cost To Date: $ _____

Operator: _____
Directional Driller: _____

HALLIBURTON

DAILY REPORT

February 3, 1998

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
Company Man: ART SCHRITT
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
3500.00	3000.62	37.26	203.59	956.95(E)	843.77(W)	1273.30	1.35

BIT DATA

Manufacturer: SECURITY
Bit Type: TCI
Serial No.: 629161
Hours On Bit: 22.67

IADC: 537
Depth In: 3408.00 - 3488.00 (80.00) m
Nozzles: 11.1(3) mm
MTG On Bit: 80.00

Model: SS86F

Length: 0.25 m
Gage Length: 0.00 mm
TFA: 290.307 mm2

MUD/PUMP DATA

Mud Type: KELZAN/BEN
Water Loss: 12.00 cc
LCM Type: Type A
Diesel Grade: 0
BH(max): -17.78 °C

Wt: 1035.00 kg/m3
Funnel Visc.: 52.00 sec
LCM Size: 0.00 mm
Aniline Pt.: 0.00 °C
Flow Line(max): 70.00 °C

PV: 17.00 cp
pH: 11.0

YP: 8.00 pa
Total Gas: 0 PPM
LCM Volume: 0.00 kg/m3
Chlorides: 1100 PPM
Temperature Gradient: 0.00 °C/30m

oil: 0.00%
Sand: 0.00%
Solids: 2.10%
H2S: 0 PPM

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 161.000 mm / HIGH SPEED

BHA No.: 1
Serial No.: 625-17006

Hole Size: 215.900 mm
Circulating: 0.00 hrs

ACTIVITY LOG

Date From: February 3, 1998
Date To: February 3, 1998

Time From: 00:00
Time To: 24:00
Total Hours Logged: 4.25

Start Depth: 0.00 m
End Depth: 0.00 m
Total Drilled: 0.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
03/02/98	13:45-18:00	0.00	0.00		MAKBHA	UNPLUG ALL TOOLS,COULD NOT UNPLUG MOTOR , PICK UP NEW MOTOR AND SHALLOW TEST M.W. D.

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 164.000 mm / F2000
Sliding(0.0%): 0.00 m @ 0.00 hrs ⟹ 0.00 m/hr
Rotating(100.0%): 80.00 m @ 22.67 hrs ⟹ 3.53 m/hr
Total Drilled: 80.00 m @ 22.67 hrs ⟹ 3.53 m/hr

BHA No.: 4
Serial No.: HT64051X
Bit Press.Drop: 2718.91 kpa
Press on Bot: 8500 kpa
Press off Bot: 7400 kpa

Hole Size: 215.900 mm
Circulating: 23.67 hrs
Flow Rate: 1.20 m3/min
SPM: 103.00

ACTIVITY LOG

Date From: February 3, 1998
Date To: February 3, 1998

Time From: 00:00
Time To: 24:00
Total Hours Logged: 24.00

Start Depth: 3408.00 m
End Depth: 3488.00 m
Total Drilled: 80.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
03/02/98	00:00-01:45	3408.00	3415.00	4.00	ROTATE	
03/02/98	01:45-01:50	3415.00	3415.00		CIRC	CIRC. AND SURVEY
03/02/98	01:50-04:00	3415.00	3424.00	4.15	ROTATE	
03/02/98	04:00-04:05	3424.00	3424.00		CONNCT	
03/02/98	04:05-04:15	3424.00	3425.00	6.00	ROTATE	
03/02/98	04:15-04:20	3425.00	3425.00		CIRC	CIRC. AND SURVEY.
03/02/98	04:20-06:15	3425.00	3434.00	4.70	ROTATE	
03/02/98	06:15-06:20	3434.00	3434.00		CIRC	CIRC. AND SURVEY.
03/02/98	06:20-08:30	3434.00	3444.00	4.62	ROTATE	
03/02/98	08:30-08:35	3444.00	3444.00		CIRC	CIRC. AND SURVEY.

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

Company Man: ART SCHRITT

03/02/98	08:35-10:10	3444.00	3450.00	3.79	ROTATE	
03/02/98	10:10-10:20	3450.00	3450.00		CIRC	CIRC. AND SURVEY.
03/02/98	10:20-11:35	3450.00	3454.00	3.20	ROTATE	
03/02/98	11:35-11:50	3454.00	3454.00		CIRC	CIRC. AND SURVEY.
03/02/98	11:50-12:00	3454.00	3454.00		CONNCT	
03/02/98	12:00-15:30	3454.00	3463.00	2.57	ROTATE	
03/02/98	15:30-15:35	3463.00	3463.00		CIRC	CIRC. AND SURVEY.
03/02/98	15:35-18:30	3463.00	3473.00	3.43	ROTATE	
03/02/98	18:30-18:35	3473.00	3473.00		CIRC	CIRC. AND SURVEY.
03/02/98	18:35-21:45	3473.00	3482.00	2.84	ROTATE	
03/02/98	21:45-21:50	3482.00	3482.00		CONNCT	
03/02/98	21:50-22:10	3482.00	3483.00	3.00	ROTATE	
03/02/98	22:10-22:15	3483.00	3483.00		CIRC	CIRC. AND SURVEY.
03/02/98	22:15-24:00	3483.00	3488.00	2.86	ROTATE	

Today's Cost: $ _____
Total Cost To Date: $ _____

Operator: _____
Directional Driller: _____

HALLIBURTON

DAILY REPORT

February 4, 1998

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
Company Man: ART SCHRITT
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
0.00	0.00	0.00	0.00	0.00(E)	0.00(W)	0.00	0.00

BIT DATA

Manufacturer: SECURITY
Bit Type: TCI
Serial No.: 629161
Hours On Bit: 4.08

IADC: 537
Depth In: 3488.00 - 3500.00 (12.00) m
Nozzles: 11.1(3) mm
MTG On Bit: 12.00

Model: SS86F

Length: 0.25 m
Gage Length: 0.00 mm
TFA: 290.307 mm2

MUD/PUMP DATA

Mud Type: KELZAN/BEN
Water Loss: 12.00 cc
LCM Type: Type A
Diesel Grade: 0
BH(max): -17.78 °C

Wt: 1035.00 kg/m3
Funnel Visc.: 52.00 sec
LCM Size: 0.00 mm
Aniline Pt.: 0.00 °C
Flow Line(max): 70.00 °C

PV: 17.00 cp
pH: 11.0

YP: 8.00 pa
Total Gas: 0 PPM
LCM Volume: 0.00 kg/m3
Chlorides: 1100 PPM
Temperature Gradient: 0.00 °C/30m

oil: 0.00%
Sand: 0.90%
Solids: 2.10%
H2S: 0 PPM

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 164.000 mm / F2000

Sliding(0.0%):	0.00 m @	0.00 hrs ⟹	0.00 m/hr	
Rotating(100.0%):	12.00 m @	4.08 hrs ⟹	2.94 m/hr	
Total Drilled:	12.00 m @	4.08 hrs ⟹	2.94 m/hr	

BHA No.: 4
Serial No.: HT64051X
Bit Press.Drop: 2718.91 kpa
Press on Bot: 8500 kpa
Press off Bot: 7400 kpa

Hole Size: 215.900 mm
Circulating: 6.00 hrs
Flow Rate: 1.20 m3/min
SPM: 103.00

ACTIVITY LOG

Date From: February 4, 1998
Date To: February 4, 1998

Time From: 00:00
Time To: 24:00
Total Hours Logged: 24.00

Start Depth: 3488.00 m
End Depth: 0.00 m
Total Drilled: 12.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
04/02/98	00:00-01:15	3488.00	3492.00	3.20	ROTATE	
04/02/98	01:15-01:20	3492.00	3492.00		CIRC	CIRC. AND SURVEY.
04/02/98	01:20-04:10	3492.00	3500.00	2.82	ROTATE	
04/02/98	04:10-04:15	3500.00	3500.00		CIRC	CIRC. AND SURVEY.
04/02/98	04:15-06:00	3500.00	3500.00		CIRC	CIRC. BOTTOMS UP,CIRC. AND PULL UP INTO CASING.
04/02/98	06:00-13:00	3500.00	0.00		POOH	
04/02/98	13:00-16:00	0.00	0.00		LAYDWN	
04/02/98	16:00-24:00	0.00	0.00		OTHER	STANDBY IN CAMP. WAIT ON AIRPLANE.

Today's Cost: $ _____
Total Cost To Date: $ _____

Operator: _____
Directional Driller: _____

HALLIBURTON

DAILY REPORT

February 5, 1998

Job No.: 97d007s4
Operator: RANGER OIL LIMITED.
Field: FORT LIARD
Well: 97d007s4

AFE No.: E6D-015
Location:
MWD Operator(s): DEAN MCNEIL, DEON GAULTON
Dir'l Driller(s): JIM MCFARLANE

Company Man: ART SCHRITT

LAST SURVEY

MD	TVD	Incl	Azi	N/S	E/W	Vertical Section	DLS
m	m	deg	deg	m	m	m	deg/30m
0.00	0.00	0.00	0.00	0.00(E)	0.00(W)	0.00	0.00

MUD/PUMP DATA

Mud Type: KELZAN/BEN
Water Loss: 12.00 cc
LCM Type: Type A
Diesel Grade: 0
BH(max): -17.78 °C

Wt: 1035.00 kg/m3
Funnel Visc.: 52.00 sec
LCM Size: 0.00 mm
Aniline Pt.: 0.00 °C
Flow Line(max): 70.00 °C

PV: 17.00 cp
pH: 11.0

YP: 8.00 pa
Total Gas: 0 PPM
LCM Volume: 0.00 kg/m3
Chlorides: 1100 PPM
Temperature Gradient: 0.00 °C/30m

oil: 0.00%
Sand: 0.00%
Solids: 2.10%
H2S: 0 PPM

BOTTOM HOLE ASSEMBLY

Run No.: 1
Motor Size / Type: 164.000 mm / F2000

BHA No.: 4
Serial No.: HT64051X

Hole Size: 215.900 mm
Circulating: 0.00 hrs

ACTIVITY LOG

Date From: February 5, 1998
Date To: February 5, 1998

Time From: 00:00
Time To: 24:00
Total Hours Logged: 18.00

Start Depth: 0.00 m
End Depth: 0.00 m
Total Drilled: 0.00 m

END DATE	TIME	FROM m	TO m	ROP m/hr	CODE	COMMENTS
05/02/98	00:00-08:00	0.00	0.00		OTHER	WAIT AT CAMP FOR AIRPLANE.
05/02/98	08:00-12:00	0.00	0.00		OTHER	DRIVE TO FORT NELSON WITH RIG CREWCAB.
05/02/98	12:00-18:00	0.00	0.00		OTHER	WAIT AT FT. NELSON AND FLY BACK TO EDMONTON VIA CAN. AIRLINES

CONTINENTAL LABORATORIES

CL CONSULTANTS LIMITED

1958 - 1998

"Logging the Past 40 Years"

RANGER FORT LIARD P66A

P66 LAT 60 40'/LONG 123 30'

File No: 96NB-1666

Prepared By:

H. WENNEKERS/ D. FERGUSON/ F. RICHARDSON
Geological Wellsite Consultants
CL Consultants Limited

Prepared for:

Peter Goetz
RANGER OIL LIMITED

PERMIT TO PRACTICE
CL CONSULTANTS LIMITED
Signature:
Date: March 16, 1998
PERMIT NUMBER: P2911
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

PROFESSIONAL GEOLOGIST ALBERTA
PATRICK J. BISS

CL Consultants Limited

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SYNOPSIS

OPERATOR:	RANGER OIL LIMITED	
WELL NAME:	RANGER FORT LIARD P66-A	
LOCATION:	LAT 60 30' / LONG 123 30'	
FIELD:	UNDEFINED	
PROVINCE:	Alberta	
ELEVATIONS:	G.L. - 449.49 m	K.B. - 459.89 m
SPUD DATE:	~~January 12~~ July 14, 1997	0900 hrs
T.D. DATE:	Feb~~ruary 04~~, 1998	04:00 hrs
CONTRACTOR:	PRECISION DRILLING	Rig: 426 E
HOLE SIZE:	311 mm	
COLLARS:	MONEL 228 mm	
MUD COMPANY:	DOWELL	
MUD TYPE:	INVERT	
WIRELINE LOGGING CO.:	COMPUTALOG	
LOG RECORD:	Run #1	

1) XY-GR	3118.0 m - 1005.0 m		
2) STI-BCS-GR	3116.4 m - 1006.0 m		
1) STI-SONIC	3500M TD - 3112 CSG	RUN #1	FEB 9/98
2) DENSITY	3500M TD - 3112 CSG	RUN #2	FEB 9/98
3) NEUTRON	3500M TD - 3112 CSG	RUN #3	FEB 9/98
4) EMI	3500M TD - 3112 CSG	RUN #4	FEB 9/98

DRILLING SUPERVISION:	JOHN FAULKNER / ART SCHRITT
GEOLOGICAL SUPERVISION:	HENRI WENNEKERS / D FERGUSON
TOTAL DEPTH:	3501 meters

FORMATION TOPS (m)

FORMATION	PROGNOSIS (MD)	PROGNOSIS (TVD)	SAMPLES (MD)	SAMPLES (TVD)	LOGS (MD)	LOGS (TVD)
KICKOFF POINT	1327	1327				
DEVONIAN 2ND BLACK SH	2256	2085				
FT SIMPSON	2387	2180	2054m / 1944m			
FAULT	2431	2210				
FT SIMPSON SEIS MKR	2612	2340				
HORN R	2812	2480	2796m / 2461m			
NAHANNI TOP	3025	2630	3116m / 2690m			
NAHANNI TOP[WHIP 4]	3128	2699.8				
TD	3501		3500m / 3000.62m			

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets	
0.00	0.00	0.00	0.00	0.00	0.00 N	0.00 E
199.00	0.50	36.40	199.00	-0.86	0.70 N	0.52 E
226.00	1.75	25.00	225.99	-1.36	1.17 N	0.76 E
253.00	1.50	20.40	252.98	-2.07	1.87 N	1.06 E
262.50	1.46	36.51	262.48	-2.30	2.09 N	1.17 E
283.00	1.75	67.40	282.97	-2.85	2.42 N	1.62 E
312.00	1.90	70.40	311.96	-3.70	2.75 N	2.48 E
343.00	2.00	70.40	342.94	-4.65	3.10 N	3.47 E
374.00	2.25	59.40	373.92	-5.73	3.59 N	4.51 E
403.00	3.00	68.40	402.89	-6.97	4.16 N	5.70 E
433.00	3.30	70.90	432.84	-8.47	4.73 N	7.25 E
451.00	4.40	71.30	450.80	-9.56	5.12 N	8.39 E
460.00	4.30	71.10	459.77	-10.17	5.34 N	9.04 E
470.00	4.30	74.20	469.75	-10.83	5.57 N	9.75 E
480.00	4.30	79.10	479.72	-11.47	5.74 N	10.48 E
490.00	4.20	87.40	489.69	-12.05	5.83 N	11.21 E
499.00	4.10	93.10	498.67	-12.51	5.83 N	11.87 E
509.00	4.10	99.30	508.64	-12.96	5.75 N	12.58 E
518.00	4.00	107.10	517.62	-13.29	5.60 N	13.19 E
528.00	3.80	114.70	527.60	-13.57	5.36 N	13.83 E
538.00	3.50	123.60	537.58	-13.75	5.06 N	14.38 E
547.00	3.20	129.50	546.56	-13.82	4.74 N	14.81 E
557.00	2.80	129.60	556.55	-13.87	4.41 N	15.21 E
566.00	2.40	130.80	565.54	-13.91	4.15 N	15.52 E
576.00	2.10	128.60	575.53	-13.94	3.90 N	15.82 E
586.00	1.90	122.80	585.52	-14.00	3.69 N	16.10 E
596.00	1.70	107.60	595.52	-14.10	3.56 N	16.39 E
605.00	1.90	97.90	604.51	-14.25	3.50 N	16.66 E
614.00	2.00	92.80	613.51	-14.45	3.47 N	16.97 E
624.00	2.20	88.10	623.50	-14.71	3.47 N	17.33 E
634.00	2.20	92.00	633.49	-14.98	3.47 N	17.72 E
644.00	2.20	101.00	643.49	-15.22	3.42 N	18.10 E
654.00	2.30	103.80	653.48	-15.43	3.34 N	18.48 E
663.00	2.40	113.60	662.47	-15.59	3.22 N	18.83 E
673.00	2.50	124.30	672.46	-15.71	3.01 N	19.20 E
683.00	2.40	130.50	682.45	-15.76	2.75 N	19.54 E
693.00	2.20	136.30	692.45	-15.78	2.48 N	19.83 E
702.00	1.90	144.50	701.44	-15.75	2.23 N	20.04 E
712.00	1.60	151.30	711.43	-15.68	1.98 N	20.20 E
722.00	1.20	151.40	721.43	-15.61	1.76 N	20.32 E
731.00	0.80	165.00	730.43	-15.55	1.62 N	20.38 E
741.00	0.40	183.40	740.43	-15.49	1.52 N	20.39 E
751.00	0.10	158.00	750.43	-15.46	1.47 N	20.39 E
760.00	0.30	45.00	759.43	-15.48	1.48 N	20.41 E
770.00	0.70	53.90	769.43	-15.57	1.54 N	20.48 E

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets
780.00	0.90	64.60	779.43	-15.70	1.61 N 20.60 E
789.00	1.00	79.60	788.43	-15.84	1.65 N 20.74 E
799.00	1.10	111.10	798.43	-15.95	1.63 N 20.92 E
808.00	1.30	135.40	807.42	-15.98	1.53 N 21.07 E
818.00	1.40	155.00	817.42	-15.94	1.34 N 21.20 E
827.00	2.00	182.50	826.42	-15.78	1.08 N 21.24 E
837.00	2.50	208.80	836.41	-15.45	0.71 N 21.13 E
847.00	2.80	220.10	846.40	-14.99	0.34 N 20.87 E
857.00	2.90	219.60	856.39	-14.50	0.04 S 20.55 E
866.00	2.40	211.50	865.38	-14.09	0.38 S 20.31 E
876.00	2.10	185.40	875.37	-13.74	0.74 S 20.18 E
886.00	2.00	153.30	885.36	-13.55	1.08 S 20.24 E
896.00	2.20	123.50	895.36	-13.53	1.34 S 20.48 E
905.00	2.70	118.00	904.35	-13.63	1.54 S 20.81 E
914.00	2.70	110.50	913.34	-13.78	1.71 S 21.20 E
924.00	2.70	111.50	923.33	-13.97	1.88 S 21.63 E
934.00	2.50	130.60	933.32	-14.08	2.11 S 22.02 E
944.00	3.20	153.20	943.31	-14.01	2.50 S 22.31 E
954.00	3.60	163.70	953.29	-13.77	3.05 S 22.53 E
963.00	4.40	164.20	962.27	-13.47	3.65 S 22.70 E
973.00	5.30	170.50	972.23	-13.01	4.48 S 22.88 E
983.00	5.60	176.90	982.19	-12.42	5.42 S 22.98 E
989.00	5.50	178.70	988.16	-12.02	6.00 S 23.00 E
1007.00	5.39	179.13	1006.08	-10.84	7.71 S 23.04 E
1019.00	4.80	179.30	1018.03	-10.10	8.77 S 23.05 E
1029.00	4.40	176.80	1028.00	-9.55	9.57 S 23.08 E
1039.00	4.00	174.50	1037.97	-9.07	10.30 S 23.13 E
1048.00	3.50	170.40	1046.95	-8.71	10.89 S 23.21 E
1058.00	3.00	169.30	1056.93	-8.39	11.45 S 23.31 E
1068.00	2.60	166.80	1066.92	-8.12	11.92 S 23.41 E
1077.00	2.00	160.40	1075.91	-7.95	12.27 S 23.51 E
1087.00	1.60	144.50	1085.91	-7.85	12.55 S 23.65 E
1097.00	1.20	128.50	1095.91	-7.84	12.73 S 23.81 E
1106.00	1.20	115.70	1104.90	-7.88	12.83 S 23.97 E
1116.00	1.10	106.10	1114.90	-7.96	12.90 S 24.16 E
1126.00	1.20	105.30	1124.90	-8.06	12.95 S 24.35 E
1136.00	1.20	114.10	1134.90	-8.15	13.02 S 24.55 E
1146.00	1.20	108.80	1144.90	-8.23	13.10 S 24.74 E
1156.00	1.30	109.60	1154.89	-8.33	13.17 S 24.95 E
1165.00	1.30	101.40	1163.89	-8.43	13.23 S 25.14 E
1175.00	1.60	98.00	1173.89	-8.57	13.27 S 25.39 E
1185.00	1.60	95.40	1183.88	-8.75	13.30 S 25.67 E
1193.00	1.30	97.90	1191.88	-8.87	13.32 S 25.87 E
1203.00	1.20	94.50	1201.88	-9.01	13.35 S 26.09 E
1233.00	1.30	94.10	1231.87	-9.43	13.40 S 26.74 E
1262.00	1.40	107.80	1260.86	-9.81	13.53 S 27.40 E

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets
1291.00	1.10	112.40	1289.86	-10.08	13.74 S 28.00 E
1310.00	0.40	110.50	1308.86	-10.18	13.84 S 28.23 E
1320.00	1.20	117.10	1318.85	-10.23	13.90 S 28.36 E
1327.00	1.66	125.42	1325.85	-10.26	13.99 S 28.50 E
1329.00	1.80	127.00	1327.85	-10.27	14.02 S 28.55 E
1339.00	2.50	120.40	1337.84	-10.35	14.23 S 28.87 E
1349.00	2.90	115.50	1347.83	-10.49	14.45 S 29.28 E
1358.00	3.10	114.40	1356.82	-10.65	14.65 S 29.71 E
1368.00	3.20	118.40	1366.81	-10.83	14.89 S 30.20 E
1378.00	3.00	123.50	1376.79	-10.96	15.17 S 30.67 E
1388.00	3.20	136.50	1386.78	-11.00	15.51 S 31.08 E
1398.00	3.60	151.50	1396.76	-10.91	15.99 S 31.42 E
1408.00	4.40	169.70	1406.73	-10.60	16.65 S 31.64 E
1417.00	5.20	182.00	1415.70	-10.10	17.39 S 31.68 E
1427.00	6.20	190.40	1425.65	-9.33	18.38 S 31.57 E
1436.00	6.90	197.40	1434.60	-8.45	19.37 S 31.32 E
1446.00	8.00	205.30	1444.51	-7.26	20.57 S 30.84 E
1456.00	9.30	211.40	1454.40	-5.82	21.89 S 30.13 E
1465.00	10.70	214.80	1463.26	-4.29	23.20 S 29.27 E
1474.00	11.60	217.20	1472.09	-2.57	24.61 S 28.25 E
1484.00	12.40	218.80	1481.87	-0.51	26.24 S 26.96 E
1494.00	12.60	219.30	1491.63	1.64	27.93 S 25.60 E
1503.00	12.80	220.00	1500.41	3.61	29.45 S 24.34 E
1513.00	12.90	220.20	1510.16	5.83	31.15 S 22.91 E
1523.00	13.30	219.40	1519.90	8.09	32.89 S 21.46 E
1533.00	13.70	219.60	1529.63	10.41	34.69 S 19.97 E
1543.00	14.50	220.60	1539.33	12.84	36.56 S 18.40 E
1553.00	15.10	221.00	1548.99	15.38	38.49 S 16.73 E
1562.00	15.80	223.20	1557.67	17.78	40.27 S 15.12 E
1572.00	16.70	222.30	1567.27	20.57	42.32 S 13.22 E
1582.00	17.50	222.80	1576.83	23.51	44.49 S 11.24 E
1592.00	17.90	224.70	1586.35	26.55	46.68 S 9.13 E
1602.00	18.10	225.30	1595.86	29.64	48.87 S 6.95 E
1612.00	18.10	225.60	1605.37	32.75	51.05 S 4.73 E
1621.00	18.60	225.00	1613.91	35.58	53.04 S 2.72 E
1631.00	19.70	225.60	1623.36	38.86	55.35 S 0.39 E
1640.00	20.60	226.80	1631.81	41.96	57.49 S 1.85 W
1650.00	21.40	226.00	1641.14	45.54	59.96 S 4.44 W
1659.00	22.70	226.00	1649.49	48.92	62.31 S 6.87 W
1668.00	24.10	225.80	1657.74	52.50	64.80 S 9.44 W
1677.00	25.90	226.70	1665.90	56.30	67.43 S 12.19 W
1687.00	27.60	226.80	1674.83	60.80	70.51 S 15.47 W
1697.00	28.80	226.80	1683.64	65.52	73.75 S 18.91 W
1707.00	29.60	227.20	1692.37	70.40	77.07 S 22.48 W
1717.00	30.50	226.90	1701.03	75.40	80.49 S 26.15 W
1727.00	31.20	226.50	1709.61	80.53	84.00 S 29.88 W

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets
1736.00	32.50	226.60	1717.26	85.27	87.27 S 33.32 W
1746.00	33.80	226.70	1725.63	90.74	91.02 S 37.30 W
1755.00	35.10	226.20	1733.05	95.83	94.53 S 40.99 W
1764.00	36.10	225.50	1740.37	101.07	98.18 S 44.75 W
1774.00	37.20	224.00	1748.39	107.04	102.42 S 48.95 W
1784.00	38.40	223.50	1756.29	113.16	106.85 S 53.19 W
1793.00	39.60	223.80	1763.29	118.83	110.95 S 57.10 W
1803.00	40.80	225.00	1770.93	125.28	115.56 S 61.61 W
1813.00	41.60	223.90	1778.45	131.87	120.26 S 66.23 W
1826.00	43.10	224.50	1788.06	140.62	126.54 S 72.33 W
1836.00	43.40	224.20	1795.34	147.47	131.44 S 77.12 W
1847.00	43.40	225.40	1803.33	155.03	136.80 S 82.45 W
1857.00	43.70	224.70	1810.58	161.92	141.67 S 87.32 W
1866.00	44.60	225.90	1817.04	168.19	146.08 S 91.78 W
1876.00	44.90	225.60	1824.14	175.23	150.99 S 96.82 W
1885.00	45.70	226.40	1830.47	181.62	155.43 S 101.42 W
1895.00	46.20	228.20	1837.42	188.81	160.30 S 106.71 W
1904.00	46.50	228.80	1843.64	195.31	164.62 S 111.58 W
1914.00	46.80	228.50	1850.50	202.56	169.42 S 117.04 W
1923.00	47.10	229.40	1856.65	209.12	173.74 S 122.00 W
1933.00	47.50	231.30	1863.43	216.44	178.43 S 127.66 W
1942.00	48.40	231.40	1869.46	223.08	182.61 S 132.88 W
1952.00	48.50	231.20	1876.09	230.52	187.28 S 138.72 W
1962.00	48.60	231.20	1882.71	237.97	191.98 S 144.56 W
1971.00	49.00	231.60	1888.64	244.70	196.21 S 149.85 W
1981.00	48.50	231.70	1895.23	252.17	200.87 S 155.75 W
1990.00	47.90	231.70	1901.23	258.83	205.03 S 161.02 W
2000.00	48.00	232.60	1907.93	266.20	209.58 S 166.88 W
2010.00	48.30	232.40	1914.60	273.59	214.12 S 172.79 W
2019.00	47.80	232.30	1920.61	280.22	218.21 S 178.09 W
2028.00	47.40	231.30	1926.68	286.82	222.32 S 183.31 W
2038.00	47.70	231.30	1933.43	294.16	226.93 S 189.07 W
2048.00	47.90	230.50	1940.15	301.53	231.60 S 194.82 W
2065.00	47.40	229.60	1951.60	314.04	239.67 S 204.45 W
2075.00	46.50	229.30	1958.43	321.33	244.42 S 210.00 W
2084.00	45.90	228.50	1964.66	327.81	248.69 S 214.90 W
2094.00	46.70	229.80	1971.57	335.02	253.42 S 220.37 W
2104.00	47.50	230.20	1978.37	342.31	258.13 S 225.98 W
2113.00	47.40	231.40	1984.46	348.91	262.32 S 231.12 W
2123.00	47.20	230.50	1991.24	356.22	266.95 S 236.82 W
2133.00	47.20	230.80	1998.04	363.52	271.60 S 242.50 W
2142.00	47.60	231.50	2004.13	370.11	275.76 S 247.66 W
2152.00	47.80	232.60	2010.86	377.45	280.30 S 253.49 W
2162.00	46.90	232.70	2017.63	384.74	284.77 S 259.34 W
2171.00	45.90	232.90	2023.84	391.19	288.71 S 264.53 W
2181.00	46.00	233.00	2030.79	398.31	293.04 S 270.26 W

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets
2191.00	46.40	233.90	2037.71	405.45	297.34 S 276.06 W
2201.00	46.60	232.90	2044.60	412.63	301.66 S 281.88 W
2211.00	46.20	233.00	2051.49	419.80	306.02 S 287.66 W
2221.00	45.60	232.10	2058.45	426.92	310.39 S 293.37 W
2231.00	45.00	231.60	2065.49	433.98	314.78 S 298.95 W
2240.00	44.40	231.80	2071.88	440.26	318.70 S 303.92 W
2249.00	43.90	230.20	2078.34	446.50	322.65 S 308.79 W
2259.00	43.60	228.70	2085.57	453.39	327.14 S 314.05 W
2269.00	43.90	227.90	2092.79	460.29	331.74 S 319.21 W
2278.00	44.90	226.60	2099.22	466.59	336.02 S 323.83 W
2288.00	46.10	226.00	2106.23	473.72	340.95 S 328.99 W
2298.00	47.40	225.40	2113.08	481.00	346.03 S 334.20 W
2307.00	48.00	225.70	2119.14	487.66	350.69 S 338.96 W
2317.00	48.00	225.50	2125.83	495.09	355.89 S 344.27 W
2327.00	47.70	226.00	2132.54	502.50	361.07 S 349.58 W
2336.00	47.60	226.70	2138.60	509.15	365.66 S 354.39 W
2346.00	47.10	227.50	2145.38	516.50	370.67 S 359.78 W
2356.00	46.60	227.80	2152.22	523.79	375.58 S 365.17 W
2365.00	46.10	228.60	2158.43	530.29	379.92 S 370.02 W
2375.00	45.70	227.40	2165.39	537.46	384.73 S 375.36 W
2384.00	45.20	226.70	2171.70	543.87	389.10 S 380.05 W
2393.00	45.30	226.30	2178.04	550.26	393.50 S 384.69 W
2403.00	45.70	224.50	2185.05	557.39	398.50 S 389.77 W
2403.00	45.70	224.50	2185.05		398.50 S 389.77 W
2419.00	46.30	224.10	2196.16		406.74 S 397.81 W
2429.00	46.80	223.50	2203.04		411.98 S 402.83 W
2439.00	46.80	224.10	2209.89		417.24 S 407.88 W
2448.00	46.30	224.10	2216.07		421.93 S 412.42 W
2457.00	46.00	225.50	2222.31		426.54 S 417.00 W
2467.00	45.70	225.90	2229.28		431.55 S 422.13 W
2477.00	45.40	226.80	2236.28		436.48 S 427.30 W
2487.00	45.50	228.20	2243.29		441.29 S 432.55 W
2496.00	45.50	228.20	2249.60		445.57 S 437.34 W
2506.00	45.40	228.10	2256.62		450.33 S 442.64 W
2516.00	45.60	229.70	2263.63		455.01 S 448.02 W
2525.00	45.60	229.40	2269.92		459.19 S 452.91 W
2535.00	45.50	229.00	2276.93		463.85 S 458.32 W
2544.00	45.30	230.30	2283.25		468.00 S 463.20 W
2555.00	45.20	230.30	2290.99		472.99 S 469.21 W
2564.00	44.80	230.20	2297.35		477.06 S 474.10 W
2574.00	44.80	229.00	2304.45		481.62 S 479.47 W
2583.00	45.30	228.10	2310.81		485.84 S 484.24 W
2593.00	45.90	227.10	2317.80		490.66 S 489.52 W
2603.00	46.70	225.50	2324.71	700.32	495.74 S 494.74 W
2612.00	46.70	224.10	2330.89	706.87	500.30 S 499.36 W
2622.00	46.50	223.50	2337.76	714.13	505.55 S 504.39 W

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets
2632.00	46.60	224.10	2344.63	721.39	510.79 S 509.41 W
2641.00	46.30	224.50	2350.84	727.91	515.45 S 513.97 W
2651.00	45.70	223.80	2357.78	735.10	520.61 S 518.98 W
2660.00	44.90	223.40	2364.11	741.50	525.25 S 523.39 W
2670.00	44.30	223.30	2371.23	748.52	530.35 S 528.21 W
2680.00	44.30	224.70	2378.39	755.50	535.38 S 533.06 W
2689.00	44.30	224.70	2384.83	761.79	539.84 S 537.48 W
2699.00	44.50	225.30	2391.98	768.78	544.79 S 542.43 W
2709.00	44.60	225.80	2399.10	775.80	549.70 S 547.44 W
2718.00	44.70	225.40	2405.50	782.12	554.13 S 551.96 W
2728.00	44.80	226.60	2412.61	789.16	559.02 S 557.02 W
2738.00	45.10	227.60	2419.68	796.22	563.83 S 562.20 W
2747.00	45.40	228.00	2426.02	802.60	568.12 S 566.93 W
2756.00	45.40	229.30	2432.34	809.00	572.36 S 571.74 W
2766.00	44.80	230.00	2439.40	816.06	576.94 S 577.14 W
2776.00	43.80	229.30	2446.56	823.02	581.46 S 582.46 W
2785.00	43.00	229.80	2453.09	829.18	585.48 S 587.17 W
2795.00	42.50	227.90	2460.44	835.96	589.94 S 592.28 W
2804.00	42.20	228.20	2467.09		593.99 S 596.79 W
2814.00	42.20	227.00	2474.50		598.52 S 601.75 W
2827.00	42.40	226.80	2484.11		604.50 S 608.14 W
2836.00	43.20	227.60	2490.72		608.66 S 612.62 W
2845.00	43.40	226.90	2497.27		612.85 S 617.16 W
2855.00	43.30	226.50	2504.54		617.55 S 622.15 W
2864.00	43.10	226.10	2511.10		621.81 S 626.61 W
2874.00	43.30	226.50	2518.39		626.54 S 631.56 W
2883.00	43.40	226.40	2524.93		630.80 S 636.03 W
2893.00	43.30	225.80	2532.20		635.56 S 640.98 W
2903.00	43.70	224.80	2539.46		640.40 S 645.87 W
2913.00	44.00	224.10	2546.67		645.34 S 650.72 W
2921.00	44.80	222.40	2552.39		649.42 S 654.56 W
2931.00	45.30	222.20	2559.45		654.66 S 659.32 W
2940.00	45.80	223.80	2565.75		659.35 S 663.70 W
2950.00	46.10	222.50	2572.71		664.60 S 668.62 W
2959.00	46.40	222.10	2578.93		669.41 S 672.99 W
2969.00	46.30	220.90	2585.83		674.82 S 677.79 W
2978.00	45.40	220.60	2592.10		679.72 S 682.00 W
2988.00	44.80	220.00	2599.16		685.12 S 686.58 W
2998.00	44.80	220.10	2606.26		690.51 S 691.12 W
3013.00	45.20	220.40	2616.86		698.61 S 697.97 W
3023.00	45.20	220.60	2623.91		704.00 S 702.58 W
3032.00	44.90	219.70	2630.27		708.87 S 706.69 W
3036.00	44.80	219.70	2633.10		711.04 S 708.49 W
3045.00	44.90	219.60	2639.48		715.93 S 712.54 W
3054.00	44.60	219.50	2645.88		720.81 S 716.57 W

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets
3064.00	44.50	219.20	2653.00		726.24 S 721.02 W
3073.00	44.30	219.40	2659.43		731.11 S 725.01 W
3085.00	44.30	219.60	2668.02		737.58 S 730.34 W
3095.00	43.90	219.80	2675.20		742.93 S 734.79 W
3122.00	40.40	214.70	2695.22		757.33 S 745.77 W
3138.00	36.90	208.80	2707.72		765.81 S 751.03 W
3157.00	37.00	208.70	2722.90		775.82 S 756.53 W
3185.00	37.80	209.50	2745.15		790.68 S 764.80 W
3195.00	38.10	209.90	2753.03		796.02 S 767.85 W
3204.00	38.10	207.60	2760.12		800.89 S 770.52 W
3214.00	38.40	207.70	2767.97		806.37 S 773.39 W
3224.00	38.50	208.10	2775.80		811.87 S 776.30 W
3253.00	34.70	206.30	2799.08		827.24 S 784.21 W
3282.00	33.40	202.80	2823.11		842.00 S 790.96 W
3311.00	34.60	204.90	2847.15		856.82 S 797.52 W
3340.00	35.30	204.80	2870.92		871.90 S 804.51 W
3369.00	35.40	205.00	2894.57		887.12 S 811.57 W
3397.00	35.60	205.30	2917.37		901.84 S 818.48 W
3416.00	35.60	204.80	2932.82		911.86 S 823.16 W
3426.00	35.50	203.90	2940.95		917.15 S 825.56 W
3436.00	35.50	204.50	2949.09		922.45 S 827.94 W
3445.00	35.70	205.70	2956.41		927.19 S 830.16 W
3455.00	36.00	204.50	2964.52		932.50 S 832.65 W
3465.00	36.30	204.30	2972.59		937.87 S 835.08 W
3474.00	36.60	205.20	2979.83		942.72 S 837.32 W
3482.00	36.80	204.70	2986.25		947.06 S 839.34 W
3500.00	37.26	203.59	3000.62		956.95 S 843.77 W

BIT RECORD

#	Type	Size (mm)	In	Out	Total (m)	Hrs drilled	FOB (daN)	RPM	Cond. T B G
RR28C	EHP51H	311	1243	1327	84	16.00	10/16	60/70	
29C	EPH43H	311	1327	1475	148	71.25	09/16	18/160	2-7-IN
									KICK OFF
30C	FIPC	311	1375	1541	66	49.25	15/25	20/100	4-2-IN
31C	ERA13	311	1541	1613	72	56.75	15/21	20/130	4-7-IN
32C	FDGH	311	1613	1668	55	33.00	15/21	20/130	3-4-IN
33C	HP13G	311	1668	1801	133	68.50	15/25	20/100	4-2-IN
34C	FDGH	311	1801		0				
35C	GT-1	311	1801	1837	36	23.00	16/25	20/90	3-2-IN
36C	HP43H	311	1837	1863	11	10.50	19/27	20/90	2-2-IN
37C	FM2844	311	1863	2070	207	70.25	12/17	20/90	1-IN
RR37C	FM2844	311	2070	2086	16	14.75	12/15	20/90	3-IN
38C	GT18	311	2086	2156	70	61.00	23/35	20/90	8-7-5mm
39C	GS83F	311	2156	2203	47	41.00	22/34	20/90	6-6-3mm
40C	F2	311	2203	2269	66	71.75	20/30	25/90	7-4-1mm
41C	HP13G	311	2269	2357	88	56.00	15/30	25/90	5-7-1mm
42C	HP13G	311	2357	2434	77	48.00	15/30	150	6-5-1mm
43C	FM2943	311	2434	2567	133	95.75	08/22	20/90	2-1/16mm
44C	EHP41H	311	2567	2597	30	43.50	20/30	20/32	6-4-1/16
45C	JG4	311	2597	2646	49	58.50	20/32	30/90	5-6-IN
46C	MSDGH	311	2646	2697	51	52.00	20/33	35/90	3-8-IN
47C	FM2944	311	2697	2827	130	84.50	06/19	31/150	8-4-1/16
48C	HP13G	311	2827	2833	6	6.00	20	31/150	7-2-4
49C	S83F	311	2833	2851	18	22.25	20/32	31/150	6-2-1/16
50C	GT18	311	2851	2902	51	40.25	32/90	20/90	8-8-IN
51C	GT20	311	2902	2936	34	26.75	32/90	20/90	6-3-IN
52C	F3P	311	2936	2977	41	55.00	28/38	20/90	3-4-1/16
53C	GT18	311	2977	3017	40	30.25	20/18	30/90	7-4-1/4
54C	F2	311	3017	3053	36	42.25	20/24	30/90	6-7-1/4
55C	F27	311	3053	3072	19	30.00	24	30/90	2-4-1/8
56C	HP61A	311	3072	3084	10				
57C		311	3084	3098	14				
58C		311	3098	3115	17				
RR59		311	3115	3115	0				
60C		311	3115	3115	0				
CASING									

BIT RECORD

#	Type	Size (mm)	In	Out	Total (m)	Hrs drilled	FOB (daN)	RPM	Cond. T B G
61	S44G	216	3115	3128	13	5.25	13/15	80	3-2-IN
62	F2	216	3128	3177	49	10.25	14/15	85	
RR61	S44G	216	3071	3116	45	2.5	13/15	65	4-4-IN
63	D12ST	216	3116	3140	26	29.25	13/14	350	
64	EPH51a	216	3140	3246	106	28.50	13/14	120	4-4-IN
65	SS86F	216	3246	3500	254	67.25	13/15	125	
RR61	S44G	216		3500					

BIT CONDITION		SCALE
Tooth Wear	(T)	0 - 8
Bearing Wear	(B)	0 - 8
Gauge	(G)	in or (mm) under

New Bit T=0 B=0 G=in

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-09	3121	0	—	Inspect BHA; Lay out and replace 3 cracked drill collars; Pick up pipe and run in hole open ended to 1700m; Slip and cut line, run in with rig service and BIOP drills; Finish in to bottom; No fill; Circulate with one pump at 98 strokes; Back ground gas -75 units; Trip gas 119 units; No mud lost.
97-07-10	3121	0	—	Circulate and wait on orders; Hoist into casing; Repair oil leak on the top drive; Wait on orders; Run in hole; Moved 2 400 bbl storage tanks from river to the airstrip and stored 60000 liters of diesel in them; Hole drag down 10/15000 dan; Hole drag up 15/25000 dan; Torque on bottom - 1050/1130 p.s.i.; Back ground gas -102 units; Mud lost last 24 Hr5s -0m3.
97-07-11	3121	0	—	Run in hole and wash 3m to bottom; Circulate and work pipe, rig service and function BOP; Hole drag down 10/15 dan; Hole drag up -15/25 dan; Torque on bottom -950/1050 p.s.i.; Background gas -57 units; Trip gas -468 units; Mud lost last 24 Hrs -1.0m3; Total water hauled to end of June -7125m3 or 498 loads; Total mud cost to condition present mud system and drill from 1400m to 2800m, no allowance for a mud cleaner or diesel, to build volume -$280,360.00.
97-07-12	Plug back depth 1765m		—	Wait on orders; Hoist to 2825m, circulate, and rig to run abandonment plugs; Plug #1 2825m -2750m ran with 30% excess; Plug down at 15:15 Hrs; Hoist and circulate; W.O.C.; Run in and felt plug at 2734m; Hoist to 1840m and run plug #2 1840m - 1765m ran with 30% excess; Plug down at 00:15 Hrts 07/12/97; Hoist and circulate; W.O.C.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-13	Plug back depth			Run in to 1787m; Did not feel any cement; Hoist to 1757m and circulate; W.O.C.; Circulate and W.O.C.; Felt plug at 1784m; Circulate; Rig to and top up plug 1784m - 1765m; Hoist 10 stands to 1497m; Circulate and rig to run plug #3 1500m -1375m; Ran with 26.9m3 G with 1%d65 + 0.6%D800; Slurry weight 2100kg/m3; Plug down at 13;30Hrs; Hoist 6 stands and circulate; W.O.C.; Run in and felt plug at 1410m; Circulate and rig to top up plug; Top up with 18m3 "G" + 0.5%D800; Slurry weight 2100kg/m3; Plug down at 02:30Hrs July 13; Hoist 5 stands and circulate pipe and hole clean; Back ground gas -56 units; Trip gas -56 units.
97-07-14	1325	0	14.5	Hoist openended pipe; Lay out 25 joints of E pipe; Work on pipe stripper; Make up and run BHA; check caliper and strap in to 1243.5m; Tagged good cement and drill out cement; Strap tally 0.26m difference; Condition mud while running plugs and drilling cement ; Reduce mud weight to 1280 kg/m3 with centrifuge and increase weight back to 1360kg/m3. Hole drg 5 dan; Hole drag up - 10 dan; Torque on bottom - 1040 psi.; Background gas -20 units; Trip gas - 20 units.
97-07-15	1339	12	8	Drill cement to 1327m; Circulate and hoist directional tools; Work tight hole at 1300m; Circulate and clean shale; Hoist to casing shoe, pump trip pill and hoist; Change out hydraulic mud valve on top drive; Pick up and make up Halliburton directional tools; Low speed motor set at 1.5 degrees; Repair hydraulic hose for torque ram; Run in hole to 1075m, test MWD; Finish in and wash to bottom; Survey and orient motor; Drill ahead with survey; Slide 1327m-1334m, 1337m-1339m; Rotate 1334m-1337m; Hole drag down 5 dan; Hole

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-20	1511	28	22.50	Drill 311mm hole with rig service and surveys; Slide 1480-1488, 1492-1497, 1503-1508m; Rotate 1488-1492, 1497-1503, 1508-1511m; Hole drag down 5/10dan; Hole drag up 5/10 dan; Torque on bottom 900/950 psi.; Background gas 15 units; Mud lost last 24 Hrs 4m3.
97-07-21	1541	30	22.25	Drill directional 311mm hole with Trudrill slow speed 1.5 degrees motor with rig service and MWD surveys from 1511m -1541m; Slide 12m; Rotate 18m; etc. etc
97-07-22	1552	11	10.00	Trip for bit and mud motor; Pump out 6 stands; Pump pill; Trip out; Change mud motor and bit, service MWD;Trip in BHA; Slip and cut drilling line; Trip in test MWD at 1100m and 1495m; Wash and ream to bottom 1495m-1541m; 10m fill; Work pipe, survey, and orient tool; Directional drill 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1541m-1552m; Slide 7.0m; Rotate 4.0m; Hole drag down 8/10; Hole drag up 7/10 dan; Torque on bottom 930/1050 psi.; Background gas 14 units; Trip gas 104 units; Mud lost last 24 Hrs 2.0m3.
97-07-23	1582	30	21.50	Directional drill 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1552m-1582m; Repair air union rubber on #1 pump suction; Sipped out 171mm Halliburton directional tools; 2 197mm mud motors for repair; DBS core barrels and accessories; 171mm Faster jars and shock tool; 2 228mm jars for repair; Dowell division 200 mud pallets; Slide 25m; Rotate 5m; Hole drag down 5/7dan; Hole drag up 5/8dan;Torque on bottom 930/970 p.s.i.; Background gas 18 units; Mud lost last 24 Hrs 5.0m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-24	1611	29	22.00	Directional drill 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1582m-1611m; Change suction valve on #2 pump; Slide 26m; Rotate 3.0m; Hole drag down 5/7dan; Hole drag up 5/10dan; Torque on bottom 930/970psi.; Back ground gas 25 units; Mud lost last 24 Hrs 2.4m3.
97-07-25	1627	16	10.50	Directional drill 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1611m-1613m; Trip for bit, pump out 2 stands; Pump pill trip out; Change bit and service MWD; Trip in tc 987m; Change seals and saver sub on Tesco top drive; Trip in test MWD at 1125m; Wash and ream to bottom 1554m-1613m 4.0m fill; Orient tool; Directional drill 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1613m-1627m; Slide 15.0m; Rotate 1.0m; Hole drag down 5/7dan; Hole drag up 5/10dan; Torque on bottom 930/970 psi.; Background gas 18 units; Trip gas 259 units; Mud lost last 24 Hrs 3.5m3.
97-07-26	1667	40	22.25	Drill directional 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1627m-1667m; Slide 39.0m; Rotate 1.0m; Hole drag down 3/6dan; Hole drag up 5/10dan; Torque on bottom 975/1000 psi.; Background gas 20 units; Mud lost in last 24 Hrs 1.0m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-27	1681	14	10.50	Directional drill 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1167m-1668m; Mud motor stalling stator rubber failed; Circulate out 2 stands; Pump pill; Trip out to change mud motor and bit, service MWD; Trip in to 1003m; Repair #2 pump and service Tesco top drive; Trip in and test MWD at 1125m; Wash and ream 1648m-1668m; 3m fill; Directional drill 311mm hole with 197mm 2.12 degrees Vector mud motor and survey with MWD 1668m-1681m; Slide 11.0m; Rotate 2.0m; Hole drag down 5/7dan; Hole drag up 8/15dan; Torque on bottom 980/1050 psi.; Background gas 15 units; Trip gas 111 units; Mud lost last 24 Hrs 1.0m3.
97-07-28	1723	42	21.25	Directional drill 311mm hole with 197mm 2.12 degrees Vector mud motor and survey with MWD 1681m-1723m; Pulsar failed on MWD; Prepare to trip out; Slide 16.0m; Rotate 26.0m; Hole drag down 5/10dan; Hole drag up 10/15dan; Torque on bottom 1100/1125 p.s.i.; Background gas 11 units; Mud lost last 24 Hrs 1.5m3.
97-07-29	1746	23	11.00	Directional drill 311mm hole with 197mm 2.12 degree Vector mud motor and survey with MWD 1723m-1724m; Circulate out 2 stands; Pump pill; Trip out; Tight hole 1665m; Set mud motor to 1.83 degrees, change out MWD and jars; Trip in BHA; Repair Tesco top drive; Trip in test MWD at 1126m; Trip to 1640m;; Wash and ream 1640m-1724m; Survey at 1697m and 1706m; Orient tool; Directional drill 311mm hole with 197mm 1.83 degrees Vector mud motor and survey MWD 1724m-1746m; Change valve and seat on #2 pump; Slide 16.0m; Rotate 7.0m; Hole drag down 5/10 dan; Hole drag up 10/18dan; Torque om bottom 1080/1110 psi.; Background gas 10; Trip gas 41; Mud lost last 24 Hrs 3.5m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-30	1790	44	22.0	Directional drill 311mm hole w/ 197mm 1.83 Vector mud motor and survey w/ MWD 1746m-1790m; change suction on #1 pump; sample quality poor to fair;
97-07-31	1801	16	5.75	Directional drill 311mm hole with 197mm Vector mud motor and survey with MWD 1790-1801m; pump out 13 stds -pump pill - trip out -change out mud motor and bit, service MWD -trip in BHA slip and cut line -trip in to 1126m - test MWD -trip in to 1449m -work tight hole 1445-1432m - wash and ream 1432m-1520m - hole sloughing.
97-08-01	1801	0m	0	Wash and ream 1510-1512m - pump out to 1404m - pump pill trip out - lay down directional tools -trip in with bit -wash and ream 1426-1801m -hole sloughing 1510-1523m - circ and condition hole and mud -circ out 13 stds - pump pill -trip out to csg shoe -repair Tesco top drive and #2 pump.
97-08-02	1801	0m	0	Repair Tesco top drive - trip in to 1393m - wash 1393m-1605m - wash and ream 1605m - 1801m -hard reaming 1770 -1801m -Circ and work pipe -pump out 1801m-1604m -pump pill - trip ot and make up directional tools -trip in - shallow test MWD at 1086m -trip in to 1485m -wash 1485m-1634m
97-08-03	1833	32	20.25	Wash and ream 1634-1801m - 8m fill - directional drill w/ 196mm low speed 1.83 deg Trudrill mud motor and survey with MWD 1801m-1833m - repair pop valve and #2 pump suction
97-08-04	1837	04	2.75	Repair pump #2 - directional drill 311mm hole with 196mm 1.83 deg Trudrill mud motor and survey with MWD 1833m-1837m -pump pill - pump out 6 stds -trip out lay down 3 dc's and mud motor -pull wear bushings -pressure test BOP's -pick up directional tools and BHA -Trip in to 1144m and shallow test MWD -trip in hole

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-08-05	1848	11	10.5	Wash and ream 1147-1611m- circ hole clean - hole unloading - wash 1611 - 1731m - ream 1731-1738m, 1796m-1837m; directional drill 311mm hole and survey with MWD 1837m-1848m - repair #2 pump suction
97-08-06	1863	15	20.25	Drill ahead 311mm hole with directional tools - work on pumps and check screens for pump pressure increase. Hoist 5 stds with pump on, flow check and pump trip pill - POH
97-08-07	1884	21	7	Hoist with bit - service tools and change out motor -RIH with new PDC bit to casing shoe, slip and cut line -Service tesco top drive -RIH to 1048m -break circulation and clean bridge -Check MWD. Clean bridge at 1420m -RIH to 1670m -Wash to bottom -ream 1796-1831m and 1856 -1863m -drill ahead 311mm hole with directional tools 1863m-1884m
97-08-08	1970	86	21.75	Work on #1 Pump - Directional drill 311mm hole 1884-1970m and survey with MWD.
97-08-09	2019	86m	18.25	Drill with directional tools 1970-1998m - Work on pumps - Wiper trip to 1690m -repair top drive - Hole pulled tight at 1864m - Directional drill ahead 311mm hole 1998m-2109m
97-08-10	2068	49m	21.75	Directional drill 311mm hole 2019m-2068m with vector low speed mud motor and survey w/ MWD. Hole condition good and sample quality is fair.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-08-11	2070	2m	1.75	Drill 311mm hole with directional tools and survey w/ MWD 2068-2070m; pump pressure increased. Circ, mix trip pill and hoist 5 stds w/ one pump on the well. Pump trip pill and hoist into casing. BOP drill. Finish out. Change out jars and motor. Pick up new jars, motor and gamma tools. Rerun PDC. Strap in BHA, replace seals on top drive actuator valve. Finish in to 1850m Break circ and check MWD and GR tool. Log in to 1968m.
97-08-12	2086	16		
97-08-13	2100	14	7.75	Circulate sample and mix trip pill; Lay out one single and circulate out 5 stands; Pump trip pill and hoist with required flow checks; Change out motors and bit; Service MWD tools and run in to 1311m, break circulation and test MWD; Change out suction valve on #1 pump; Run in (stage motor every 10 stands); Wash to bottom from 1925m; Check survey and drill ahead; Slide 2086m-2100m; Rotate 2090m-2100m; Hole drag down 10/12dan; Hole drag up 7-100 dan; Torque on bottom 1050-1200 psi.; Background gas 125 units; Mud lost last 24 Hrs 4m3.
97-08-14	2126	26	22.75	Drill 311mm hole with rig service and surveys; Slide 2113m-2118m and 2122m-2126m; Rotate 2100m-2118m and 2118m-2122m; Hole drag down 7/10 dan; Hole drag up 10/13 dan; Torque on bottom 100/1300 p.s.i.; Background gas 140 units; Mud lost last 24 Hrs 5.2m3.
97-08-15	2147	21	20.75	Drill 311mm hole with rig service and surveys; Slide 13m; Rotate 8m; Background gas 100, and 45 over last four meters.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-08-16	2156	9	9.25	Drill 311mm hole with rig service and surveys from 2147m - 2156m; Change graber dies on top drive; Circulate out 5 stands; Mix and pump trip pill; Hoist with required flow checks; Change out motor, MWD, and bit; Run in, check MWD at 1150m; Stage motor in hole; Slide 2152m-2156m; Rotate 2147m-2152m; Hole drag up 10/15000 dan; Hole drag down 10/15000 dan; Torque on bottom Background gas 100 units; Mud lost last 24 Hrs 5.0m3.
97-08-17	2160	4	2.00	Run in, check MWD; Stage motor in hole; Wash from 2117m-2143m; Ream from 2143m-2155m; Drill 311mm hole with rig service and MWD survey; MWD tools failed; Circulate out 5 stands; Mix and pump trip pill: Hoist with required flow checks; Change out MWD tool; Run in, check MWD; Stage motor in hole; Slide 0m; Rotate 4m;
97-08-18	2183	23	18.75	Finish staging motor in to 2024m; Wash to bottom; Log to 2160m; Drill 311mm hole; Replace suction valve and seat on #2 pump; Drill with rig service and surveys to 2183m; Slide 2161m-2167m, 2174m-2177m, 2181m-2183m; Rotate 2167m-2181m; Hole drag up 210/12dan; Hole drag down 10/20 dan; Torque on bottom 1100/1300 psi.; Background gas 25 units; Mud lost last 24 Hrs 2.1m3.
97-08-19	2203	20	20.00	Drill 311mm hole; Change discharge valve and seat on pump #1; Drill ahead with rig service and surveys to 2203m; Pump trip pill and hoist for bit; Slide 2183m-2186m, 2-90m-2196m, 2200m-2203m; Rotate 2186m-2190m, 2196m-2200m; Hole drag up 10/15000 dan; Hole drag down 10/13 dan; Torque on bottom 1100/1350 p.s.i.; Background gas 5 units; Mud lost last 24 Hrs 2.2m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-08-20	2003	0	0.00	Hoist for bit wirh required flow checks, rig service: Inspect B.H.A.; Repair break in torque line; Work on top drive; Handle directional tools; Change out bit; Run in; Finish staging motor in to 2082m; Break circulation; Wash to bottom.
97-08-21	2222	19	22.00	Directional drill 311mmm hole with low speed 1.83 degrees Trudrill mud motor and survey MWD, log GR 2203m-2222m; Held BOP drills with both crews; Slide 13m; Rotate 9m; Hole drag up 10/15 dan; Hole drag down 10/20 dan; Torque on bottom 1100/1350psi; Background gas 10 units; Mud lost last 24 Hrs 1.5m3.
97-08-22	2243	21	22.00	Directional drill 311mm hole with low speed 1.83 degrees Trudrill mud motor, MWD, rig service and Gamma ray log from 2222m -2243m; Slide 13m; Rotate 8m;
97-08-23	2265	22	22.00	Drill directional 311mm hole with low speed 1.83 degrees Trudrill mud motor, MWD surveys, Gamma ray log, and rig service from 2243m-2265m.
97-08-24	2276	11	9.00	Directional drill 311mm hole with low speed 1.83 degrees Trudrill mud motor, MWD surveys and Gamma ray log, and rig service from 2265m-2270m: Service top drive at 2268m; Trip for motor and bit; Pump out stands; Mix and pump trip pill: Hoist for bit with required flow checks; Change out motor and bit; Add junk basket; Run in hole; Finish staging motor at 1863m; Break circulation; Wash to bottom: Directional drill 311mm hole with low speed 19.mm 1.83 degrees mud motor, MWD surveys, Gamma ray log, and rig service from 2270m-2276m; Slide 6m; Rotate 5m.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-08-25	2310	34	19.50	Directional drill 311mm hole with MWD log with GR 2276m-2310m; Repair pump #1 pony rod, head, and liner; Slide 2279m-2284m, 2289m-2302m, 2308m-2310m; Rotate 2284m-2289m; 2302m-2308m; Hole drag up 10/18 dan; Hole drag down 10/15 dan; Torque on bottom 1180/1350 psi; Mud lost last 24 Hrs 1.9m3.
97-08-26	2343	33	22.50	Directional drill 311mm hole with 196mm Vector low speed mud motor, MWD surveys, Gamma ray log, and rig service from 2310m-2343m. Slide 16m; Rotate 17m;
97-08-27	2357	14	10.25	Directional drill 311mm hole with 196mm low speed 1.83 deg mud motor and survey with MWD/GR 2343-2357m; repair #1 main electrical to pump traction motors; circ out 6 stds - pump pill -trip out -change out mud motor and bit service MWD -trip in and shallow test MWD -trip in
97-08-28	2390	33	17.25	Trip in - ream bridge @ 2154-2160 - Trip in - ream bridge at 2241m - wash and ream 2241-2357m -Directional drill with low speed mud motor and survey with MWD/GR 2357-2390m
97-08-29	2424	34	22.5	Directional drill 311mm hole 2390-2424m and survey with MWD/GR; sample quality fair-good with the addition of oil wetting agent to mud system; scattered cavings throughout.
97-08-30	2434	10	8.5	Directional drill 311mm hole 2424-2434m; Pump out 10 stds; pump pill POH; Change out BHA; Pressure test BOP's and pick up directional tools.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-08-31	2451	17	10.25	Pick up directional tols - lay down 2 dc's - pick up 10 127mm HWDP - slip and cut line - trip in to 1128mm shallow test MWD - trip in to 2080m -wash and ream 2080-2434m - directional drill 311mm hole with 197mm 1.83 deg vector mud motor and survey with MWD log with GR 2434-2451m.
97-09-01	2484	33	21.25	drill 311mm hole with low speed mud motor and survey with MWD/GR 2451-2484m.
97-09-02	2520	36	21.0	drill 311mm hole with Vector low speed mud motor and survey with MWD/GR 2484-2520m.
97-09-03	2547	27	21.75	drill ahead 311mm hole with vector low speed mud motor and survey with MWD/GR 2521-2547m.
97-09-04	2565	18	20.0	Drill 311mm hole with 197mm 1.83deg vector mud motor and survey with MWD/GR; work on #1 pump, chnage discharge valve; work on #2 pump change out valves and pony rod.
97-09-05	2567	2	2.75	Drill 311mm directional hole and survey with MWD/GR 2565-2567m; Hoist for bit at 2567m.Hole pulled tight from 2407-2123m. Finish out. Lay down tools. Service top drive, change grabber dies, saver sub and hoses. Picked up new Trudrill 7/8 Lobe 1.83 deg motor and MWD. RIH. Repair hydraulic hoses, check MWD. Finish in to 2284m. Wash and ream from 2284m to 2459m.
97-09-06	2586	18	22.0	Ream and wash 2459-2567m; Drill 311mm hole with trudrill 1.83deg mud motor and survey w/ MWD/GR.
97-09-07	2595	9	15.75	Drill to 2592m with 1.83deg motor and survey with MWD/GR. Work tight hole and wiper trip to 2250m. Circulate out and back in to clean low side of well. Drill ahead 2592 - 2595m.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-09-08	2597	2	5.0	Drill 311mm directional hole to 2597m. Trip for motor. Circulate out to 2425. Lay down washed drill pipe. Finish out, repair pipe spinner. Change out drilling jars and lay down directional tools. Make up bit and junk sub. Run in to 2250m. Circulate from 2250m to bottom, work junk sub to clean up broken inserts.
97-09-09	2604	7	6.75	Work junk sub and drill 1m new hole. Hoist. Circulate 5 stds out. Pump trip pill and finish out with junk sub. Clean and inspect junk sub. Pick up directional tools. Run in BHA. Slip and cut line. Service top drive. Run in hole and check MWD at 1167m. Stage motor in hole to 2450m. Circulate to bottom. Work junk sub. Drill 311mm hole with trudrill 203mm 7/8lobe 1.83deg motor and survey with MWD/GR to 2604m.
97-09-10	2621	17	22.25	Drill 311mm hole with Tru Drill 1.83 degrees motor, MWD, Gamma ray log from 2604m-2621m.Rig service and surveys. Work on #2 mud pump (valve). Slide 9m; Rotate 8m; Hole drag up 20/25000 dan; Hole drag down 15/20 dan; Torque on bottom 1100/1400 psi; Background gas 22 units; Mud lost last 24 Hrs 4.5 m3.
97-09-11	2638	17	20.50	Drill 311mm hole with Tru Dril 1.8 degrees motor with MWD and Gamma ray logging; Rig service and surveys. Work on #2 mud pump (valves); Work pipre to clean up hole after survey. Slide 5m; Rotate 12m; Hole drag up 10/20 dan; Hole drag down 8/16 dan; Torque on bottom 100/1450 psi; Background gas 26 units; Mud lost last 24 Hrs 5.6m3

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-09-12	2646	8	10.00	Drill 311mm hole with Tru Drill 1.8 degfrees mud motor, MWD surveys, Gamma ray logging and rig service from 2638m-2646m; Circulate and work hole; Hoist for bit; Circulate clean hole to 2339m; Work on top drive (kelly cock); Circulate and clean hole to 2340m; Finish out; Check monel seals; Lay out tools and motor; Slide 2m; Rotate 6m; Dowell cementer and 20 tonne of G on location. Empty fuel truck stuck on road (towed with Hayes) Hole drag up 10/20 dan; Hole drag down 8/14 dan; Torque on bottom 1250/1550 p.s.i.; Mud lost last 24 Hrs 5.6m3; BOP drill and meeting with crew; Sent 1 tire for repair and 1 to be replaced with a new tire for the Ranger truck; Returned 1 Security DBS PDC FM2943 for rebuild to DBS Nisku.
97-09-13	2655	9	9.50	Lay out motor and MWD; Change out monel collars; Pick up tools and run in hole to casing shoe; Service and repair Tesco to drive (wiring for kelly cock valve. Tesco man replaced switch seemed to have put wires back the wrong way; he needed blue print from office to get wire scheme and repair); Check MWD finish in hole; Wash and clean from 2377m; Work junk sub and drill with a Tru Drill 1.8 degrees motor from 2646m-2655m; Survey, run Gamma ray log and rig service; Slide 4m; Rotate 5m; Hole drag up 15/20 dan; Hole drag down 10/17 dan; Torque on bottom 1200/1450 psi; Background gas 16 units; Mud lost last 24 Hrs 3.8m3; Lost 2.0m3 while tripping.
97-09-14	2675	20	21.75	Drill 311mm hole with Tru Drill 1.83 degrees mud motor with rig service, gamma ray logging and surveys. Work on #1 mud pump (suction valve); Repair leak on #1 pump suction; Slide 6m; Rotate 14m; Hole drag up 15/20 dan; Hole drag down 10/13 dan; Torque on bottom 1250/1500 psi; Background gas 12 units; Mud lost last 24 Hrs 2.5m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-09-15	2697	22	20.25	Drill 311mm hole with Tru Drill 1.8 degrees motor; Rig service, gamma ray and surveys; Work on mud pumps (valves and suction); Slide 4m; Rotate 18m; Hole drag up 15/20 dan; Hole drag down 12/17 dan;Torque on bottom 1200/1450 psi; Background gas 15 units; Mud lost last 24 Hrs 4.2 m3.
97-09-16	2702	5	2.75	Drill 311mm hole to 2697.4m. Circulate and work pipe; Mix trip pill and circulate out 12 stands; Pump pill and hoist; Handle directional tools; Run in BHA and service Tesco top drive: Run in to 1150m and check MWD, run in to 1177m and ream bridge; Run in and ream bridge at 1426m; Finish in to 2350m and wash and clean to bottom; Drill 311mm Halliburton tandem motor set at 1.75 degrees; Rotate 5m; Hole drag up 15/20 dan; Hole drag down 15/30 dan; Torque on bottom 100/1650 psi; Background gas 25 units; Mud lost last 24 Hrs 2m3.
97-09-17	2748	46	19.00	Directional drill 311mm hole with 197mm 1.83 degrees tandem Halliburton mud motor and survey with MWD, log Gamma ray from 2702m-2748m. Change head s on #2 pump. Work pipe every 5m hole not cleaning properly. Slide 5m. Rotate 46m.
97-09-18	2771	23	14.50	Directional drill 311mm hole with 197mm 1.83 degrees tandem Halliburton mud motor and survey with MWD, log Gamma ray from 2748m-2751m. Wiper trip 20 stands, circulate out 10 stands. Tight hole at 2628m-2635m. Wash and ream in 2640m-2751m, 1.0m fill. Directional drill 311mm hole with 197mm 1.83 degrees tandem Halliburton mud motor with MWD surveys, and log Gamma ray from 2751m-2771m. Changed 3 heads and liners, valves and seats on #1 and #2 mud pumps. Slide 5m. Rotate 18m.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-09-19	2794	23	20.00	Directional drill 311mm hole with 197mm 1.83 degrees tandem Halliburton mud motor with MWD surveys and log Gamma ray from 2771m-2794m. Slide 14m. Rotate 9m.
97-09-20	2822	28	21.50	Directional drill 311mm holke with 197mm 1.83 degrees Halliburton mud motor, MWD surveys and log Gamma ray from 2794m-2822m. Slide 10m. Rotate 18m.
97-09-21	2828	6	7.50	Directional drill 311mm hole with 197mm 1.83 degrees mud motor, MWD surveys, and Gamma ray from 2822m-2828m. Stator rubber over shale shaker. Drilling slowed down. Trip for motor and PDC bit. Bit worn. Buttons missing. Slide 2m. Rotate 4m.
97-09-22	2833	5	6.50	Run in hole without junk basket (missing bottons?) and with MWD check. Bridge at 1940m. Directional drill 311mm hole with mud motor, rig service, MWD, and log Gamma ray from 2828m-2833m. MWD tool failed. Drilling slowed down to 2 hours per meter. Trip for MWD tool, bit. Slide 0m. Rotate 5m.
97-09-23	2848	15	18.50	Change bit, broken teeth. Change BHA, add junk basket. Run in with MWD check and rig sevice. Work on pump and wash and clean to bottom. Directional drill 311mm hole with 197mm 1.75 degrees Halliburton mud motor, with MWD surveys, and Gamma ray logging from 2833m-2848m. Slide 8m. Rotate 7m.
97-09-24	2851	3	4.5	Drill 311mm directional hole 2848-2851m (3m), work junk sub and circ out 6 stds, pump pill and trip out to change mud motor and bit -service MWD -trip in BHA -shallow test MWD at 1162m -wash and ream to bottom 2734 - 2851m.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-09-25	2882	31	21.5	Directional drill 311mm hole with 197mm 1.83deg Vector mud motor and survey with MWD/GR 2851-2882m -work tight hole 2858m - 2852m.
97-09-26	2902	20	18.75	Drill 311mm directional hole with 197mm 1.83deg mud motor and survey with MWD/GR 2882-2892m, pump pill and POH.
97-09-27	2902	0	0	Work on top drive - pump pill - trip out and lay down directional tools - pull wear bushings -Pressure test BOP's -Install wear bushing - Make up directional tools and bit Trip in and test MWD shallow at 1165m.
97-09-28	2927	25	18.25	Trip in to 2846m - wash and ream 2846m-2897m ream underguage hole 2897m- 2902m no fill - Survey - directional drill 311mm hole with 197mm 1.83deg Vector mud motor and survey with MWD/GR 2902m-2927m - change head on pump 2
97-09-29	2936	9	8.8	Directional drill 311mm hole with 197mm 1.83deg vector mud motor and survey with MWD/GR 2927-2936m -work junk sub -circ out 6stds -pump pill - trip out -change mud motor and bit -service MWD -make up BHA - slip and cut drilling line -trip in with bit 54 and trudrill mud motor.
97-09-30	2948	12	16	Trip in with bit - wash to bottom 2919-2936m no fill -drill ahead 311mm directional hole with 197mm 1.83deg trudrill mud motor and survey with MWD/GR 2936-2938m -flow check - circulate out trip gas 3656 units - directional drill 311mm hole 2938-2948m bit torque and rough drilling 2947.7-2948m

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-01	2960	12	21.5	Directional drill 311mm hole with trudrill 1.83deg mud motor and survey with MWD/GR 2948-2960m. Note: fracture at 2937m (3656unit gas show) is probable fault with last survey over this interval showing almost 2 deg right turn (4deg DL). Fracture with small rapidly depleting gas show (783 / 147) at 2948m.
97-10-02	2976	16	19.25	circ out gas cut mud at 2975m Max gas 2730m from fracture at 2973.6m. mix barite and cic out gas. drill ahead to 2976
97-10-03	2984	8	4.75	Drill to 2977m Circulate sample and work junk sub. Circulate 6 stds out and pull 6 stds. BOP drill. Pump trip pill and hoist. Hole was good. Lay down junksub and motor. Service MWD and pick up Dynadrill and set to 1.83deg. RIH, Check MWD and stage motor in hole. Wash to bottom from 2935m. Drill ahead 311mm directional hole , circulate out trip gas 3300 units. drill ahead 311mm directional hole 2977-2984m
97-10-04	3012	28	20	Drill 311mm hole with rig service and survey with MWD/GR to 2999.77m. repair steel ring gasket on discharge tee #2 pump. Drill ahead 311mm directional hole to 3012m.
97-10-05	3017	5	6	Drill 311mm hole with rig service and survey with MWD/GRto 3017m Pressure and torque spikes. Circ bottoms up sample. Circulate and hoist to 2742m. Flow check and pump trip pill. Hoist and lay down 25 joints of XHE drill pipe. Change out motors, check MWD. Pick up new vector mud motor and bit. RIH with BHA. Pick up 25 jts of good hard band XHE pipe nad RIH.
97-10-06	3032	15	14.25	Finish in hole. Wash and ream 2 stds to bottom. Work Junk sub. Drill 311mm directional hole with vector low speed mud motor and survey with MWD/GR to 3032.5m. Circulate sample

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-07	3048	16	21.75	Drill ahead 311mm directional hole with low speed vector mud motor and survey with MWD/GR 3032-3048m.
97-10-08	3053	5	6.25	Drill 311mm hole to 3053m. Circulate sample. Drill to 2053m and circulate sample. Bit torqued up. Mix pill and circulate out 6 stands. Pump pill and hoist. Lay out singles with worn hard band. Clean junk sub, and lay out motor. Check MWD. Pick up new motor and bit. Hole was good on trip out. Rotate 5m. Hole drag up 20/30 dan. Hole drag down 10/15 dan. Background gas 700 units. Mud lost last 24 Hrs 4.2m3.
97-10-09	3055	2	3.25	Run in hole. Pick up singles with good hard banding. Slip and cut line. Run in. Two screens down. Work on panels. Blown fuses and RLI relays. Finish in with MWD check and staging motor to 3020m. Ream to bnottom and work junk sub. Circulate out trip gas maximum 4050 units. Work on #2 pump. Drill 311mm hole. Survey. Circulate 3055m sample. Rotate 2m. Hole drag up 15/30 dan. Hole drag down 15/20dan. Torque on bottom 1350/1650 psi. Background gas 156 units. Mud lost last 24 hrs 2.7m3.
97-10-10	3068	13	21.00	Circulate 3055m sample. Drill 311mm hole with rig service and surv ey. Work on both pumps. Rotate 13m. Hole drag up 35/45 dan. Hole drag down 20/25 dan. Torque on bottom 1350/1600 psi. Background gas 120 units. Mud lost last 24hr 3m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-11	3072	4	5.75	Drill 311mm hole with Vector 1.83 degrees slow speed mud motor. Rig service, MWD surveys, and Gamma ray logging. Circulate 3072m sample. Work on junk sub and hoist for bit. Circulate 6 stands out, pump trip pill and hoist to 2010m. Check Elmago, outside bearing was worn. Pull into casing. Circulate hole and work Elmago brake. Wait on bearing. Rotate 4m. Hole drag up 25/35 dan. Hole drag down 10/15 dan. Torque on bottom 1350/1500 psi. Back ground gas 125 units. Mud lost last 24 hrs 2.6m3.
97-10-12	3072	0	0	Wait on mechanic and repairs for Elmago (inertia hydromatic) brake. Change bearings. Finish out of hole. Lay down motor and junk sub. Pick up a new Tru drill motor set at 1.832 degrees. Run in hole. Shallow test MWD at 1124m. Stage in motor. Background gas 0 units. No mud lost last 24 hrs.
97-10-13	3084	12	18.75	Finish in hole with new bit. Wash and ream from 3014m. Drill 311mm hole with Tru Drill 1.83 degrees motor. Rig service and survey. Rotate 12m. Hole drag up 20/30 dan. Hole drag down 15/20 dan. Torque on bottom 1300/1500 p.s.i. Background gas 50. Mud lost last 24 hrs 3m3.
97-10-14	3095	11	21.50	Drill 311mm hole with Tru Drill 1.83 degrees slow speed motor. Rig service and MWD survey. Repair mud pumps. Rotate 11m. Hole drag up 20/30 dan. Hole drag down 10/15 dan. Torque on bottom 1400/1550 psi. Back ground gas 80 units. Mud lost last 24 hrs 1.5m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-15	3098	3	7.25	Directional drill 311mm hole with Tru Drill 1.83 degrees motor, MWD survey, and Gamma ray logging from 3095m to 3098.68m. Trip for bit and/or motor. Hoist, mix pill and pump trip pill, trip with flow check and rig service. Handle directional tools. Run in hole with MWD check at 1128m.
97-10-16	3115	17	13.50	Run in hole, circulate, and ream. Finish staging motor, and tagged bottom at 3101m. This is 2.32m lower than measured at beginning of this trip. Directional drill 311mm hole with Dyna Drill 1.83 degrees mud motor, MWD surveys, Gamma ray logging, rig service, and circulating bottom samples from 3101m-3115m.
97-10-17	3115	0	0	Circulate 3115 m sample. Circulate. Mix trip pill. Hoist several stands. Pump pill. Handle and lay down directional tools. Change bit.Run in Slide 0m. Rotate 8m. Hole drag up 25/30dan. Hole drag down 15/20dan. Torque on bottom 1300/1550 p.s.i. Back ground gas 80 units. Trip gas 1080 units. Mud lost last 24 hrs 2.8m3.
97-10-18	3115	0	0	Circulate hole for logging. Circulate out 6 stands. Pump pill trip out. Rig to log with Computalog. Run in with XY-GR-DAR-STI tools. Tools failed except XY calipers at 2800m. Check tools and bridle on surface. Run log tools to 3000m. Tools failed, pull tools. Geologist changed logging program. Run in with STI -GR and wait on new DAR tool. Hole bridged at 1900m. Pull log tools out. Wire line damaged, birds nest at 700m, due repeated efforts to get tool through bridge. Rig down loggers. Hole drag up 25/30dan, Hole drag down 15/20dan. Torque on bottom 1325/1430 p.s.i. Background gas 80 units. Trip gas 1980 units (Was much higher estimated at 3200 units. This was not recorded because the high gas reading unit in Minipac 2100 failed.) Mud lost last

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
				24 hrs 4.2m3. Geolcgist proposed to rig out loggers and proposed changed logging program to collect needed data before jeapordizing hole.
97-10-19	3115	0	0	Rig out loggers. Trip with RR #59 bit. No hole problems to 3105m. Wash and ream 3105m-3115m. 1.5m fill. Drill on rubber bull nose loggers lost in hole. Work tight hole. Drill up rubber bull nose. Circulate condition hole. Circulate out 6 stands. Pump pill trip out. Rig to log and log with Computalog. Hole drag up 25/30 dan. Hole drag down 15/20dan. Torque on bottom 1325/1430 psi. Background gas 120 units. Trip gas 3240 units. Mud lost last 24 hrs 1.0m3.
97-10-20	3115	0	0	Log well with Computalog STI-BCS-GR 3116.4m-1006.4m. Tight hole at 1490m-1478m. Loggers pulled 400 psi. over normal weight to loosen tool. Geologist stopped logging operations. Wait on orders. Senior V.P. Ranger ordered rig out loggers, to condition hole for setting casing. Trip in with bit # 60 to 1250m. Circulate and work pipe, Hole condition good. Pump pill trip out. Pick up 3pt reamer. Trip in BHA. Slip and cut drill lie. Repair mud manifold valves. Trip in to 1326m. Strap hole. Wash and ream 1326m -1565m. Hole drag up 2/5000dan. Hole drag down 1/2dan. Torque on bottom 920/1270 psi. Background gas 20. Mud lost last 24 hrs 3.5m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-21	3115	0	0	Pull up to 1485m. Circulate change to 84 mesh shaker screens. Ream with bit and 3 point reamer 1485m-1584m. Hole unloading shale 1485m-1548m. Work pipe circulate hole clean. Ream with bit and 3 point reamer 1548m-3115m. 2.5m fill on bottom. Circulate and work pipe condition for casing. Hole drag down 5/15dan. Hole drag up 2/8 dan. Torque on bottom 1450/1740 psi. Background gas 85 units. Trip gas 950 units. Mud lost last 24 hrs 4.5m3.
97-10-22	3115	0	0	Circulate condition hole for casing. Wiper trip out to 1300m. Hole tight 1468m-1395m. Wash and ream 1325m-1500m. Circulate and work pipe, hole unloading 1/8" -3/4" in size. Circulate out to 1293m. Wash and ream 1310m-1530m. Hole cleaned up. Trip in with bit and 3point reamer to bridge at 1675m. Wash and ream 1675m-1756m. Hole drag up 5/15dan. Hole drag down 1/5dan. Torque on bottom 1450/1740 psi. Background gas 25 units. Mud lost last 24 hrs 1.5m3.
97-10-23	3115	0	0	Wash and ream 1756m-1786m. Trip out. Tight hole at 1438m-1430m. Lay down 3 ppoint reamer. Trip in BHA. Slip and cut drill line. Trip in with RR #60 bit. Wash and ream bridges 1440m-1462m, 1662m-1842m, 1936m-1952m. Repair top drive. Trip in. Clean fill 3104m-3115m. Circulate condition hole and mud. Hole drag up 10/25dan. Hole drag down 2/5dan. Torque on bottom 1450/1740 psi. Background gas 180 units. Trip gas 3240 units. Mud lost last 24 hrs 2.1m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-24	3115	0	0	Circulate condition hole and mud. Circulate out 1 stand. Trip out tight hole at 2518m-2522m & 1438m-1444m. Trip out to 1000m. Trip in. Wash and ream 3098m-3115m. 1.0m fill. Circulate condition hole for casing. Circulate cut 1 stand. Pump pill trip out to run casing. Hole drag up 10/15 dan. Hole drag down 5dan. Torque off (??) bottom 1400/1650 p.s.i. Back ground gas 185 units. Trip gas 2220 units. Mud lost last 24 hrs 1.8m3
97-10-25	3115	0	0	Trip out. Lay down 228mm DCS. Pull wear bushing. Change top pipe rams to 244.5mm and test gate seals to 1400 kpa and 15 kpa. Rig up to run 244.5mm casing. Safety meeting. Run 244.5 mm casing. Changed to 350 ton slips and elevators at casing shoe. Mud lost last 24 hrs 0.8m3.
97-10-26	3115	0	0	Run 51 joints 244.5mm 662.42m 79.62kg/m L-80 Butress - 180 joints 244.5mm 2460.04m 69.94 kg/m L-80 Butress Landed @ 3114.80m. Weatherford stage cementer landed @ 1300.40m. Circulate condition hole for cement. Unable to reciprocate casing. Drill line on dead line anchor slipped at 260 dan. Safety meeting. Rig to cement. Pump 3m3 Diesel -3m3 CW8 preflush. Pressure test lines to 21000 kpa. Cement with 17 tonnes "G" + 35% D66 + 1.25% D160 + 0.5% D65 + 0.5% D-28 displaced with 67.93m3 water, 3.0m3 Diesel, 46.97m3 Invert mud. Plug down at 06:45 hrs. Over displaced 0.5m3 with out bumping plug. Floats held. Drop dart opened stage cementer with 900kpa. Circulate W.O.C. Hole drag up with casing unknown. Hole drag down 32 dan. Back ground gas 84 units. Trip gas 1348 units.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-27	3115	0	0	Circulate through stage cementer. Load plug in head. Safety meeting. Pump 3m3 Diesel, 3m3 CW8 preflush. Cement with 68 tonnes "G" + 0.3% B71 + 0.5% D65 displace with Weatherford plug and 49.97m3 water. Bump plug with 19000kpa closed stage cementer. Plug down at 16:00 hrs. Rig out Dowell. Rig down BOP to set slips. Centrifuge mud. 160m3 in mud tanks. 204m3 in tank farm.
97-10-28	3115	0	0	Rig down BOP. Set casing slipsa. Rig up BOP. Centrifuge mud and clean suction tank.
97-10-29	3115	0	0	Rig up BOP. Change top pipe rams to 127mm. Pressure test upper and lower pipe rams, blind rams, HCRs and BOP valves, manifold valves and lines, stabbing valve, kelly valves to 1400kpa low and 3400 kpa high for 10 minutes each. Pressure test annular BOP to 1400 kpa and 10500 kpa. Mud line manifold failed test. repair valves. Centrifuge invert mud. Strip down #2 mud pump for repair. Weld on suction tank and mixing system.
97-10-30	3115	0	0	Repair mud line manifold and stand-pipe valves. Pressure test mud lines and valves to 1500 kpa and 21000 kpa. Test annular BOP to 1500 kpa and 17500 kpa. Clean mud tanks and level same. Repair #2 mud pump. Function test accumulator start pressure 20500 kpa, open HCR, close annular BOP upper and lower rams, open lower pipe rams pressure remaining 11600 kpa. Recharge time 1 minute and 31 seconds. Recharge pressure 7500 kpa.
97-10-31	3115	0	0	Clean mud tanks. Make up BHA. Repair #2 mud pumps.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-11-01	3115	0	0	Strap in to 1280m. Drill oout cement, plug andstage cementer. Stage cementer at 1300.4m. Circulate bottoms up. Pressure test casing to 27000 kpa. Strap in tag cement at 3070m. Float collar at 3101m. Drill out float and cement. Change swivel packing. Circulate mix mud and chemicals. Repair #2 mud pump.
97-11-02	3115	0	0	Mix and condition mud. Wait on #2 pump repairs.
97-11-03	3115	0	0	Mix and condition mud. Wait on #2 pump repairs.
97-11-04	3128	13	7.50	Mix and condition mud. Wait on #2 pump repairs. Drill out cement and shoe. Work on pumps. Work on the top drive. Circulate samples 3120m and 3125m. Work on pumps. Survey. Mix and pump pill. Trip out.
97-11-05	3128	0	0	Mix and condition mu. Repair #2 mud pump. Drill out cement and shoe. Work on pumps. Work on top drive. Drill 216mm hole 3115m-3120m. Circulate up sample. Poor sample. Drill 216mm hole 3120m-3125m. Circulate sample. Poor sample. Drill 216mm hole 3125m-3128m. Circulate and survey. Mix and pump pill. Trip out to pick up stabilization. Repair draworks low chain. Circulate sample.
97-11-06	3128m	0	0	Tripped out, changed out BHA, pick up extra pipe. Run in hole.
97-11-07	3128m	0	0	Wash and ream to bottom. Drill 216mm hole 3128m-3177m. Work on pipe every 9m. Stuck on bottom. Circulate and jar. Mix ID Free and Diesel 5.4m3. Spot pill 3177m -3140m. Pump 10 strokes every 1/2 hour. Jar pipe no movement. Max pull 23 dan.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-11-08	3128m	0	0	Jar stuck pipe unable to circulate. Jar stuck pipe wit on wire line personel and tools. Rig to and run free-point with Computalog. Free-point tool hanging up at 2960m. Pull out free-point tool. Rig to run sinker bars and driving tool. Damaged wire-line and rope-socket while picking up the tools. Wait on wire line tools from 19:40 hrs.
NO GEOLOGIST ON LOCATION TILL 23 JANUARY 1998				
98-01-23	3098m	0	0	0000-0015 rig service 0015-0400 pooh laydown & change BHA 0400-0800 run in hole 0800-0815 BOP function 0815-0845 RIH break circ. 0845-1115 drill cmt from 3098-3144 (top fish) 1115-1230 circ. 1230-1600 pooh 1600-1615 rig service 1615-1915 pooh 1915-2045 make up BHA, run in hole 2045-2130 slip & cut line 2130-2400 run in hole
98-01-24	3144	46	0	0000-0015 rig service 0015-0245 circ. 0245-0445 rig up cementers,plug back 0445-0600 pull out of plug 0600-0715 circ. 0715-0800 hoist out 0800-0815 bop drill 0815-1600 pick up bha & rih 1600-1615 rig service 1615-2130 break circ. 2130-2230 rih to 3048 2230-2400 circ.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00	
98-01-25	3116	0	0	0000-0015	rig service
				0015-0700	circ.
				0700-0800	tag cement @ 3069.52 to 3078
				0800-0815	rig service
				0815-1000	drill cement 3078 to 3116
				1000-1130	circ.
				1130-1600	poor & flow @ 1350
				1600-1615	rig service
				1615-1800	pooh
				1800-2100	pick up dir. drill tools
				2100-2115	break circ.
				2115-2400	rih
98-01-26	3116	0	0	0000-0015	rig service
				0015-0300	rih break circ. every twelve stands
				0300-0500	rih unable to break circ.
				0500-0800	pooh
				0800-0815	rig service
				0815-1345	pooh
				1345-1600	handle dir tools
				1600-1615	rig service
				1615-1815	handle dir drill tools test mwd
				1815-1845	rih
				1845-1930	slip & cut line
				1930-2300	rih to 2459
				2300-2400	circ. & wash to bottom
98-01-27	3128	12	22 3/4	0000-0015	rig service
				0015-0800	drill
				0800-0815	rig service
				0815-2400	drill and slide
98-01-28	3140	6	6 1/2	0000-1600	rig service, drill slide pooh
				1600-1845	lay down mud motor pick up slow speed
				1845-1915	shallow test mwd tool
				1915-2400	rih
98-01-29	3176	36	14 1/4	0000-0015	rig service
				0015-0115	break circ. wash to bottom
				0115-0230	work on no.2 pump
				0230-2400	drill, rotate, survey, work pipe

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	00:00 - 24:00	Rig activity
98-01-30	3224	48	13 3/4	0000-0015	rig service
				0015-2115	drill, rotate, survey, work pipe
				2115-2400	pump 5 std, pump pill, pooh
98-01-31	3251	27	8	0000-0015	rig service
				0015-0145	pooh
				0145-0215	held safety meeting
				0215-0545	pooh
				0545-0745	handle dir tools
				0745-0800	rih
				0800-0815	rig service
				0815-0830	run in bha
				0830-0900	shallow test mwd tool
				0900-0945	slip and cut line
				0945-1345	rih
				1345-1430	wash to bottom
				1430-2400	drill,survey,rotate
98-02-01	3321	70	17 3/4	0000-0015	rig service
				0015-0815	drill,rotate,survey,work pipe
				0815-0830	pump lost circ.material
				0830-1115	wiper trip
				1115-2400	drill,rotate,survey,work pipe
98-02-02	3377	56	17 1/2	0000-0015	rig service
				0015-2400	drill,rotate,survey,work pipe
98-02-03	3464	87	20	0000-0015	rig service
				0015-2400	drill,rotate,survey,work pipe
98-02-04	3500	36	3 1/2	0000-0015	rig service
				0015-0415	drill,rotate,survey,work pipe
				0415-0530	circ. sample
				0530-0700	pump out 14 stands
				0700-0715	flow check & pump pill
				0715-1415	pooh, lay bown dir drill tools
				1415-2200	rih,break circ. every 12 stands
				2200-2345	wash to bottom
				2345-2400	circ.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00	
98-02-05	3500	0	0	0000-0015	rig service
				0015-0245	circ.
				0245-0545	wiper trip 15 stands
				0545-0800	circ.
				0800-0815	rig service
				0815-1015	pump out 14 stds
				1015-1030	flow & pump pill
				1030-1600	pooh
				1600-1615	rig service
				1615-1630	rig up loggers
				1630-1830	run log no.1
				1830-1930	pull out log no. 1 can't reach bottom
				1930-2030	rig out loggers
				2030-2145	run in hole
				2145-2400	slip & cut line & rih
98-02-06	3500	0	0	0000-0015	rig service
				0015-0215	rih break circ, 1800m & every 12 stds
				0215-0445	wash to bottom from 3107
				0445-0800	circ.
				0800-1630	circ. & wiper trip
				1630-2130	pooh
				2130-2300	rih to bot of csg.
				2300-2330	circ.
				2330-2400	shut in well Read & record

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00	
98-02-07	3500	0	0	0000-0015	rig service
				0015-0030	circ. kick
				0030-0045	shut well
				0045-0230	circ. kick no mud returns
				0230-0800	shut in well , mix mud
				0800-0815	rig service
				0815-1100	well shut in , mix mud
				1100-1330	circ. gas
				1330-1345	shut in well
				1345-1530	open well & circ.,flow check
				1530-1545	flow check
				1545-1600	circ.
				1600-1615	rig service
				1615-1700	run in to 3280
				1700-2030	circ. through chock
				2030-2300	circ. open well
				2300-2330	run in 4 stnds
				2330-2400	circ. @ 55 strokes/min
98-02-08	3500	0	0	0000-0015	rig service
				0015-0200	circ 55 stroks/min till bottom up
				0200-0330	circ 85 stroks/min till bottom up
				0330-0430	rih tag bottom
				0430-0715	circ 55 stroks/min till bottom up
				0715-0800	circ 85 stroks/min till bottom up
				0800-0815	rig service
				0815-1245	circ. 85 stroks/min
				1245 1415	wiper trip to csg 15 stds
				1415-1445	flow check
				1445-1600	rih to bottom
				1600-1615	rig service
				1615-2030	circ
				2030-2045	pump pill
				2045-2400	pooh to log

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00	
98-02-09	3500	0	0	0000-0015	rig service
				0015-0345	pooh
				0345-0415	rig up loggers
				0415-0515	run in log no. 1
				0515-0800	pull out log no.1 STI & SONIC
				0800-0815	rig service
				0815-0845	pooh change tools
				0845-0945	run in log no.2
				0945-1300	pooh & log density
				1300-1345	run in to log no.3
				1345-1600	pooh and log no.3
				1600-1615	rig service
				1615-1800	log no.3
				1800-1945	run in log no.4
				1945-2200	pooh with log no.4
				2200-2230	lay down logging tools
				2230-2400	rih break circ. at 1200m & 2000m
98-02-10	3500	0	0	0000-0015	rig service
				0015-0445	rih break circ at 1200 & 2000
				0445-0615	break circ at 3100 & circ bottom up
				0615-0800	wash to bottom
				0800-0815	rig service
				0815-1600	circ cond mud
				1600-1615	rig service & function chock
				1615-1815	circ. mix pill, pump pill
				1845-2100	slip & cut line, break circ.
				2100-2400	circ. & cond mud

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00	
98-02-11	3500	0	0	0000-0015	rig service
				0015-0030	circ
				0030-0130	run in hole break circ at 3270
				0130-0315	circ & monitor gas
				0315-0800	circ & cond mud
				0800-0815	rig service
				0815-1015	circ & cond mud
				1015-1145	pump pill pooh
				1145-1230	hole gained 47m3 rih wash to
				1230-1600	circ bottom up, circ cond mud
				1600-1615	rig service
				1615-1845	pump pill pooh
				1845-1945	rih break circ wash to bottom
				1945-2400	circ & cond mud
98-02-12	3500	0	0	0000-0015	rig service
				0015-0045	circ.
				0045-0800	pooh
				0800-0815	rig service
				0815-0900	rig up tong hand
				0900-0915	held safety meeting
				0915-1315	run in csg
				1315-1600	run in pipe(strap in)
				1600-1615	rig service
				1615 2400	run in csg (strap in)
98-02-13	3500	0	0	0000-0015	rig service
				0015-0515	run in csg.
				0515-	

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1325 - 1355	SHALE - medium - dark gray, subfissile, blocky, trace slickensides in part, slightly dolomitic, trace calcite micro fracture fill;
1355 - 1385	SHALE - dark gray, medium gray in part, fissile, platy in part, blocky in part, trace slickensides, in part trace thin interbedded dark gray microcrystalline argillaceous LIMESTONE, no visual show, no visible porosity, thin interbedded medium gray CLAYSTONE, slightly calcareous in small part, slightly dolomitic, trace calcite sparry micro fracture fill, trace pyrite disseminated;
1385 - 1410	SHALE - medium gray - dark gray, fissile, platy, blocky in part, rare slickensides, slightly silty, rare dolomitic, rare pyrite;
1410 - 1435	SHALE - medium gray - dark gray, fissile, blocky in part, thin interbedded CLAYSTONE, SHALE medium gray - dark gray, platy, blocky, rare slickensides, slightly calcareous, abundant calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part;
1435 - 1460	SHALE - medium gray - dark gray, fissile, blocky in part, thin interbedded CLAYSTONE, SHALE medium gray - dark gray, platy, blocky, rare slickensides, slightly calcareous, abundant calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part;
1460 - 1469	SHALE - medium gray - dark gray, fissile, blocky in part, thin interbedded CLAYSTONE, SHALE medium gray - dark gray, platy, blocky, rare slickensides, slightly calcareous, abundant calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part;
1469 - 1484	SHALE - medium gray - dark gray, fissile, blocky in part, thin interbedded CLAYSTONE, SHALE medium gray - dark gray, platy, blocky, rare slickensides, slightly calcareous, abundant calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1484 - 1500	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, slightly calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill;
1500 - 1512	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, slightly calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill;
1512 - 1525	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning;
1525 - 1535	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning;
1535 - 1552	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1552 - 1570	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; **SHALE** - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, mixed with parallel micro calcite lenses, slightly silty, rare pyrite, disseminated, rare fragments;
1570 - 1580	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; **SHALE** - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, mixed with parallel micro calcite lenses, slightly silty, rare pyrite, disseminated, rare fragments;
1580 - 1598	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; **SHALE** - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, mixed with parallel micro calcite lenses, slightly silty, rare pyrite, disseminated, rare fragments;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1598 - 1610	SHALE - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown CLAYSTONE, SHALE medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; SHALE - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, slightly silty, rare pyrite, disseminated, rare fragments;
1610 - 1620	SHALE - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown CLAYSTONE, SHALE medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; SHALE - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, slightly silty, rare pyrite, disseminated, rare fragments;
1620 - 1645	SHALE - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown CLAYSTONE, SHALE medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; SHALE - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, slightly silty, rare pyrite, disseminated, rare fragments;
1645 - 1665	SHALE - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown CLAYSTONE, SHALE medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; SHALE - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, slightly silty, rare pyrite, disseminated, rare fragments;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1665 - 1680	SHALE - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown CLAYSTONE, SHALE medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; SHALE - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, slightly silty, rare pyrite, disseminated, rare fragments;
1680 - 1690	SHALE - dark gray - black, irregular blocky, medium hard - hard, rare slickensides, wavy, lustre, slightly silty, minor calcite micro fracture fill, multiple zoned;
1690 - 1695	SHALE - dark gray - black, irregular blocky, medium hard - hard, rare slickensides, wavy, lustre, slightly silty, minor calcite micro fractures fill, multiple zoned;
1695 - 1700	SHALE - medium gray - dark gray, subfissile, blocky, medium hard, moderately calcareous, trace slickensides in part, rare dolomitic, moderately calcite micro fractures fill; SHALE - dark gray - black, irregular blocky, medium hard - hard, rare slickensides, slightly silty, minor calcite micro fracture fill, multiple zoned, rare pyrite thin beds and thin streaks of disseminated micro crystals, and in calcite micro fractures fill;
1700 - 1705	SHALE - dark gray - black, irregular blocky, medium hard - hard, rare slickensides, slightly silty, minor calcite micro fracture fill, multiple zoned, rare pyrite thin beds and thin streaks of disseminated micro crystals, and in calcite micro fractures fill;
1705 - 1710	SHALE - medium gray - dark gray, subfissile, blocky, medium hard, moderately calcareous, trace slickensides in part, rare dolomitic, moderately calcite micro fractures fill;
1710 - 1715	SHALE - dark gray - black, irregular blocky, medium hard - hard, rare slickensides, slightly silty, minor calcite micro fracture fill, multiple zoned, rare pyrite thin beds and thin streaks of disseminated micro crystals, and in calcite micro fractures fill;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1715 - 1720	SHALE - dark gray - black, irregular blocky, medium hard - hard, rare slickensides, slightly silty, minor calcite micro fracture fill, multiple zoned, rare pyrite thin beds and thin streaks of disseminated micro crystals, and in calcite micro fractures fill;
1725 - 1735	SHALE - medium gray - dark gray, subfissile, blocky, medium hard, moderately calcareous, trace slickensides in part, rare dolomitic, moderately calcite micro fractures fill;
1735 - 1740	SHALE - medium gray - dark gray, subfissile, blocky, medium hard, moderately calcareous, trace slickensides in part, rare dolomitic, moderately calcite micro fractures fill;
1740 - 1760	SHALE - medium gray - dark gray, subfissile, blocky, medium hard, moderately calcareous, trace slickensides in part, rare dolomitic, moderately calcite micro fractures fill;
1760 - 1780	SHALE - medium gray - dark gray, subfissile, blocky, medium hard, moderately calcareous, trace slickensides in part, rare dolomitic, moderately calcite micro fractures fill; SHALE - dark gray - black, platy, irregular blocky, medium hard, slightly silty, some calcite micro fracture fill;
1780 - 1795	SHALE - medium gray - dark gray, subfissile, blocky in part, medium hard, slightly calcareous, trace slickensides in part, rare dolomitic streaks in part, scattered calcite micro fracture fill;
1795 - 1800	No sample - sample not circ'd;
1800 - 1815	SHALE - medium gray - dark gray, subfissile, blocky in part, medium hard, slightly calcareous, trace slickensides in part, rare dolomitic streaks in part, trace calcite micro fracture fill;
1815 - 1825	SHALE - medium gray - dark gray, subfissile, blocky in part, medium hard, slightly calcareous, trace slickensides in part, rare dolomitic streaks in part, trace calcite micro fracture fill;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1825 - 1837	SHALE - medium gray - dark gray, subfissile, blocky in part, medium hard, slightly calcareous, trace slickensides in part, rare dolomitic streaks in part, trace calcite micro fracture fill;
1837 - 1840	No sample - sample not circ'd;
1840 - 1855	SHALE - medium gray - dark gray, subfissile, blocky in part, medium consolidated, trace slickensides in part, slightly dolomitic, trace calcite micro fracture fill in small part;
1855 - 1865	SHALE - medium gray - dark gray, subfissile, blocky in part, medium consolidated, trace slickensides in part, slightly dolomitic, trace calcite micro fracture fill in small part; SHALE - dark gray - black, medium gray in part, subfissile, medium hard, trace micromicaceous;
1865 - 1880	SHALE - dark gray - black, medium gray in part, subfissile, medium hard, trace micromicaceous;
1880 - 1900	SHALE - dark gray - black, medium gray in part, subfissile, soft, trace micromicaceous, trace carbonaceous in part;
1900 - 1920	SHALE - dark gray - black, medium gray in part, subfissile, soft, trace micromicaceous, trace carbonaceous in part;
1920 - 1940	SHALE - dark gray - black, medium gray in part, subfissile, soft, trace micromicaceous, trace carbonaceous in part;
1940 - 1960	SHALE - dark gray - black, medium gray in part, subfissile, soft, trace siliceous micro fracture fill, trace carbonaceous in part;
1960 - 1980	SHALE - dark gray - black, medium gray in part, subfissile, soft, trace siliceous micro fracture fill, trace carbonaceous in part, trace pyrite in part;
1980 - 2000	SHALE - dark gray - black, medium gray in part, subfissile, soft, trace siliceous micro fracture fill, trace carbonaceous in part, trace pyrite in part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2000 - 2020	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2020 - 2040	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2040 - 2050	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2050 - 2068	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2068 - 2080	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2080 - 2101	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2101 - 2118	**SHALE** - medium gray - dark gray, subfissile, blocky in part, medium consolidated, trace slickensides in part, slightly dolomitic, trace calcite micro fracture fill in small part; **SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2118 - 2125	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2125 - 2140	**SHALE** - medium gray - dark gray, subfissile, blocky in part, medium consolidated, trace slickensides in part, slightly dolomitic, trace calcite micro fracture fill in small part; **SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part; Note: There is an increasing percentage of 1) **SHALE** - dark gray, medium hard, irregularly blocky, rare opaque calcite micro fracture fill, occasional clear quartz micro fracture fill with common clear euhedral quartz crystals, occasional pyrite fragments, common disseminated pyrite, slightly micromicaceous, minor slickensides in part, and of 2) **SILTSTONE** - black, hard to very hard, irregularly blocky, common micromicaceous, common disseminated pyrite, common quartz micro fracture fill with common euhedral quartz crystals.
2140 - 2145	**SHALE** - dark gray - black, medium hard, irregularly blocky, medium slickensides in part, rare calcite opaque micro fracture fill, occasional quartz micro fracture fill with common clear euhedral crystals, occasional pyrite fragments, common pyrite disseminated, slightly micromicaceous; **SILTSTONE** - black, hard - very hard, irregular blocky, common micromicaceous, common pyrite disseminated, common quartz micro fracture fill with common euhedral clear quartz crystals;
2145 - 2155	**SHALE** - dark gray - black, medium hard, irregularly blocky, medium slickensides in part, rare calcite opaque micro fracture fill, occasional quartz micro fracture fill with common clear euhedral crystals, occasional pyrite fragments, common pyrite disseminated, slightly micromicaceous; **SILTSTONE** - black, hard - very hard, irregularly blocky, common micromicaceous, common pyrite disseminated, common quartz micro fracture fill with common euhedral clear quartz crystals; siliceous in part.

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2155 - 2160	SHALE - dark gray - black, medium hard, irregularly blocky, medium slickensides in part, rare calcite opaque micro fracture fill, occasional quartz micro fracture fill with common clear euhedral crystals, occasional pyrite fragments, common pyrite disseminated, slightly micromicaceous; SILTSTONE - black, hard - very hard, irregularly blocky, common micromicaceous, common pyrite disseminated, common quartz micro fracture fill with common euhedral clear quartz crystals;
2160 - 2170	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, occasional quartz micro fracture fill with rare clear euhedral crystals, rare pyrite disseminated, slightly micromicaceous; SILTSTONE - black, hard - very hard, irregular blocky, siliceous, common micromicaceous, occasional pyrite disseminated, common quartz micro fracture fill with rare euhedral clear quartz crystals;
2170 - 2180	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, occasional quartz micro fracture fill with rare clear euhedral crystals, rare pyrite disseminated, slightly micromicaceous; SILTSTONE - black, hard - very hard, irregular blocky, siliceous, common micromicaceous, occasional pyrite disseminated, common quartz micro fracture fill with rare euhedral clear quartz crystals;
2180 - 2185	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, occasional quartz micro fracture fill with rare clear euhedral crystals, rare pyrite disseminated, slightly micromicaceous; SILTSTONE - black, hard - very hard, irregular blocky, siliceous, common micromicaceous, occasional pyrite disseminated, common quartz micro fracture fill with rare euhedral clear quartz crystals;
2185 - 2190	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, rare pyrite diseminated slightly micromicaceous; SILTSTONE - black, hard -very hard, irregular blocky, siliceous, common micromicaceous, occasional pyrite disseminated, sparse quartz micro fracture fill with rare euhedral clear quartz crystals;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2185 - 2190	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, rare pyrite disseminated; SILTSTONE - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite disseminated, some quartz micro fracture fill with clear euhedral crystals, common siliceous;
2190 - 2195	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, rare pyrite disseminated; SILTSTONE - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite disseminated, some quartz micro fracture fill with clear euhedral crystals, common siliceous;
2195 - 2200	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, rare pyrite disseminated; SILTSTONE - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite disseminated, some quartz micro fracture fill with clear euhedral crystals, common siliceous;
2200 - 2205	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, rare pyrite disseminated; SILTSTONE - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite disseminated, some quartz micro fracture fill with clear euhedral crystals, common siliceous;
2205 - 2210	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, rare pyrite disseminated; SILTSTONE - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite disseminated, some quartz micro fracture fill with clear euhedral crystals, common siliceous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2210 - 2215	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, rare pyrite disseminated; SILTSTONE - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite disseminated, some quartz micro fracture fill with clear euhedral crystals, common siliceous;
2215 - 2220	SHALE - dark gray - black in part, soft - medium hard, platy - blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, abundant pyrite disseminated; SILTSTONE - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite fragments and disseminated, rare quartz micro fracture fill, some siliceous , common in part;
2220 - 2225	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; SILTSTONE - black, hard - very hard, irregular blocky, some micromicaceous, rare quartz micro fracture fill, common siliceous, some pyrite disseminated; SILTSTONE - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;
2225 - 2230	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; SILTSTONE - black, hard - very hard, irregular blocky, some micromicaceous, rare quartz micro fracture fill, common siliceous, some pyrite disseminated;
2230 - 2235	SHALE - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; SILTSTONE - black, hard - very hard, irregular blocky, some micromicaceous, rare quartz micro fracture fill, common siliceous, some pyrite disseminated; SILTSTONE - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2235 - 2240	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;
2240 - 2255	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, hard - very hard, irregular blocky, some micromicaceous, rare quartz micro fracture fill, common siliceous, some pyrite disseminated; **SILTSTONE** - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;
2255 - 2265	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;
2265 - 2270	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;
2270 - 2275	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;
2275 - 2285	**SHALE** - medium gray - dark gray, platy, soft, rare slickensides, slightly calcareous, trace dolomitic, trace silty, moderately micromicaceous, rare pyrite disseminated;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2285 - 2295	SILTSTONE - black, medium hard - hard, irregular blocky, slightly micromicaceous to common micromicaceous in part, some siliceous in part, common pyrite disseminated, rare pyrite fragments; SHALE - medium gray - dark gray, platy, soft, rare slickensides, slightly calcareous, trace dolomitic, trace silty, moderately micromicaceous, rare pyrite disseminated;
2295 - 2310	SILTSTONE - black, medium hard - hard, irregular blocky, slightly micromicaceous to common micromicaceous in part, some siliceous in part, common pyrite disseminated, rare pyrite fragments; SHALE - medium gray - dark gray, platy, soft, rare slickensides, slightly calcareous, trace dolomitic, trace silty, moderately micromicaceous, rare pyrite disseminated;
2310 - 2315	SHALE - medium gray - dark gray, platy, soft, rare slickensides, slightly calcareous, trace dolomitic, trace silty, moderately micromicaceous, rare pyrite disseminated;
2315 - 2340	SHALE - medium gray - dark gray, platy, soft, rare slickensides, slightly calcareous, trace dolomitic, trace silty, moderately micromicaceous, rare pyrite disseminated;
2340 - 2360	SHALE - medium gray, dark gray in part, platy, soft, becoming slightly calcareous in part, trace micromicaceous, trace pyrite in part;
2360 - 2380	SHALE - medium gray, dark gray in part, platy, soft, becoming black in part, becoming slightly calcareous in part, trace micromicaceous, rare pyrite in part;
2380 - 2395	SHALE - medium gray, dark gray in part, platy, soft, becoming black in part, becoming slightly dolomitic in part, slightly micromicaceous, trace calcareous streaks in part;
2395 - 2410	SHALE - medium gray, dark gray in part, platy, soft, becoming black in part, slightly micromicaceous, slightly dolomitic, rare pyrite;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2410 - 2415	SHALE - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, rare pyrite;
2415 - 2425	SHALE - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, rare pyrite;
2425 - 2430	SHALE - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, trace pyrite;
2430 - 2440	SHALE - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, trace pyrite;
2440 - 2450	SHALE - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, trace pyrite;
2450 - 2470	SHALE - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, trace pyrite;
2430 - 2440	SHALE - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, trace pyrite;
2470 - 2495	SHALE - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly dolomitic;
2495 - 2510	SHALE - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly dolomitic;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2510 - 2535	SHALE - medium gray, subfissile, becoming dark gray in part, soft, slightly dolomitic, trace micromicaceous in part;
2535 - 2560	SHALE - medium gray, subfissile, becoming dark gray in part, soft, slightly dolomitic, trace micromicaceous in part;
2560 - 2575	SHALE - medium gray, subfissile, becoming dark gray in part, soft, slightly dolomitic, trace micromicaceous in part;
2575 - 2590	SHALE - medium gray, dark gray in part, soft, subfissile, samples poor quality - heavy contamination by mud products, slightly dolomitic in part;
2590 - 2595	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor - heavy contamination by unassimilated mud products, slightly dolomitic;
2595 - 2600	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic;
2600 - 2620	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic;
2620 - 2635	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic;
2635 - 2640	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, abundant pyrite, fragments;
2640 - 2645	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2645 - 2650	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, occasional pyrite fragments and disseminated;
2650 - 2660	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, occasional pyrite fragments and disseminated; **SILTSTONE** - black, blocky, occasional pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills;
2660 - 2675	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, occasional pyrite fragments and disseminated; **SILTSTONE** - black, blocky, occasional pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills;
2675 - 2690	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, some pyrite fragments and disseminated; **SILTSTONE** - black, blocky, occasional pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills, rare quartz micro fracture fill;
2690 - 2695	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, some pyrite fragments and disseminated; minor **SILTSTONE** - black, hard to very hard, blocky with sharp ribs, rare pyrite disseminated and fragments, some quartz micro fracture fill.
2695 - 2700	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, some pyrite fragments and disseminated; rare calcite micro fracture fill, rare clear calcite crystals; minor **SILTSTONE** - black, hard - very hard, blocky with sharp ribs, rare quartz micro fracture fill.
2700 - 2710	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, some pyrite fragments and disseminated;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2710 - 2715	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, some pyrite fragments and disseminated; SILTSTONE - black, blocky, occasional pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills, rare quartz micro fracture fill;
2715 - 2720	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, rare calcite micro fracture fill, rare pyrite disseminated and fragments;
2720 - 2730	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, rare calcite micro fracture fill, rare pyrite disseminated and fragments; SILTSTONE - black, hard - very hard, blocky, rare pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills, rare quartz micro fracture fill;
2730 - 2740	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, rare calcite micro fracture fill, rare pyrite disseminated and fragments; SILTSTONE - black, hard - very hard, blocky, rare pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills, rare quartz micro fracture fill;
2740 - 2745	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, rare calcite micro fracture fill, rare pyrite disseminated and fragments;
2745 - 2760	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, rare calcite micro fracture fill, rare pyrite disseminated and fragments; SILTSTONE - black, hard - very hard, blocky, rare pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills, rare quartz micro fracture fill;
2760 - 2770	SHALE - medium gray, dark gray in part, subfissile, soft to moderately consolidated, rare calcite micro fracture fill, rare pyrite disseminated and fragments; SILTSTONE - black, hard - very hard, blocky, rare pyrite disseminated and fragments, common siliceous, some calcite micro fracture fill fills, rare quartz micro fracture fill;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2770 - 2780	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated;
2780 - 2785	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, very poor quality sample;
2785 - 2795	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, very poor quality sample;
2795 - 2805	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, very poor quality sample;
2805 - 2820	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, very poor quality sample;
2820 - 2835	**SHALE** - black, platy, soft - hard, common pyrite disseminated and thin streaks;
2835 - 2848	**SHALE** - black, platy, soft - hard, common pyrite disseminated and thin streaks;
2848 - 2855	**SHALE** - black, dark gray in part, fissile, brittle, hard - moderately consolidated, minor trace calcite fracture fill in part, scattered pyrite disseminated and thin streaks, trace siliceous streaks in part;
2855 - 2865	**SHALE** - black, fissile, brittle, hard - moderately consolidated, minor trace calcite fracture fill in part, scattered pyrite disseminated and thin streaks, trace siliceous streaks in part;
2865 - 2870	**SHALE** - black, occasionally dark gray in part, fissile, moderately consolidated, minor trace calcite fracture fill in part, scattered pyrite disseminated and thin streaks, trace siliceous streaks in part;
2870 - 2885	**SHALE** - black, fissile - subfissile, moderately consolidated, trace pyrite disseminated and thin streaks, slightly dolomitic;
2885 - 2895	**SHALE** - black, fissile - subfissile, moderately consolidated, trace pyrite disseminated and thin streaks, slightly dolomitic;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2895 - 2915	SHALE - black, fissile, moderately consolidated, trace pyrite disseminated, moderately dolomitic;
2915 - 2927	SHALE - black, fissile, moderately consolidated to hard, trace pyrite disseminated, moderately dolomitic, slightly calcareous in part;
2927 - 2935	SHALE - black, fissile, moderately consolidated, brittle in part, trace pyrite disseminated, slightly dolomitic, moderately calcareous in part;
2935 - 2940	SHALE - black, fissile, moderately consolidated, brittle in part, trace pyrite disseminated, slightly dolomitic, moderately calcareous in part; SHALE - dark gray - black, subfissile, hard, brittle in part, trace fracture fill calcite in small part, trace pyrite, moderately calcareous in part;
2940 - 2945	SHALE - dark gray - black, subfissile, hard, brittle in part, trace fracture fill calcite in small part, trace pyrite, moderately calcareous in part;
2945 - 2950	SHALE - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous in part;
2950 - 2960	SHALE - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous in part;
2960 - 2970	SHALE - black, fissile, moderately consolidated, brittle in part, trace pyrite disseminated, slightly dolomitic, moderately calcareous in part; SHALE - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous in part.
2970 - 2975	SHALE - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous in part; SHALE - black, dark gray in part, blocky, subfissile in part, hard, fair fracture porosity, trace pyrite disseminated, moderately calcareous in part, scattered calcite fracture fill;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2975 - 2980	SHALE - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous in part;
2980 - 2995	SHALE - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, scattered pyrite disseminated, moderately calcareous in part;
2995 - 3010	SHALE - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous in part;
3010 - 3015	SHALE - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, slightly calcareous in part;
3015 - 3025	SHALE - dark gray, black in part, blocky, moderately consolidated, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous;
3025 - 3030	SHALE - dark gray, black in part, blocky, moderately consolidated, scattered fracture fill calcite in small part, scattered pyrite disseminated, moderately calcareous;
3030 - 3032	SHALE - dark gray, black in part, blocky, moderately consolidated, scattered fracture fill calcite in small part, scattered pyrite disseminated, moderately calcareous;
3032 - 3035	SHALE - dark gray, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part;
3035 - 3040	SHALE - dark gray, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part;
3040 - 3044	SHALE - dark gray, mottled white calcareous streaks in part, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part;

LITHOLOGY

Formation tops
Sample interval
(in meters) SAMPLE DESCRIPTION

The interval from 2833m to 3053m contains dark grey to black, blocky to irregular blocky, hard to very hard, siliceous, SHALE, silty in part. This lithology has been described as SILTSTONE by H. Wennekers. The cuttings are multi and irregularly faceted, with some cutting surfaces appearing as shell-like and even amygdaloidal; not uncommon for chert fracturing. Cuttings of this lithology may include cavings, which though seems unlikely with the slightly over gauge, clean, hole, and the high viscosity (117) and heavy (1430kg/m3) drilling mud. Drilling bits ware on this lithology. Drilling bit shanks wore and some of the bits were 1/2" under gauge. This lithology has been mistakenly been described as "chert" from this lowermost interval (the Horn River) of the Besa River in some wells in the region.

3044 - 3045	SHALE - dark gray, mottled white calcareous streaks in part, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part;
3045 - 3055	SHALE - dark gray, mottled white calcareous streaks in part, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part; SHALE - dark gray - black, hard - very hard, blocky, abundant siliceous, common calcareous, some calcite white micro fracture fill, rare quartz euhedral crystals, common pyrite disseminated and fragments;
3055 - 3065	SHALE - dark gray, mottled white calcareous streaks in part, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part; SHALE - dark gray - black, hard - very hard, blocky, abundant siliceous, common calcareous, some calcite white micro fracture fill, common quartz micro fracture fill and euhedral crystals, common pyrite disseminated and fragments;
3065 - 3068	SHALE - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3068 - 3072	SHALE - dark gray - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, trace quartz micro fracture fill, rare pyrite disseminated;
3072 - 3080	SHALE - dark gray, mottled white calcareous streaks in part, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part; SHALE - dark gray - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, trace quartz micro fracture fill, rare pyrite disseminated;
3080 - 3090	SHALE - dark gray, mottled white calcareous streaks, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part, rare dolomite clear euhedral crystals in calcite micro fracture fill; SHALE - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments; LIMESTONE - gray brown, platy, mottled, microcrystalline, calcite fossil mould, common argillaceous, some calcite white calcite micro fracture fill;
3090 - 3095	SHALE - dark gray, mottled white calcareous streaks in part, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part; SHALE - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments; LIMESTONE - gray brown, platy, mottled, microcrystalline, calcite fossil, small angle top cone Tentaculites, common argillaceous, some calcite white calcite micro fracture fill;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3095 - 3098	**SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments; **LIMESTONE** - gray brown, platy, mottled, microcrystalline, calcite fossil, small angle top cone Tentaculites, common argillaceous, some calcite white calcite micro fracture fill;
3098 - 3099	**SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments;
3099 - 3102	No sample; A 2.32m discrepancy in bottom hole depth.
3102 - 3105	**SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments; **LIMESTONE** - gray brown (whitish-gray to dark gray speckled, platy, mottled, microcrystalline, calcite fossil, small angle top cone Tentaculites, common argillaceous, some calcite white calcite micro fracture fill.
3105 - 3110	**SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments; **LIMESTONE** - gray brown (whitish - gray to dark gray speckled), platy, mottled, microcrystalline, calcite fossil, small angle top cone Tentaculites, common argillaceous, some calcite white calcite micro fracture fill;
3110 - 3113	**SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments; **LIMESTONE** - gray brown - dark gray, mottled, hard, brittle, platy, microcrystalline, calcite fossil, small angle top cone Tentaculites, common argillaceous, some calcite white calcite micro fracture fill, rare bitumen black, high lustre, amygdaloidal fractures;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3113 - 3115	LIMESTONE - gray brown - dark gray, mottled, hard, brittle, platy, microcrystalline, dried bitumen in microfracture lined with calcite crystals, calcite fossil, small angle top cone Tentaculites, common argillaceous, some calcite white calcite micro fracture fill, rare bitumen black, high lustre, amygdoidal fractures;

Some notes on the lithology of the rocks drilled in P-66-A between 3080m and 3115m.

The rock encountered from 3080m to 3115m contains what appears two units with limestone separated by shale. This could be a repeat section, or it represents an undisturbed succession. The lowermost sample of this interval from 3112.50m to 3115.00m contains abundant pieces of opaque calcite, common pieces of quartz and small clear quartz crystals, and pieces of opaque to translucent dolomite. Also encountered were small pieces of brittle dried bitumen, black, high luster, with amygdaloidal-like fractures. A few pieces had already been found in sample 3112.50m, but then a decision as to its origin waivered between in-situ and/or a mud additive. This riddle was solved when, in circulated 3115.00m bottom hole sample, a cutting was found that contained limestone and part of a micro fracture almost filled with calcite crystals; not closed, but with space left between the two surfaces of crystal tops, indicating crystal growth was from the fracture walls towards the centre of the fracture. The open space between the two opposite surfaces studded with crystal tops, is filled with black shiny dried bitumen. This was a most wonderful discovery, since similar fractures filled with dried bitumen (Gilsonite) are characteristic of the Nahanni limestone and dolomite in wells drilled in the Pointed Mountain Field and in other wells that were drilled in the region. At this time, it is not known how far the 3115.00m bottom hole depth is from the top of the Nahanni dolomites. It might be concluded that the limestone we have seen in the last 35 meters of the P-66-A hole might include basal Horn River limestones and uppermost limestones of the Nahanni Formation.

The limestones encountered in the 3080m to 3098m interval are not sedimentary limestones. It appears that these Limestones are defined as Limiestones, because of their reaction with 0.1normal HCL acid, leaving some argillaceous residue. In places, the distinction between argillaceous Limestone and calcareous shale is very difficult; if not impossible. In addition, it is more than likely that these limestone are the result of a series of complex diagenitic events.

LITHOLOGY

Formation tops
Sample interval
(in meters) SAMPLE DESCRIPTION

It appears, that a mainly argillaceous black rock, claystone to shale, containing abundant pyrite, went through a silicification cycle, changing the rock into a very hard siliceous claystone-shale, that I have described in many cases as a siltstone; gritty feel and hard. This "siltstone" then was subjected to a calcification process, which diagenetically converted the "siltstone" to varying degrees into a mottled rock, that reacts actively with 0.1 normal HCL acid, suggesting it is a limestone; very little residue is left after acid has removed all calcite. The limestone designation seems logic as the rock contains calcified fossils. Unfortunately, such calcified fossils are also present in siliceous shales/claystones. These fossils include, Tentaculites; three dimensional, suggesting that hardening of this rock, due silification, occurred somewhere prior to advanced induration. Or, as an alternative, local calcification of these fossils occurred early in the induration process.

It is noted here, that the calcification of the "siltstone" occurred as if it followed original very fine bedding in the "siltstone". A bedding that can not be detected when cuttings of non-calcified "siltstone" are examined in detail. Thus, calcification highlights that "bedding". Also, the calcification process, although appearing to follow original bedding, has the appearance, on a cross section surface, not of thin beds, but of a string of flattened beads. With more advanced calcification, the "partially calcified siltstone" is converted into a grayish brown coloured limestone. Following that, it appears that further calcification results in a grayish brown to whitish and dark gray "salt and pepper" microcrystalline limestone. Usually, the description "salt and pepper" is used for sandstone, but that is how it looks. Further calcification results in a microcrystalline whitish-blackish salt and pepper limestone.

Note: The content of the above two pages is based on visual observations on location P-66-A, and not on reviews of literature and other sources.

[An alternate interpretation might envision diagenetically changed original sedimentary argillaceous limestones and possibly calcareous shales of the Nahanni, between 3102m and 3115m?; silicification to varying degrees?]

3115 - 3125 **DOLOMITE** - light tan, light brown, microcrystalline, dried brittle black bitumen and soft black bitumen, abundant calcite, pieces of crystals, some blackish due to bitumen;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
	Sample descriptions that follow [3115-3500] whipstock no.4 were logged by Fred Richardson January 27/98 to February 4/98
3115 - 3120	Sample is 100% cement;
3120 - 3125	Sample is 100% cement; No sample - teflon beads;
3125 - 3130	Teflon beads; **DOLOMITE** - dark gray, fine crystalline to medium crystalline and some coarse crystalline; **DOLOMITE** - white, medium crystalline to coarse crystalline and some fine crystalline, fair intercrystalline porosity, fair vuggy porosity;
3125 - 3130	**DOLOMITE** - white, fine crystalline to medium crystalline, no gas show, sample ground very fine, and abundant cement, difficult to access porosity, occasional bitumen; 40-50% of sample is cement;
3130 - 3135	**DOLOMITE** - white, fine crystalline to medium crystalline, no gas show, sample ground very fine, and abundant cement, difficult to access porosity, occasional bitumen;
3135 - 3140	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - dark gray, black, fine crystalline to medium crystalline, trace intercrystalline porosity;
3140 - 3145	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - dark gray, black, fine crystalline to medium crystalline, trace intercrystalline porosity;
3145 - 3150	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3150 - 3155	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;
3155 - 3160	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;
3160 - 3165	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;
3165 - 3170	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;
3170 - 3175	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;
3175 - 3180	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3180 - 3185	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;
3185 - 3190	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace vuggy porosity, trace gas, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity;
3190 - 3195	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity;
3195 - 3200	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3200 - 3205	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; DOLOMITE - gray, gray - brown, fine crystalline to microcrystalline, rare intercrystalline porosity;
3205 - 3210	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; DOLOMITE - gray, gray - brown, fine crystalline to microcrystalline, rare intercrystalline porosity;
3210 - 3215	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; DOLOMITE - as above, fine crystalline to microcrystalline, rare intercrystalline porosity;
3215 - 3220	DOLOMITE - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; DOLOMITE - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3220 - 3225	DOLOMITE - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; DOLOMITE - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous;
3225 - 3230	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; DOLOMITE - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3230 - 3235	DOLOMITE - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; DOLOMITE - gray, gray - brown, fine crystalline to microcrystalline, rare intercrystalline porosity; DOLOMITE - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3235 - 3240	DOLOMITE - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; DOLOMITE - gray, gray - brown, fine crystalline to microcrystalline, rare intercrystalline porosity; DOLOMITE - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous;
3240 - 3245	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3245 - 3250	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3250 - 3255	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3255 - 3260	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3260 - 3265	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3265 - 3270	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3270 - 3275	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3275 - 3280	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; **DOLOMITE** - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3280 - 3285	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous;
3285 - 3290	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3290 - 3295	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3295 - 3300	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3300 - 3305	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; **DOLOMITE** - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous;
3305 - 3310	**DOLOMITE** - gray, gray - brown, fine crystalline to microcrystalline, rare intercrystalline porosity; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3310 - 3315	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3315 - 3320	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3320 - 3325	DOLOMITE - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, trace porosity, trace of vuggy porosity, trace gas, occasionally calcareous;
3325 - 3330	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous;
3325 - 3330	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals;
3330 - 3335	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals; DOLOMITE - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity;
3335 - 3340	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals; DOLOMITE - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3340 - 3345	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, light gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;
3345 - 3350	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;
3350 - 3355	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;
3355 - 3360	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3360 - 3365	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3365 - 3370	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3370 - 3375	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3375 - 3380	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3380 - 3385	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; DOLOMITE - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;
3385 - 3390	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; DOLOMITE - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;
3390 - 3395	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; DOLOMITE - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity;
3395 - 3400	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; DOLOMITE - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;
3395 - 3400	DOLOMITE - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; DOLOMITE - brown, cryptocrystalline to microcrystalline, tight; DOLOMITE - white, coarse crystalline to very coarse crystalline, trace vuggy porosity, trace clear quartz crystal, trace calcareous;
3400 - 3405	DOLOMITE - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; DOLOMITE - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3405 - 3410	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace vuggy porosity, trace clear quartz crystal, trace calcareous;
3410 - 3415	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace vuggy porosity, trace clear quartz crystal, trace calcareous;
3415 - 3420	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3420 - 3425	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace vuggy porosity, trace clear quartz crystal, trace calcareous;
3425 - 3430	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3430 - 3435	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3435 - 3440	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3440 - 3445	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3445 - 3450	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3450 - 3455	DOLOMITE - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; DOLOMITE - gray, dark gray, very fine crystalline to fine crystalline and some medium crystalline, fair fracture porosity; DOLOMITE - brown, cryptocrystalline to microcrystalline, tight;
3455 - 3460	DOLOMITE - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; DOLOMITE - brown, cryptocrystalline to microcrystalline, tight; DOLOMITE - gray, dark gray, fine crystalline to medium crystalline;
3460 - 3465	DOLOMITE - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; DOLOMITE - brown, cryptocrystalline to microcrystalline, tight; DOLOMITE - gray, dark gray, fine crystalline to medium crystalline;
3465 - 3470	DOLOMITE - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; DOLOMITE - brown, cryptocrystalline to microcrystalline, tight; DOLOMITE - gray, dark gray, fine crystalline to medium crystalline;
3470 - 3475	DOLOMITE - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; DOLOMITE - brown, cryptocrystalline to microcrystalline, tight; DOLOMITE - gray, dark gray, fine crystalline to medium crystalline;
3475 - 3480	DOLOMITE - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous;
3480 - 3485	DOLOMITE - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; DOLOMITE - brown, cryptocrystalline to microcrystalline, tight; DOLOMITE - gray, dark gray, fine crystalline to medium crystalline;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3485 - 3490	DOLOMITE - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; DOLOMITE - brown, cryptocrystalline to microcrystalline, tight; DOLOMITE - gray, dark gray, fine crystalline to medium crystalline;
3490 - 3495	DOLOMITE - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; DOLOMITE - brown, cryptocrystalline to microcrystalline, tight; DOLOMITE - gray, dark gray, fine crystalline to medium crystalline;
3495 - 3500	DOLOMITE - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; DOLOMITE - brown, cryptocrystalline to microcrystalline, tight; DOLOMITE - gray, dark gray, fine crystalline to medium crystalline;
TOTAL DEPTH	3500m

GEOLOGICAL SUMMARY AND CONCLUSIONS

Side track #3, Ranger Fort Liard P66A, kicked off at around 1400m. Directional drilling, building up to a 45 degrees angle was drilled to 3115m when intermediate casing was set. Hole conditions were excellent from around 1950m down to 3115m, but many tight hole intervals, unloading of shale, and large diameter hole caused considerable concern for the integrity of the hole until it was finally cased. The section drilled between 1400m and 1950m contains medium gray to dark gray to light brown to tan, soft, platy, sometimes blocky, shale, micromicaceous in places, calcareous to varying degrees, sometimes slightly dolomitic. This shale unloads easily when mud pressure is lowered or when there is much activity in the hole. While the directional drilling had build up to, and reached, the 45 degrees angle, the production of finely ground up rock so characteristic of drilling that interval, continued even when the harder more stable strata were drilled from 1950m to 3115m. Well cutting samples contained at times almost no cuttings, but were dominated by pieces of mud solids, scraped of the well bore wall and characterized by shiny black surfaces, almost resembling slickensides. In this case, they are recent slickensides; actual friction surfaces. With the high downhole temperatures and pressures, it is increasingly difficult to assess what actually took place at the bit. Not mechanically, but physically and chemically. From time to time the hole dragged and with a mud, containing irregular and sometimes very high percentages of mud solids, the hole drag increased. From time to time, efforts were made to decrease the hole drag and bottom torque. This was done by adding crushed wallnut shells to the mud. Interesting to note that the mud company does not carry tables and graphs that show that these wallnut shells at 1000 to 5000 psi are compacted to very small pieces indeed. In this hole it was clearly visible that below 1950m the real cuttings of the silicified shale were larger than the compressed crushed wallnut pieces. In effect a useless addition to the mud, that tended to pack off the MWD tool and caused problems in the mud pumps. The most important adaptation to the lithologies in this hole was the production of very clean mud that had no problems carrying sloughings and cuttings. That was all that there is to it.

Sidetrack no.4 was required because a fish was left in the hole and had to be cemented off and sidetracked around. Kick off point was 3115m [measured] and directional drilling started on January 27, 1998 and successful drilled past the fish and to TD of 3500m at 04:00 hrs February 4, 1998. Drilling was completed without any major problems.

The lithology consisted primarily of white Dolomite very course crystalline with some spotty vuggy porosity to 10 or 12 % . Forty to fifty per cent of the samples are dark grey to black Dolomite, very fine crystalline and tight. One good gas show was encountered at 3166m [2280] units. Smaller gas shows are as follows: 346 units at 3378m and 760 units at 3408m.

Logging operations began February 5, 1998 18:00 to 20:00 and could not reach bottom , Hole was bridged off at 3288m . A clean out trip followed and an

GEOLOGICAL SUMMARY AND CONCLUSIONS (cont.)

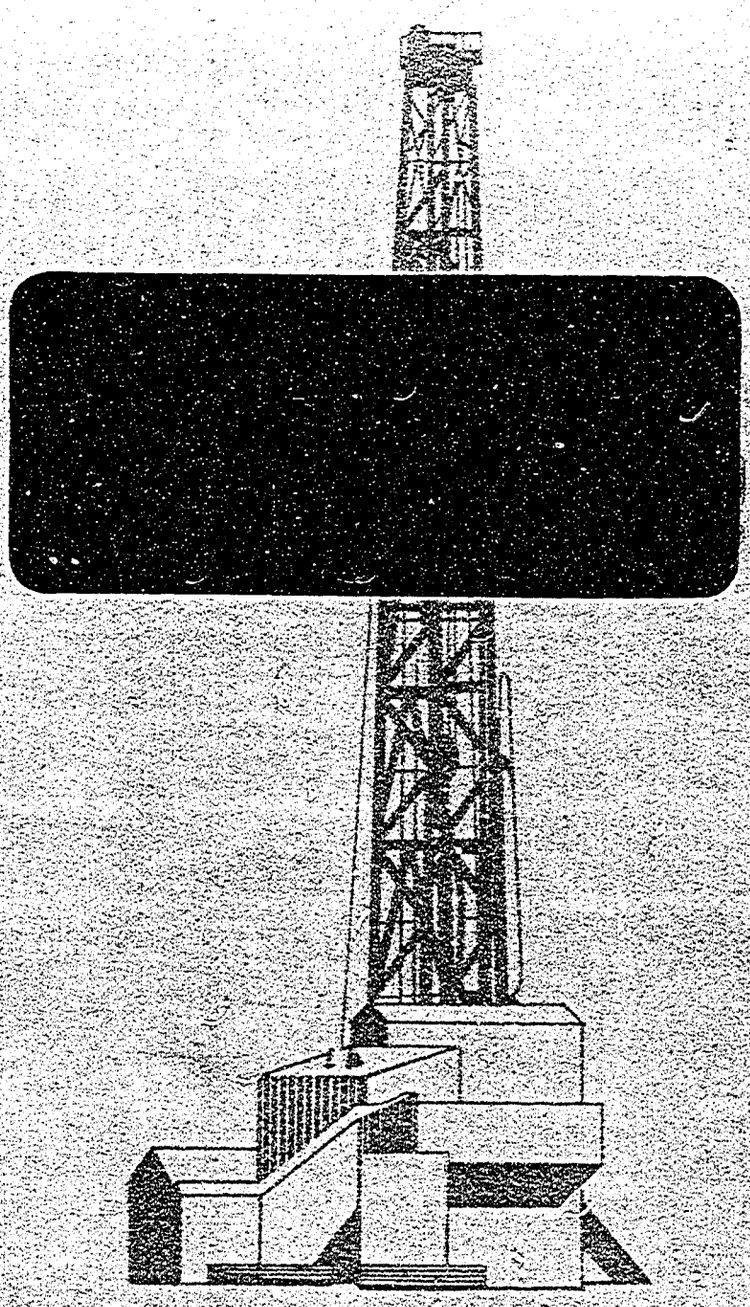
obstruction was felt at 3288m . While circulating on bottom at 3106m the well kicked gas in the early morning hours February 7, 1998. The gas kick was controlled, and 25m3 of mud was lost to the formation. After mud volume was rebuilt and all gas circulated out of mud we were ready to log again at 05:15 February 9, 1998. And all logs were completed at 20:00 hrs. Logs run were STI, Sonic, Density, Laterolog, & EMI.

The next day (February 1, ~~October~~ 10, 1998) we received orders to run 177.8 mm casing.

GEOLOGICAL REPORT

N.E.B.

Geological Report



C L Consultants Limited

CONTINENTAL LABORATORIES

CL CONSULTANTS LIMITED

1958 - 1998

"Logging the Past 40 Years"

RANGER ~~FORT~~ NORTH LIARD P66A

P66 LAT 60 40'/LONG 123 30'

File No: 96NB-1666

Prepared By:

H. WENNEKERS/ D. FERGUSON/ F. RICHARDSON
Geological Wellsite Consultants
CL Consultants Limited

Prepared for:

Peter Goetz
RANGER OIL LIMITED

PERMIT TO PRACTICE
CL CONSULTANTS LIMITED
Signature: _____
Date: March 16, 1998
PERMIT NUMBER: P2911
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

PROFESSIONAL GEOLOGIST ALBERTA
PATRICK J. BISS

CL Consultants Limited

NATIONAL ENERGY BOARD
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MAR 23 1998

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SYNOPSIS

OPERATOR:	RANGER OIL LIMITED	
WELL NAME:	RANGER FORT LIARD P66-A	
LOCATION:	LAT 60 30' / LONG 123 30'	
FIELD:	UNDEFINED	
PROVINCE:	Alberta	
ELEVATIONS:	G.L. - 449.49 m	K.B. - 459.89 m
SPUD DATE:	January 12, 1997	0900 hrs
T.D. DATE:	February 04, 1998	04:00 hrs
CONTRACTOR:	PRECISION DRILLING	Rig: 426 E
HOLE SIZE:	311 mm	
COLLARS:	MONEL 228 mm	
MUD COMPANY:	DOWELL	
MUD TYPE:	INVERT	
WIRELINE LOGGING CO.:	COMPUTALOG	
LOG RECORD:	Run #1	

1) XY-GR	3118.0 m - 1005.0 m		
2) STI-BCS-GR	3116.4 m - 1006.0 m		
1) STI-SONIC	3500M TD - 3112 CSG	RUN #1	FEB 9/98
2) DENSITY	3500M TD - 3112 CSG	RUN #2	FEB 9/98
3) NEUTRON	3500M TD - 3112 CSG	RUN #3	FEB 9/98
4) EMI	3500M TD - 3112 CSG	RUN #4	FEB 9/98

DRILLING SUPERVISION:	JOHN FAULKNER / ART SCHRITT
GEOLOGICAL SUPERVISION:	HENRI WENNEKERS / D FERGUSON
TOTAL DEPTH:	3501 meters

FORMATION TOPS (m)

FORMATION	PROGNOSIS (MD)	PROGNOSIS (TVD)	SAMPLES (MD)	SAMPLES (TVD)	LOGS (MD)	LOGS (TVD)
KICKOFF POINT	1327	1327				
DEVONIAN 2ND BLACK SH	2256	2085				
FT SIMPSON	2387	2180	2054m / 1944m			
FAULT	2431	2210				
FT SIMPSON SEIS MKR	2612	2340				
HORN R	2812	2480	2796m / 2461m			
NAHANNI TOP	3025	2630	3116m / 2690m			
NAHANNI TOP[WHIP 4]	3128	2699.8				
TD	3501		3500m / 3000.62m			

-2239.91

Seismic - 2230

RANGER FORT LIARD P66A
LAT 60 40' / LONG 123 30'

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets	
0.00	0.00	0.00	0.00	0.00	0.00 N	0.00 E
199.00	0.50	36.40	199.00	-0.86	0.70 N	0.52 E
226.00	1.75	25.00	225.99	-1.36	1.17 N	0.76 E
253.00	1.50	20.40	252.98	-2.07	1.87 N	1.06 E
262.50	1.46	36.51	262.48	-2.30	2.09 N	1.17 E
283.00	1.75	67.40	282.97	-2.85	2.42 N	1.62 E
312.00	1.90	70.40	311.96	-3.70	2.75 N	2.48 E
343.00	2.00	70.40	342.94	-4.65	3.10 N	3.47 E
374.00	2.25	59.40	373.92	-5.73	3.59 N	4.51 E
403.00	3.00	68.40	402.89	-6.97	4.16 N	5.70 E
433.00	3.30	70.90	432.84	-8.47	4.73 N	7.25 E
451.00	4.40	71.30	450.80	-9.56	5.12 N	8.39 E
460.00	4.30	71.10	459.77	-10.17	5.34 N	9.04 E
470.00	4.30	74.20	469.75	-10.83	5.57 N	9.75 E
480.00	4.30	79.10	479.72	-11.47	5.74 N	10.48 E
490.00	4.20	87.40	489.69	-12.05	5.83 N	11.21 E
499.00	4.10	93.10	498.67	-12.51	5.83 N	11.87 E
509.00	4.10	99.30	508.64	-12.96	5.75 N	12.58 E
518.00	4.00	107.10	517.62	-13.29	5.60 N	13.19 E
528.00	3.80	114.70	527.60	-13.57	5.36 N	13.83 E
538.00	3.50	123.60	537.58	-13.75	5.06 N	14.38 E
547.00	3.20	129.50	546.56	-13.82	4.74 N	14.81 E
557.00	2.80	129.60	556.55	-13.87	4.41 N	15.21 E
566.00	2.40	130.80	565.54	-13.91	4.15 N	15.52 E
576.00	2.10	128.60	575.53	-13.94	3.90 N	15.82 E
586.00	1.90	122.80	585.52	-14.00	3.69 N	16.10 E
596.00	1.70	107.60	595.52	-14.10	3.56 N	16.39 E
605.00	1.90	97.90	604.51	-14.25	3.50 N	16.66 E
614.00	2.00	92.80	613.51	-14.45	3.47 N	16.97 E
624.00	2.20	88.10	623.50	-14.71	3.47 N	17.33 E
634.00	2.20	92.00	633.49	-14.98	3.47 N	17.72 E
644.00	2.20	101.00	643.49	-15.22	3.42 N	18.10 E
654.00	2.30	103.80	653.48	-15.43	3.34 N	18.48 E
663.00	2.40	113.60	662.47	-15.59	3.22 N	18.83 E
673.00	2.50	124.30	672.46	-15.71	3.01 N	19.20 E
683.00	2.40	130.50	682.45	-15.76	2.75 N	19.54 E
693.00	2.20	136.30	692.45	-15.78	2.48 N	19.83 E
702.00	1.90	144.50	701.44	-15.75	2.23 N	20.04 E
712.00	1.60	151.30	711.43	-15.68	1.98 N	20.20 E
722.00	1.20	151.40	721.43	-15.61	1.76 N	20.32 E
731.00	0.80	165.00	730.43	-15.55	1.62 N	20.38 E
741.00	0.40	183.40	740.43	-15.49	1.52 N	20.39 E
751.00	0.10	158.00	750.43	-15.46	1.47 N	20.39 E
760.00	0.30	45.00	759.43	-15.48	1.48 N	20.41 E
770.00	0.70	53.90	769.43	-15.57	1.54 N	20.48 E

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets
780.00	0.90	64.60	779.43	-15.70	1.61 N 20.60 E
789.00	1.00	79.60	788.43	-15.84	1.65 N 20.74 E
799.00	1.10	111.10	798.43	-15.95	1.63 N 20.92 E
808.00	1.30	135.40	807.42	-15.98	1.53 N 21.07 E
818.00	1.40	155.00	817.42	-15.94	1.34 N 21.20 E
827.00	2.00	182.50	826.42	-15.78	1.08 N 21.24 E
837.00	2.50	208.80	836.41	-15.45	0.71 N 21.13 E
847.00	2.80	220.10	846.40	-14.99	0.34 N 20.87 E
857.00	2.90	219.60	856.39	-14.50	0.04 S 20.55 E
866.00	2.40	211.50	865.38	-14.09	0.38 S 20.31 E
876.00	2.10	185.40	875.37	-13.74	0.74 S 20.18 E
886.00	2.00	153.30	885.36	-13.55	1.08 S 20.24 E
896.00	2.20	123.50	895.36	-13.53	1.34 S 20.48 E
905.00	2.70	118.00	904.35	-13.63	1.54 S 20.81 E
914.00	2.70	110.50	913.34	-13.78	1.71 S 21.20 E
924.00	2.70	111.50	923.33	-13.97	1.88 S 21.63 E
934.00	2.50	130.60	933.32	-14.08	2.11 S 22.02 E
944.00	3.20	153.20	943.31	-14.01	2.50 S 22.31 E
954.00	3.60	163.70	953.29	-13.77	3.05 S 22.53 E
963.00	4.40	164.20	962.27	-13.47	3.65 S 22.70 E
973.00	5.30	170.50	972.23	-13.01	4.48 S 22.88 E
983.00	5.60	176.90	982.19	-12.42	5.42 S 22.98 E
989.00	5.50	178.70	988.16	-12.02	6.00 S 23.00 E
1007.00	5.39	179.13	1006.08	-10.84	7.71 S 23.04 E
1019.00	4.80	179.30	1018.03	-10.10	8.77 S 23.05 E
1029.00	4.40	176.80	1028.00	-9.55	9.57 S 23.08 E
1039.00	4.00	174.50	1037.97	-9.07	10.30 S 23.13 E
1048.00	3.50	170.40	1046.95	-8.71	10.89 S 23.21 E
1058.00	3.00	169.30	1056.93	-8.39	11.45 S 23.31 E
1068.00	2.60	166.80	1066.92	-8.12	11.92 S 23.41 E
1077.00	2.00	160.40	1075.91	-7.95	12.27 S 23.51 E
1087.00	1.60	144.50	1085.91	-7.85	12.55 S 23.65 E
1097.00	1.20	128.50	1095.91	-7.84	12.73 S 23.81 E
1106.00	1.20	115.70	1104.90	-7.88	12.83 S 23.97 E
1116.00	1.10	106.10	1114.90	-7.96	12.90 S 24.16 E
1126.00	1.20	105.30	1124.90	-8.06	12.95 S 24.35 E
1136.00	1.20	114.10	1134.90	-8.15	13.02 S 24.55 E
1146.00	1.20	108.80	1144.90	-8.23	13.10 S 24.74 E
1156.00	1.30	109.60	1154.89	-8.33	13.17 S 24.95 E
1165.00	1.30	101.40	1163.89	-8.43	13.23 S 25.14 E
1175.00	1.60	98.00	1173.89	-8.57	13.27 S 25.39 E
1185.00	1.60	95.40	1183.88	-8.75	13.30 S 25.67 E
1193.00	1.30	97.90	1191.88	-8.87	13.32 S 25.87 E
1203.00	1.20	94.50	1201.88	-9.01	13.35 S 26.09 E
1233.00	1.30	94.10	1231.87	-9.43	13.40 S 26.74 E
1262.00	1.40	107.80	1260.86	-9.81	13.53 S 27.40 E

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets	
1291.00	1.10	112.40	1289.86	-10.08	13.74 S	28.00 E
1310.00	0.40	110.50	1308.86	-10.18	13.84 S	28.23 E
1320.00	1.20	117.10	1318.85	-10.23	13.90 S	28.36 E
1327.00	1.66	125.42	1325.85	-10.26	13.99 S	28.50 E
1329.00	1.80	127.00	1327.85	-10.27	14.02 S	28.55 E
1339.00	2.50	120.40	1337.84	-10.35	14.23 S	28.87 E
1349.00	2.90	115.50	1347.83	-10.49	14.45 S	29.28 E
1358.00	3.10	114.40	1356.82	-10.65	14.65 S	29.71 E
1368.00	3.20	118.40	1366.81	-10.83	14.89 S	30.20 E
1378.00	3.00	123.50	1376.79	-10.96	15.17 S	30.67 E
1388.00	3.20	136.50	1386.78	-11.00	15.51 S	31.08 E
1398.00	3.60	151.50	1396.76	-10.91	15.99 S	31.42 E
1408.00	4.40	169.70	1406.73	-10.60	16.65 S	31.64 E
1417.00	5.20	182.00	1415.70	-10.10	17.39 S	31.68 E
1427.00	6.20	190.40	1425.65	-9.33	18.38 S	31.57 E
1436.00	6.90	197.40	1434.60	-8.45	19.37 S	31.32 E
1446.00	8.00	205.30	1444.51	-7.26	20.57 S	30.84 E
1456.00	9.30	211.40	1454.40	-5.82	21.89 S	30.13 E
1465.00	10.70	214.80	1463.26	-4.29	23.20 S	29.27 E
1474.00	11.60	217.20	1472.09	-2.57	24.61 S	28.25 E
1484.00	12.40	218.80	1481.87	-0.51	26.24 S	26.96 E
1494.00	12.60	219.30	1491.63	1.64	27.93 S	25.60 E
1503.00	12.80	220.00	1500.41	3.61	29.45 S	24.34 E
1513.00	12.90	220.20	1510.16	5.83	31.15 S	22.91 E
1523.00	13.30	219.40	1519.90	8.09	32.89 S	21.46 E
1533.00	13.70	219.60	1529.63	10.41	34.69 S	19.97 E
1543.00	14.50	220.60	1539.33	12.84	36.56 S	18.40 E
1553.00	15.10	221.00	1548.99	15.38	38.49 S	16.73 E
1562.00	15.80	223.20	1557.67	17.78	40.27 S	15.12 E
1572.00	16.70	222.30	1567.27	20.57	42.32 S	13.22 E
1582.00	17.50	222.80	1576.83	23.51	44.49 S	11.24 E
1592.00	17.90	224.70	1586.35	26.55	46.68 S	9.13 E
1602.00	18.10	225.30	1595.86	29.64	48.87 S	6.95 E
1612.00	18.10	225.60	1605.37	32.75	51.05 S	4.73 E
1621.00	18.60	225.00	1613.91	35.58	53.04 S	2.72 E
1631.00	19.70	225.60	1623.36	38.86	55.35 S	0.39 E
1640.00	20.60	226.80	1631.81	41.96	57.49 S	1.85 W
1650.00	21.40	226.00	1641.14	45.54	59.96 S	4.44 W
1659.00	22.70	226.00	1649.49	48.92	62.31 S	6.87 W
1668.00	24.10	225.80	1657.74	52.50	64.80 S	9.44 W
1677.00	25.90	226.70	1665.90	56.30	67.43 S	12.19 W
1687.00	27.60	226.80	1674.83	60.80	70.51 S	15.47 W
1697.00	28.80	226.80	1683.64	65.52	73.75 S	18.91 W
1707.00	29.60	227.20	1692.37	70.40	77.07 S	22.48 W
1717.00	30.50	226.90	1701.03	75.40	80.49 S	26.15 W
1727.00	31.20	226.50	1709.61	80.53	84.00 S	29.88 W

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets	
1736.00	32.50	226.60	1717.26	85.27	87.27 S	33.32 W
1746.00	33.80	226.70	1725.63	90.74	91.02 S	37.30 W
1755.00	35.10	226.20	1733.05	95.83	94.53 S	40.99 W
1764.00	36.10	225.50	1740.37	101.07	98.18 S	44.75 W
1774.00	37.20	224.00	1748.39	107.04	102.42 S	48.95 W
1784.00	38.40	223.50	1756.29	113.16	106.85 S	53.19 W
1793.00	39.60	223.80	1763.29	118.83	110.95 S	57.10 W
1803.00	40.80	225.00	1770.93	125.28	115.56 S	61.61 W
1813.00	41.60	223.90	1778.45	131.87	120.26 S	66.23 W
1826.00	43.10	224.50	1788.06	140.62	126.54 S	72.33 W
1836.00	43.40	224.20	1795.34	147.47	131.44 S	77.12 W
1847.00	43.40	225.40	1803.33	155.03	136.80 S	82.45 W
1857.00	43.70	224.70	1810.58	161.92	141.67 S	87.32 W
1866.00	44.60	225.90	1817.04	168.19	146.08 S	91.78 W
1876.00	44.90	225.60	1824.14	175.23	150.99 S	96.82 W
1885.00	45.70	226.40	1830.47	181.62	155.43 S	101.42 W
1895.00	46.20	228.20	1837.42	188.81	160.30 S	106.71 W
1904.00	46.50	228.80	1843.64	195.31	164.62 S	111.58 W
1914.00	46.80	228.50	1850.50	202.56	169.42 S	117.04 W
1923.00	47.10	229.40	1856.65	209.12	173.74 S	122.00 W
1933.00	47.50	231.30	1863.43	216.44	178.43 S	127.66 W
1942.00	48.40	231.40	1869.46	223.08	182.61 S	132.88 W
1952.00	48.50	231.20	1876.09	230.52	187.28 S	138.72 W
1962.00	48.60	231.20	1882.71	237.97	191.98 S	144.56 W
1971.00	49.00	231.60	1888.64	244.70	196.21 S	149.85 W
1981.00	48.50	231.70	1895.23	252.17	200.87 S	155.75 W
1990.00	47.90	231.70	1901.23	258.83	205.03 S	161.02 W
2000.00	48.00	232.60	1907.93	266.20	209.58 S	166.88 W
2010.00	48.30	232.40	1914.60	273.59	214.12 S	172.79 W
2019.00	47.80	232.30	1920.61	280.22	218.21 S	178.09 W
2028.00	47.40	231.30	1926.68	286.82	222.32 S	183.31 W
2038.00	47.70	231.30	1933.43	294.16	226.93 S	189.07 W
2048.00	47.90	230.50	1940.15	301.53	231.60 S	194.82 W
2065.00	47.40	229.60	1951.60	314.04	239.67 S	204.45 W
2075.00	46.50	229.30	1958.43	321.33	244.42 S	210.00 W
2084.00	45.90	228.50	1964.66	327.81	248.69 S	214.90 W
2094.00	46.70	229.80	1971.57	335.02	253.42 S	220.37 W
2104.00	47.50	230.20	1978.37	342.31	258.13 S	225.98 W
2113.00	47.40	231.40	1984.46	348.91	262.32 S	231.12 W
2123.00	47.20	230.50	1991.24	356.22	266.95 S	236.82 W
2133.00	47.20	230.80	1998.04	363.52	271.60 S	242.50 W
2142.00	47.60	231.50	2004.13	370.11	275.76 S	247.66 W
2152.00	47.80	232.60	2010.86	377.45	280.30 S	253.49 W
2162.00	46.90	232.70	2017.63	384.74	284.77 S	259.34 W
2171.00	45.90	232.90	2023.84	391.19	288.71 S	264.53 W
2181.00	46.00	233.00	2030.79	398.31	293.04 S	270.26 W

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets
2191.00	46.40	233.90	2037.71	405.45	297.34 S 276.06 W
2201.00	46.60	232.90	2044.60	412.63	301.66 S 281.88 W
2211.00	46.20	233.00	2051.49	419.80	306.02 S 287.66 W
2221.00	45.60	232.10	2058.45	426.92	310.39 S 293.37 W
2231.00	45.00	231.60	2065.49	433.98	314.78 S 298.95 W
2240.00	44.40	231.80	2071.88	440.26	318.70 S 303.92 W
2249.00	43.90	230.20	2078.34	446.50	322.65 S 308.79 W
2259.00	43.60	228.70	2085.57	453.39	327.14 S 314.05 W
2269.00	43.90	227.90	2092.79	460.29	331.74 S 319.21 W
2278.00	44.90	226.60	2099.22	466.59	336.02 S 323.83 W
2288.00	46.10	226.00	2106.23	473.72	340.95 S 328.99 W
2298.00	47.40	225.40	2113.08	481.00	346.03 S 334.20 W
2307.00	48.00	225.70	2119.14	487.66	350.69 S 338.96 W
2317.00	48.00	225.50	2125.83	495.09	355.89 S 344.27 W
2327.00	47.70	226.00	2132.54	502.50	361.07 S 349.58 W
2336.00	47.60	226.70	2138.60	509.15	365.66 S 354.39 W
2346.00	47.10	227.50	2145.38	516.50	370.67 S 359.78 W
2356.00	46.60	227.80	2152.22	523.79	375.58 S 365.17 W
2365.00	46.10	228.60	2158.43	530.29	379.92 S 370.02 W
2375.00	45.70	227.40	2165.39	537.46	384.73 S 375.36 W
2384.00	45.20	226.70	2171.70	543.87	389.10 S 380.05 W
2393.00	45.30	226.30	2178.04	550.26	393.50 S 384.69 W
2403.00	45.70	224.50	2185.05	557.39	398.50 S 389.77 W
2403.00	45.70	224.50	2185.05		398.50 S 389.77 W
2419.00	46.30	224.10	2196.16		406.74 S 397.81 W
2429.00	46.80	223.50	2203.04		411.98 S 402.83 W
2439.00	46.80	224.10	2209.89		417.24 S 407.88 W
2448.00	46.30	224.10	2216.07		421.93 S 412.42 W
2457.00	46.00	225.50	2222.31		426.54 S 417.00 W
2467.00	45.70	225.90	2229.28		431.55 S 422.13 W
2477.00	45.40	226.80	2236.28		436.48 S 427.30 W
2487.00	45.50	228.20	2243.29		441.29 S 432.55 W
2496.00	45.50	228.20	2249.60		445.57 S 437.34 W
2506.00	45.40	228.10	2256.62		450.33 S 442.64 W
2516.00	45.60	229.70	2263.63		455.01 S 448.02 W
2525.00	45.60	229.40	2269.92		459.19 S 452.91 W
2535.00	45.50	229.00	2276.93		463.85 S 458.32 W
2544.00	45.30	230.30	2283.25		468.00 S 463.20 W
2555.00	45.20	230.30	2290.99		472.99 S 469.21 W
2564.00	44.80	230.20	2297.35		477.06 S 474.10 W
2574.00	44.80	229.00	2304.45		481.62 S 479.47 W
2583.00	45.30	228.10	2310.81		485.84 S 484.24 W
2593.00	45.90	227.10	2317.80		490.66 S 489.52 W
2603.00	46.70	225.50	2324.71	700.32	495.74 S 494.74 W
2612.00	46.70	224.10	2330.89	706.87	500.30 S 499.36 W
2622.00	46.50	223.50	2337.76	714.13	505.55 S 504.39 W

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets	
2632.00	46.60	224.10	2344.63	721.39	510.79 S	509.41 W
2641.00	46.30	224.50	2350.84	727.91	515.45 S	513.97 W
2651.00	45.70	223.80	2357.78	735.10	520.61 S	518.98 W
2660.00	44.90	223.40	2364.11	741.50	525.25 S	523.39 W
2670.00	44.30	223.30	2371.23	748.52	530.35 S	528.21 W
2680.00	44.30	224.70	2378.39	755.50	535.38 S	533.06 W
2689.00	44.30	224.70	2384.83	761.79	539.84 S	537.48 W
2699.00	44.50	225.30	2391.98	768.78	544.79 S	542.43 W
2709.00	44.60	225.80	2399.10	775.80	549.70 S	547.44 W
2718.00	44.70	225.40	2405.50	782.12	554.13 S	551.96 W
2728.00	44.80	226.60	2412.61	789.16	559.02 S	557.02 W
2738.00	45.10	227.60	2419.68	796.22	563.83 S	562.20 W
2747.00	45.40	228.00	2426.02	802.60	568.12 S	566.93 W
2756.00	45.40	229.30	2432.34	809.00	572.36 S	571.74 W
2766.00	44.80	230.00	2439.40	816.06	576.94 S	577.14 W
2776.00	43.80	229.30	2446.56	823.02	581.46 S	582.46 W
2785.00	43.00	229.80	2453.09	829.18	585.48 S	587.17 W
2795.00	42.50	227.90	2460.44	835.96	589.94 S	592.28 W
2804.00	42.20	228.20	2467.09		593.99 S	596.79 W
2814.00	42.20	227.00	2474.50		598.52 S	601.75 W
2827.00	42.40	226.80	2484.11		604.50 S	608.14 W
2836.00	43.20	227.60	2490.72		608.66 S	612.62 W
2845.00	43.40	226.90	2497.27		612.85 S	617.16 W
2855.00	43.30	226.50	2504.54		617.55 S	622.15 W
2864.00	43.10	226.10	2511.10		621.81 S	626.61 W
2874.00	43.30	226.50	2518.39		626.54 S	631.56 W
2883.00	43.40	226.40	2524.93		630.80 S	636.03 W
2893.00	43.30	225.80	2532.20		635.56 S	640.98 W
2903.00	43.70	224.80	2539.46		640.40 S	645.87 W
2913.00	44.00	224.10	2546.67		645.34 S	650.72 W
2921.00	44.80	222.40	2552.39		649.42 S	654.56 W
2931.00	45.30	222.20	2559.45		654.66 S	659.32 W
2940.00	45.80	223.80	2565.75		659.35 S	663.70 W
2950.00	46.10	222.50	2572.71		664.60 S	668.62 W
2959.00	46.40	222.10	2578.93		669.41 S	672.99 W
2969.00	46.30	220.90	2585.83		674.82 S	677.79 W
2978.00	45.40	220.60	2592.10		679.72 S	682.00 W
2988.00	44.80	220.00	2599.16		685.12 S	686.58 W
2998.00	44.80	220.10	2606.26		690.51 S	691.12 W
3013.00	45.20	220.40	2616.86		698.61 S	697.97 W
3023.00	45.20	220.60	2623.91		704.00 S	702.58 W
3032.00	44.90	219.70	2630.27		708.87 S	706.69 W
3036.00	44.80	219.70	2633.10		711.04 S	708.49 W
3045.00	44.90	219.60	2639.48		715.93 S	712.54 W
3054.00	44.60	219.50	2645.88		720.81 S	716.57 W

DEVIATION SURVEY RECORD

Depth (m)	Incl	Azimuth	TVD	Vert Sect	Rectangular Offsets
3064.00	44.50	219.20	2653.00		726.24 S 721.02 W
3073.00	44.30	219.40	2659.43		731.11 S 725.01 W
3085.00	44.30	219.60	2668.02		737.58 S 730.34 W
3095.00	43.90	219.80	2675.20		742.93 S 734.79 W
3122.00	40.40	214.70	2695.22		757.33 S 745.77 W
3138.00	36.90	208.80	2707.72		765.81 S 751.03 W
3157.00	37.00	208.70	2722.90		775.82 S 756.53 W
3185.00	37.80	209.50	2745.15		790.68 S 764.80 W
3195.00	38.10	209.90	2753.03		796.02 S 767.85 W
3204.00	38.10	207.60	2760.12		800.89 S 770.52 W
3214.00	38.40	207.70	2767.97		806.37 S 773.39 W
3224.00	38.50	208.10	2775.80		811.87 S 776.30 W
3253.00	34.70	206.30	2799.08		827.24 S 784.21 W
3282.00	33.40	202.80	2823.11		842.00 S 790.96 W
3311.00	34.60	204.90	2847.15		856.82 S 797.52 W
3340.00	35.30	204.80	2870.92		871.90 S 804.51 W
3369.00	35.40	205.00	2894.57		887.12 S 811.57 W
3397.00	35.60	205.30	2917.37		901.84 S 818.48 W
3416.00	35.60	204.80	2932.82		911.86 S 823.16 W
3426.00	35.50	203.90	2940.95		917.15 S 825.56 W
3436.00	35.50	204.50	2949.09		922.45 S 827.94 W
3445.00	35.70	205.70	2956.41		927.19 S 830.16 W
3455.00	36.00	204.50	2964.52		932.50 S 832.65 W
3465.00	36.30	204.30	2972.59		937.87 S 835.08 W
3474.00	36.60	205.20	2979.83		942.72 S 837.32 W
3482.00	36.80	204.70	2986.25		947.06 S 839.34 W
3500.00	37.26	203.59	3000.62		956.95 S 843.77 W

BIT RECORD

#	Type	Size (mm)	In	Out	Total (m)	Hrs drilled	FOB (daN)	RPM	Cond. T B G
RR28C	EHP51H	311	1243	1327	84	16.00	10/16	60/70	
29C	EPH43H	311	1327	1475	148	71.25	09/16	18/160	2-7-IN
									KICK OFF
30C	FIPC	311	1375	1541	66	49.25	15/25	20/100	4-2-IN
31C	ERA13	311	1541	1613	72	56.75	15/21	20/130	4-7-IN
32C	FDGH	311	1613	1668	55	38.00	15/21	20/130	3-4-IN
33C	HP13G	311	1668	1801	133	68.50	15/25	20/100	4-2-IN
34C	FDGH	311	1801		0				
35C	GT-1	311	1801	1837	36	23.00	16/25	20/90	3-2-IN
36C	HP43H	311	1837	1863	11	10.50	19/27	20/90	2-2-IN
37C	FM2844	311	1863	2070	207	70.25	12/17	20/90	1-IN
RR37C	FM2844	311	2070	2086	16	14.75	12/15	20/90	3-IN
38C	GT18	311	2086	2156	70	61.00	23/35	20/90	8-7-5mm
39C	GS83F	311	2156	2203	47	41.00	22/34	20/90	6-6-3mm
40C	F2	311	2203	2269	66	71.75	20/30	25/90	7-4-1mm
41C	HP13G	311	2269	2357	88	56.00	15/30	25/90	5-7-1mm
42C	HP13G	311	2357	2434	77	48.00	15/30	150	6-5-1mm
43C	FM2943	311	2434	2567	133	95.75	08/22	20/90	2-1/16mm
44C	EHP41H	311	2567	2597	30	43.50	20/30	20/32	6-4-1/16
45C	JG4	311	2597	2646	49	58.50	20/32	30/90	5-8-IN
46C	MSDGH	311	2646	2697	51	52.00	20/33	35/90	3-8-IN
47C	FM2944	311	2697	2827	130	84.50	06/19	31/150	8-4-1/16
48C	HP13G	311	2827	2833	6	6.00	20	31/150	7-2-4
49C	S83F	311	2833	2851	18	22.25	20/32	31/150	6-2-1/16
50C	GT18	311	2851	2902	51	40.25	32/90	20/90	8-8-IN
51C	GT20	311	2902	2936	34	26.75	32/90	20/90	6-3-IN
52C	F3P	311	2936	2977	41	55.00	28/38	20/90	3-4-1/16
53C	GT18	311	2977	3017	40	30.25	20/18	30/90	7-4-1/4
54C	F2	311	3017	3053	36	42.25	20/24	30/90	6-7-1/4
55C	F27	311	3053	3072	19	30.00	24	30/90	2-4-1/8
56C	HP61A	311	3072	3084	10				
57C		311	3084	3098	14				
58C		311	3098	3115	17				
RR59		311	3115	3115	0				
60C		311	3115	3115	0				
CASING									

BIT RECORD

#	Type	Size (mm)	In	Out	Total (m)	Hrs drilled	FOB (daN)	RPM	Cond. T B G
61	S44G	216	3115	3128	13	5.25	13/15	80	3-2-IN
62	F2	216	3128	3177	49	10.25	14/15	85	
RR61	S44G	216	3071	3116	45	2.5	13/15	65	4-4-IN
63	D12ST	216	3116	3140	26	29.25	13/14	350	
64	EPH51a	216	3140	3246	106	28.50	13/14	120	4-4-IN
65	SS86F	216	3246	3500	254	67.25	13/15	125	
RR61	S44G	216		3500					

BIT CONDITION		SCALE
Tooth Wear	(T)	0 - 8
Bearing Wear	(B)	0 - 8
Gauge	(G)	in or (mm) under

New Bit T=0 B=0 G=in

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-09	3121	0	--	Inspect BHA; Lay out and replace 3 cracked drill collars; Pick up pipe and run in hole open ended to 1700m; Slip and cut line, run in with rig service and BIOP drills; Finish in to bottom; No fill; Circulate with one pump at 98 strokes; Back ground gas -75 units; Trip gas 119 units; No mud lost.
97-07-10	3121	0	--	Circulate and wait on orders; Hoist into casing; Repair oil leak on the top drive; Wait on orders; Run in hole; Moved 2 400 bbl storage tanks from river to the airstrip and stored 60000 liters of diesel in them; Hole drag down 10/15000 dan; Hole drag up 15/25000 dan; Torque on bottom - 1050/1130 p.s.i.; Back ground gas -102 units; Mud lost last 24 Hr5s -0m3.
97-07-11	3121	0	--	Run in hole and wash 3m to bottom; Circulate and work pipe, rig service and function BOP; Hole drag down 10/15 dan; Hole drag up -15/25 dan; Torque on bottom -950/1050 p.s.i.; Background gas -57 units; Trip gas -468 units; Mud lost last 24 Hrs -1.0m3; Total water hauled to end of June -7125m3 or 498 loads; Total mud cost to condition present mud system and drill from 1400m to 2800m, no allowance for a mud cleaner or diesel, to build volume -$280,360.00.
97-07-12	Plug back depth 1765m		--	Wait on orders; Hoist to 2825m, circulate, and rig to run abandonment plugs; Plug #1 2825m -2750m ran with 30% excess; Plug down at 15:15 Hrs; Hoist and circulate; W.O.C.; Run in and felt plug at 2734m; Hoist to 1840m and run plug #2 1840m - 1765m ran with 30% excess; Plug down at 00:15 Hrts 07/12/97; Hoist and circulate; W.O.C.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-13	Plug back depth			Run in to 1787m; Did not feel any cement; Hoist to 1757m and circulate; W.O.C.; Circulate and W.O.C.; Felt plug at 1784m; Circulate; Rig to and top up plug 1784m - 1765m; Hoist 10 stands to 1497m; Circulate and rig to run plug #3 1500m -1375m; Ran with 26.9m3 G with 1%d65 + 0.6%D800; Slurry weight 2100kg/m3; Plug down at 13;30Hrs; Hoist 6 stands and circulate; W.O.C.; Run in and felt plug at 1410m; Circulate and rig to top up plug; Top up with 18m3 "G" + 0.5%D800; Slurry weight 2100kg/m3; Plug down at 02:30Hrs July 13; Hoist 5 stands and circulate pipe and hole clean; Back ground gas -56 units; Trip gas -56 units.
97-07-14	1325	0	14.5	Hoist openended pipe; Lay out 25 joints of E pipe; Work on pipe stripper; Make up and run BHA; check caliper and strap in to 1243.5m; Tagged good cement and drill out cement; Strap tally 0.26m difference; Condition mud while running plugs and drilling cement ; Reduce mud weight to 1280 kg/m3 with centrifuge and increase weight back to 1360kg/m3. Hole drg 5 dan; Hole drag up - 10 dan; Torque on bottom - 1040 psi.; Background gas -20 units; Trip gas - 20 units.
97-07-15	1339	12	8	Drill cement to 1327m; Circulate and hoist directional tools; Work tight hole at 1300m; Circulate and clean shale; Hoist to casing shoe, pump trip pill and hoist; Change out hydraulic mud valve on top drive; Pick up and make up Halliburton directional tools; Low speed motor set at 1.5 degrees; Repair hydraulic hose for torque ram; Run in hole to 1075m, test MWD; Finish in and wash to bottom; Survey and orient motor; Drill ahead with survey; Slide 1327m-1334m, 1337m-1339m; Rotate 1334m-1337m; Hole drag down 5 dan; Hole

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-16	1388	49	21.75	Drill with Dyna drill medium speed motor set at 1.5 degrees; Rig service, surveys and BOP drills; Hole has been good on connections; Slide 1339m-1342, 1342m-1350m, 1357m-1388m; Rotate 1343m-1346m; Hole drag down 5dan; Hole drag up 5 dan; Torque on bottom -750/850 psi.; Back ground gas 15 units; Mud lost last 24 Hrs -1.8m3.
97-07-17	1429	41	21.25	Drill 311mm hole with rig service and surveys; Worked pipe at 1405m prior to connection; Slide 1388m-1424m, 1427m-1429m; Rotate 1424m-1427m; Hole drag down 3/7 dan; Hole drag up 5/10 dan; Back ground gas 15 units; Mud lost last 24 Hrts 4.8m3; Unloaded PE BEN truck at barge landing; Did not send out core bbls and 63/4 tools; Returned one Smith F27#LG2472 to PE BEN yard at Fort Saint John with PE BEN.
97-07-18	1467	38	16.75	Drill to 1433m; Circulate sample and work pipe; Dummy trip to casing, hole was good; Work on Tesco motor; Changed two fuel injectors; Run in and wash to bottom; Drill with surveys and rig service; Slide 1429m-1451m, 1453m-1461m, 1463m-1467m; Rotate 1451m-1453m, 1461m-1463m; Hole drag down 5/9dan; Hole drag up 5/10dan; Torque on bottom 900/975 psi.; Background gas 18 units; Trip gas 20 units; Mud lost last 24 Hrs -7.5m3.
97-07-19	1483	16	11.25	Drill 311mm hole to 1475m; Circulate and mix trip pill; Circulate pipe out to 1316m; Pump trip pill and hoist; Change out motor and jars, make up new bit and run in; Shallow test MWD; Wash 2 stands to bottom; 1m fill; Drill with Trudril slow speed 1.5 degrees motor; Hole drag down 5dan; Hole drag up 5 dan; Torque on bottom 950/1050 psi; Background gas 13 units;Trip gas 213 units; Mud lost last 24 Hrs 8.0m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-20	1511	28	22.50	Drill 311mm hole with rig service and surveys; Slide 1480-1488, 1492-1497, 1503-1508m; Rotate 1488-1492, 1497-1503, 1508-1511m; Hole drag down 5/10dan; Hole drag up 5/10 dan; Torque on bottom 900/950 psi.; Background gas 15 units; Mud lost last 24 Hrs 4m3.
97-07-21	1541	30	22.25	Drill directional 311mm hole with Trudrill slow speed 1.5 degrees motor with rig service and MWD surveys from 1511m -1541m; Slide 12m; Rotate 18m; etc. etc
97-07-22	1552	11	10.00	Trip for bit and mud motor; Pump out 6 stands; Pump pill; Trip out; Change mud motor and bit, service MWD;Trip in BHA; Slip and cut drilling line; Trip in test MWD at 1100m and 1495m; Wash and ream to bottom 1495m-1541m; 10m fill; Work pipe, survey, and orient tool; Directional drill 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1541m-1552m; Slide 7.0m; Rotate 4.0m; Hole drag down 8/10; Hole drag up 7/10 dan; Torque on bottom 930/1050 psi.; Background gas 14 units; Trip gas 104 units; Mud lost last 24 Hrs 2.0m3.
97-07-23	1582	30	21.50	Directional drill 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1552m-1582m; Repair air union rubber on #1 pump suction; Sipped out 171mm Halliburton directional tools; 2 197mm mud motors for repair; DBS core barrels and accessories; 171mm Faster jars and shock tool; 2 228mm jars for repair; Dowell division 200 mud pallets; Slide 25m; Rotate 5m; Hole drag down 5/7dan; Hole drag up 5/8dan;Torque on bottom 930/970 p.s.i.; Background gas 18 units; Mud lost last 24 Hrs 5.0m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-24	1611	29	22.00	Directional drill 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1582m-1611m; Change suction valve on #2 pump; Slide 26m; Rotate 3.0m; Hole drag down 5/7dan; Hole drag up 5/10dan; Torque on bottom 930/970psi.; Back ground gas 25 units; Mud lost last 24 Hrs 2.4m3.
97-07-25	1627	16	10.50	Directional drill 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1611m-1613m; Trip for bit, pump out 2 stands; Pump pill trip out; Change bit and service MWD; Trip in to 987m; Change seals and saver sub on Tesco top drive; Trip in test MWD at 1125m; Wash and ream to bottom 1554m-1613m 4.0m fill; Orient tool; Directional drill 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1613m-1627m; Slide 15.0m; Rotate 1.0m; Hole drag down 5/7dan; Hole drag up 5/10dan; Torque on bottom 930/970 psi.; Background gas 18 units; Trip gas 259 units; Mud lost last 24 Hrs 3.5m3.
97-07-26	1667	40	22.25	Drill directional 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1627m-1667m; Slide 39.0m; Rotate 1.0m; Hole drag down 3/6dan; Hole drag up 5/10dan; Torque on bottom 975/1000 psi.; Background gas 20 units; Mud lost in last 24 Hrs 1.0m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-27	1681	14	10.50	Directional drill 311mm hole with 197mm 1.83 degrees Halliburton mud motor and survey with MWD 1167m-1668m; Mud motor stalling stator rubber failed; Circulate out 2 stands; Pump pill; Trip out to change mud motor and bit, service MWD; Trip in to 1003m; Repair #2 pump and service Tesco top drive; Trip in and test MWD at 1125m; Wash and ream 1648m-1668m; 3m fill; Directional drill 311mm hole with 197mm 2.12 degrees Vector mud motor and survey with MWD 1668m-1681m; Slide 11.0m; Rotate 2.0m; Hole drag down 5/7dan; Hole drag up 8/15dan; Torque on bottom 980/1050 psi.; Background gas 15 units; Trip gas 111 units; Mud lost last 24 Hrs 1.0m3.
97-07-28	1723	42	21.25	Directional drill 311mm hole with 197mm 2.12 degrees Vector mud motor and survey with MWD 1681m-1723m; Pulsar failed on MWD; Prepare to trip out; Slide 16.0m; Rotate 26.0m; Hole drag down 5/10dan; Hole drag up 10/15dan; Torque on bottom 1100/1125 p.s.i.; Background gas 11 units; Mud lost last 24 Hrs 1.5m3.
97-07-29	1746	23	11.00	Directional drill 311mm hole with 197mm 2.12 degree Vector mud motor and survey with MWD 1723m-1724m; Circulate out 2 stands; Pump pill; Trip out; Tight hole 1665m; Set mud motor to 1.83 degrees, change out MWD and jars; Trip in BHA; Repair Tesco top drive; Trip in test MWD at 1126m; Trip to 1640m;; Wash and ream 1640m-1724m; Survey at 1697m and 1706m; Orient tool; Directional drill 311mm hole with 197mm 1.83 degrees Vector mud motor and survey MWD 1724m-1746m; Change valve and seat on #2 pump; Slide 16.0m; Rotate 7.0m; Hole drag down 5/10 dan; Hole drag up 10/18dan; Torque om bottom 1080/1110 psi.; Background gas 10; Trip gas 41; Mud lost last 24 Hrs 3.5m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-07-30	1790	44	22.0	Directional drill 311mm hole w/ 197mm 1.83 Vector mud motor and survey w/ MWD 1746m-1790m; change suction on #1 pump; sample quality poor to fair;
97-07-31	1801	16	5.75	Directional drill 311mm hole with 197mm Vector mud motor and survey with MWD 1790-1801m; pump out 13 stds -pump pill - trip out -change out mud motor and bit, service MWD -trip in BHA slip and cut line -trip in to 1126m - test MWD -trip in to 1449m -work tight hole 1445-1432m - wash and ream 1432m-1520m - hole sloughing.
97-08-01	1801	0m	0	Wash and ream 1510-1512m - pump out to 1404m - pump pill trip out - lay down directional tools -trip in with bit -wash and ream 1426-1801m -hole sloughing 1510-1523m - circ and condition hole and mud -circ out 13 stds - pump pill -trip out to csg shoe -repair Tesco top drive and #2 pump.
97-08-02	1801	0m	0	Repair Tesco top drive - trip in to 1393m - wash 1393m-1605m - wash and ream 1605m - 1801m -hard reaming 1770 -1801m -Circ and work pipe -pump out 1801m-1604m -pump pill - trip ot and make up directional tools -trip in - shallow test MWD at 1086m -trip in to 1485m -wash 1485m-1634m
97-08-03	1833	32	20.25	Wash and ream 1634-1801m - 8m fill - directional drill w/ 196mm low speed 1.83 deg Trudrill mud motor and survey with MWD 1801m-1833m - repair pop valve and #2 pump suction
97-08-04	1837	04	2.75	Repair pump #2 - directional drill 311mm hole with 196mm 1.83 deg Trudrill mud motor and survey with MWD 1833m-1837m -pump pill - pump out 6 stds -trip out lay down 3 dc's and mud motor -pull wear bushings -pressure test BOP's -pick up directional tools and BHA -Trip in to 1144m and shallow test MWD -trip in hole

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-08-05	1848	11	10.5	Wash and ream 1147-1611m- circ hole clean - hole unloading - wash 1611 - 1731m - ream 1731-1738m, 1796m-1837m; directional drill 311mm hole and survey with MWD 1837m-1848m - repair #2 pump suction
97-08-06	1863	15	20.25	Drill ahead 311mm hole with directional tools - work on pumps and check screens for pump pressure increase. Hoist 5 stds with pump on, flow check and pump trip pill - POH
97-08-07	1884	21	7	Hoist with bit - service tools and change out motor -RIH with new PDC bit to casing shoe, slip and cut line -Service tesco top drive -RIH to 1048m -break circulation and clean bridge -Check MWD. Clean bridge at 1420m -RIH to 1670m -Wash to bottom -ream 1796-1831m and 1856 -1863m -drill ahead 311mm hole with directional tools 1863m-1884m
97-08-08	1970	86	21.75	Work on #1 Pump - Directional drill 311mm hole 1884-1970m and survey with MWD.
97-08-09	2019	86m	18.25	Drill with directional tools 1970-1998m - Work on pumps - Wiper trip to 1690m -repair top drive - Hole pulled tight at 1864m - Directional drill ahead 311mm hole 1998m-2109m
97-08-10	2068	49m	21.75	Directional drill 311mm hole 2019m-2068m with vector low speed mud motor and survey w/ MWD. Hole condition good and sample quality is fair.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-08-11	2070	2m	1.75	Drill 311mm hole with directional tools and survey w/ MWD 2068-2070m; pump pressure increased. Circ, mix trip pill and hoist 5 stds w/ one pump on the well. Pump trip pill and hoist into casing. BOP drill. Finish out. Change out jars and motor. Pick up new jars, motor and gamma tools. Rerun PDC. Strap in BHA, replace seals on top drive actuator valve. Finish in to 1850m Break circ and check MWD and GR tool. Log in to 1968m.
97-08-12	2086	16		
97-08-13	2100	14	7.75	Circulate sample and mix trip pill; Lay out one single and circulate out 5 stands; Pump trip pill and hoist with required flow checks; Change out motors and bit; Service MWD tools and run in to 1311m, break circulation and test MWD; Change out suction valve on #1 pump; Run in (stage motor every 10 stands); Wash to bottom from 1925m; Check survey and drill ahead; Slide 2086m-2100m; Rotate 2090m-2100m; Hole drag down 10/12dan; Hole drag up 7-100 dan; Torque on bottom 1050-1200 psi.; Background gas 125 units; Mud lost last 24 Hrs 4m3.
97-08-14	2126	26	22.75	Drill 311mm hole with rig service and surveys; Slide 2113m-2118m and 2122m-2126m; Rotate 2100m-2118m and 2118m-2122m; Hole drag down 7/10 dan; Hole drag up 10/13 dan; Torque on bottom 100/1300 p.s.i.; Background gas 140 units; Mud lost last 24 Hrs 5.2m3.
97-08-15	2147	21	20.75	Drill 311mm hole with rig service and surveys; Slide 13m; Rotate 8m; Background gas 100, and 45 over last four meters.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-08-16	2156	9	9.25	Drill 311mm hole with rig service and surveys from 2147m - 2156m; Change graber dies on top drive; Circulate out 5 stands; Mix and pump trip pill; Hoist with required flow checks; Change out motor, MWD, and bit; Run in, check MWD at 1150m; Stage motor in hole; Slide 2152m-2156m; Rotate 2147m-2152m; Hole drag up 10/15000 dan; Hole drag down 10/15000 dan; Torque on bottom Background gas 100 units; Mud lost last 24 Hrs 5.0m3.
97-08-17	2160	4	2.00	Run in, check MWD; Stage motor in hole; Wash from 2117m-2143m; Ream from 2143m-2155m; Drill 311mm hole with rig service and MWD survey; MWD tools failed; Circulate out 5 stands; Mix and pump trip pill: Hoist with required flow checks; Change out MWD tool; Run in, check MWD; Stage motor in hole; Slide 0m; Rotate 4m;
97-08-18	2183	23	18.75	Finish staging motor in to 2024m; Wash to bottom; Log to 2160m; Drill 311mm hole; Replace suction valve and seat on #2 pump; Drill with rig service and surveys to 2183m; Slide 2161m-2167m, 2174m-2177m, 2181m-2183m; Rotate 2167m-2181m; Hole drag up 210/12dan; Hole drag down 10/20 dan; Torque on bottom 1100/1300 psi.; Background gas 25 units; Mud lost last 24 Hrs 2.1m3.
97-08-19	2203	20	20.00	Drill 311mm hole; Change discharge valve and seat on pump #1; Drill ahead with rig service and surveys to 2203m; Pump trip pill and hoist for bit; Slide 2183m-2186m, 2-90m-2196m, 2200m-2203m; Rotate 2186m-2190m, 2196m-2200m; Hole drag up 10/15000 dan; Hole drag down 10/13 dan; Torque on bottom 1100/1350 p.s.i.; Background gas 5 units; Mud lost last 24 Hrs 2.2m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-08-20	2003	0	0.00	Hoist for bit wirh required flow checks, rig service: Inspect B.H.A.; Repair break in torque line; Work on top drive; Handle directional tools; Change out bit; Run in; Finish staging motor in to 2082m; Break circulation; Wash to bottom.
97-08-21	2222	19	22.00	Directional drill 311mmm hole with low speed 1.83 degrees Trudrill mud rotor and survey MWD, log GR 2203m-2222m; Held BOP drills with both crews; Slide 13m; Rotate 9m; Hole drag up 10/15 dan; Hole drag down 10/20 dan; Torque on bottom 1100/1350psi; Background gas 10 units; Mud lost last 24 Hrs 1.5m3.
97-08-22	2243	21	22.00	Directional drill 311mm hole with low speed 1.83 degrees Trudrill mud motor, MWD, rig service and Gamma ray log from 2222m -2243m; Slide 13m; Rotate 8m;
97-08-23	2265	22	22.00	Drill directional 311mm hole with low speed 1.83 degrees Trudrill mud motor, MWD surveys, Gamma ray log, and rig service from 2243m-2265m.
97-08-24	2276	11	9.00	Directional drill 311mm hole with low speed 1.83 degrees Trudrill mud motor, MWD surveys and Gamma ray log, and rig service from 2265m-2270m: Service top drive at 2268m; Trip for motor and bit: Pump out stands; Mix and pump trip pill: Hoist for bit with required flow checks; Change out motor and bit; Add junk basket; Run in hole; Finish staging motor at 1863m; Break circulation; Wash to bottom: Directional drill 311mm hole with low speed 19.mm 1.83 degrees mud motor, MWD surveys, Gamma ray log, and rig service from 2270m-2276m; Slide 6m; Rotate 5m.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-08-25	2310	34	19.50	Directional drill 311mm hole with MWD log with GR 2276m-2310m; Repair pump #1 pony rod, head, and liner; Slide 2279m-2284m, 2289m-2302m, 2308m-2310m; Rotate 2284m-2289m; 2302m-2308m; Hole drag up 10/18 dan; Hole drag down 10/15 dan; Torque on bottom 1180/1350 psi; Mud lost last 24 Hrs 1.9m3.
97-08-26	2343	33	22.50	Directional drill 311mm hole with 196mm Vector low speed mud motor, MWD surveys, Gamma ray log, and rig service from 2310m-2343m. Slide 16m; Rotate 17m;
97-08-27	2357	14	10.25	Directional drill 311mm hole with 196mm low speed 1.83 deg mud motor and survey with MWD/GR 2343-2357m; repair #1 main electrical to pump traction motors; circ out 6 stds - pump pill -trip out -change out mud motor and bit service MWD -trip in and shallow test MWD -trip in
97-08-28	2390	33	17.25	Trip in - ream bridge @ 2154-2160 - Trip in - ream bridge at 2241m - wash and ream 2241-2357m -Directional drill with low speed mud motor and survey with MWD/GR 2357-2390m
97-08-29	2424	34	22.5	Directional drill 311mm hole 2390-2424m and survey with MWD/GR; sample quality fair-good with the addition of oil wetting agent to mud system; scattered cavings throughout.
97-08-30	2434	10	8.5	Directional drill 311mm hole 2424-2434m; Pump out 10 stds; pump pill POH; Change out BHA; Pressure test BOP's and pick up directional tools.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-08-31	2451	17	10.25	Pick up directional tols - lay down 2 dc's - pick up 10 127mm HWDP - slip and cut line - trip in to 1128mm shallow test MWD - trip in to 2080m -wash and ream 2080-2434m - directional drill 311mm hole with 197mm 1.83 deg vector mud motor and survey with MWD log with GR 2434-2451m.
97-09-01	2484	33	21.25	drill 311mm hole with low speed mud motor and survey with MWD/GR 2451-2484m.
97-09-02	2520	36	21.0	drill 311mm hole with Vector low speed mud motor and survey with MWD/GR 2484-2520m.
97-09-03	2547	27	21.75	drill ahead 311mm hole with vector low speed mud motor and survey with MWD/GR 2521-2547m.
97-09-04	2565	18	20.0	Drill 311mm hole with 197mm 1.83deg vector mud motor and survey with MWD/GR; work on #1 pump, chnage discharge valve; work on #2 pump change out valves and pony rod.
97-09-05	2567	2	2.75	Drill 311mm directional hole and survey with MWD/GR 2565-2567m; Hoist for bit at 2567m.Hole pulled tight from 2407-2123m. Finish out. Lay down tools. Service top drive, change grabber dies, saver sub and hoses. Picked up new Trudrill 7/8 Lobe 1.83 deg motor and MWD. RIH. Repair hydraulic hoses, check MWD. Finish in to 2284m. Wash and ream from 2284m to 2459m.
97-09-06	2586	18	22.0	Ream and wash 2459-2567m; Drill 311mm hole with trudrill 1.83deg mud motor and survey w/ MWD/GR.
97-09-07	2595	9	15.75	Drill to 2592m with 1.83deg motor and survey with MWD/GR. Work tight hole and wiper trip to 2250m. Circulate out and back in to clean low side of well. Drill ahead 2592 - 2595m.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-09-08	2597	2	5.0	Drill 311mm directional hole to 2597m. Trip for motor. Circulate out to 2425. Lay down washed drill pipe. Finish out, repair pipe spinner. Change out drilling jars and lay down directional tools. Make up bit and junk sub. Run in to 2250m. Circulate from 2250m to bottom, work junk sub to clean up broken inserts.
97-09-09	2604	7	6.75	Work junk sub and drill 1m new hole. Hoist. Circulate 5 stds out. Pump trip pill and finish out with junk sub. Clean and inspect junk sub. Pick up directional tools. Run in BHA. Slip and cut line. Service top drive. Run in hole and check MWD at 1167m. Stage motor in hole to 2450m. Circulate to bottom. Work junk sub. Drill 311mm hole with trudrill 203mm 7/8lobe 1.83deg motor and survey with MWD/GR to 2604m.
97-09-10	2621	17	22.25	Drill 311mm hole with Tru Drill 1.83 degrees motor, MWD, Gamma ray log from 2604m-2621m.Rig service and surveys. Work on #2 mud pump (valve). Slide 9m; Rotate 8m; Hole drag up 20/25000 dan; Hole drag down 15/20 dan; Torque on bottom 1100/1400 psi; Background gas 22 units; Mud lost last 24 Hrs 4.5 m3.
97-09-11	2638	17	20.50	Drill 311mm hole with Tru Dril 1.8 degrees motor with MWD and Gamma ray logging; Rig service and surveys. Work on #2 mud pump (valves); Work pipre to clean up hole after survey. Slide 5m; Rotate 12m; Hole drag up 10/20 dan; Hole drag down 8/16 dan; Torque on bottom 100/1450 psi; Background gas 26 units; Mud lost last 24 Hrs 5.6m3

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-09-12	2646	8	10.00	Drill 311mm hole with Tru Drill 1.8 degfrees mud motor, MWD surveys, Gamma ray logging and rig service from 2638m-2646m; Circulate and work hole; Hoist for bit; Circulate clean hole to 2339m; Work on top drive (kelly cock); Circulate and clean hole to 2340m; Finish out; Check monel seals; Lay out tools and motor; Slide 2m; Rotate 6m; Dowell cementer and 20 tonne of G on location. Empty fuel truck stuck on road (towed with Hayes) Hole drag up 10/20 dan; Hole drag down 8/14 dan; Torque on bottom 1250/1550 p.s.i.; Mud lost last 24 Hrs 5.6m3; BOP drill and meeting with crew; Sent 1 tire for repair and 1 to be replaced with a new tire for the Ranger truck; Returned 1 Security DBS PDC FM2943 for rebuild to DBS Nisku.
97-09-13	2655	9	9.50	Lay out motor and MWD; Change out monel collars; Pick up tools and run in hole to casing shoe; Service and repair Tesco to drive (wiring for kelly cock valve. Tesco man replaced switch seemed to have put wires back the wrong way; he needed blue print from office to get wire scheme and repair); Check MWD finish in hole; Wash and clean from 2377m; Work junk sub and drill with a Tru Drill 1.8 degrees motor from 2646m-2655m; Survey, run Gamma ray log and rig service; Slide 4m; Rotate 5m; Hole drag up 15/20 dan; Hole drag down 10/17 dan; Torque on bottom 1200/1450 psi; Background gas 16 units; Mud lost last 24 Hrs 3.8m3; Lost 2.0m3 while tripping.
97-09-14	2675	20	21.75	Drill 311mm hole with Tru Drill 1.83 degrees mud motor with rig service, gamma ray logging and surveys. Work on #1 mud pump (suction valve); Repair leak on #1 pump suction; Slide 6m; Rotate 14m; Hole drag up 15/20 dan; Hole drag down 10/13 dan; Torque on bottom 1250/1500 psi; Background gas 12 units; Mud lost last 24 Hrs 2.5m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-09-15	2697	22	20.25	Drill 311mm hole with Tru Drill 1.8 degrees motor; Rig service, gamma ray and surveys; Work on mud pumps (valves and suction); Slide 4m; Rotate 18m; Hole drag up 15/20 dan; Hole drag down 12/17 dan;Torque on bottom 1200/1450 psi; Background gas 15 units; Mud lost last 24 Hrs 4.2 m3.
97-09-16	2702	5	2.75	Drill 311mm hole to 2697.4m. Circulate and work pipe; Mix trip pill and circulate out 12 stands; Pump pill and hoist; Handle directional tools; Run in BHA and service Tesco top drive: Run in to 1150m and check MWD, run in to 1177m and ream bridge; Run in and ream bridge at 1426m; Finish in to 2350m and wash and clean to bottom; Drill 311mm Halliburton tandem motor set at 1.75 degrees; Rotate 5m; Hole drag up 15/20 dan; Hole drag down 15/30 dan; Torque on bottom 100/1650 psi; Background gas 25 units; Mud lost last 24 Hrs 2m3.
97-09-17	2748	46	19.00	Directional drill 311mm hole with 197mm 1.83 degrees tandem Halliburton mud motor and survey with MWD, log Gamma ray from 2702m-2748m. Change head s on #2 pump. Work pipe every 5m hole not cleaning properly. Slide 5m. Rotate 46m.
97-09-18	2771	23	14.50	Directional drill 311mm hole with 197mm 1.83 degrees tandem Halliburton mud motor and survey with MWD, log Gamma ray from 2748m-2751m. Wiper trip 20 stands, circulate out 10 stands. Tight hole at 2628m-2635m. Wash and ream in 2640m-2751m, 1.0m fill. Directional drill 311mm hole with 197mm 1.83 degrees tandem Halliburton mud motor with MWD surveys, and log Gamma ray from 2751m-2771m. Changed 3 heads and liners, valves and seats on #1 and #2 mud pumps. Slide 5m. Rotate 18m.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling Rig activity (hrs)	00:00 - 24:00
97-09-19	2794	23	20.00	Directional drill 311mm hole with 197mm 1.83 degrees tandem Halliburton mud motor with MWD surveys and log Gamma ray from 2771m-2794m. Slide 14m. Rotate 9m.
97-09-20	2822	28	21.50	Directional drill 311mm holke with 197mm 1.83 degrees Halliburton mud motor, MWD surveys and log Gamma ray from 2794m-2822m. Slide 10m. Rotate 18m.
97-09-21	2828	6	7.50	Directional drill 311mm hole with 197mm 1.83 degrees mud motor, MWD surveys, and Gamma ray from 2822m-2828m. Stator rubber over shale shaker. Drilling slowed down. Trip for motor and PDC bit. Bit worn. Buttons missing. Slide 2m. Rotate 4m.
97-09-22	2833	5	6.50	Run in hole without junk basket (missing bottons?) and with MWD check. Bridge at 1940m. Directional drill 311mm hole with mud motor, rig service, MWD, and log Gamma ray from 2828m-2833m. MWD tool failed. Drilling slowed down to 2 hours per meter. Trip for MWD tool, bit. Slide 0m. Rotate 5m.
97-09-23	2848	15	18.50	Change bit, broken teeth. Change BHA, add junk basket. Run in with MWD check and rig sevice. Work on pump and wash and clean to bottom. Directional drill 311mm hole with 197mm 1.75 degrees Halliburton mud motor, with MWD surveys, and Gamma ray logging from 2833m-2848m. Slide 8m. Rotate 7m.
97-09-24	2851	3	4.5	Drill 311mm directional hole 2848-2851m (3m), work junk sub and circ out 6 stds, pump pill and trip out to change mud motor and bit -service MWD -trip in BHA -shallow test MWD at 1162m -wash and ream to bottom 2734 - 2851m.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-09-25	2882	31	21.5	Directional drill 311mm hole with 197mm 1.83deg Vector mud motor and survey with MWD/GR 2851-2882m -work tight hole 2858m - 2852m.
97-09-26	2902	20	18.75	Drill 311mm directional hole with 197mm 1.83deg mud motor and survey with MWD/GR 2882-2892m, pump pill and POH.
97-09-27	2902	0	0	Work on top drive - pump pill - trip out and lay down directional tools - pull wear bushings -Pressure test BOP's -Install wear bushing - Make up directional tools and bit Trip in and test MWD shallow at 1165m.
97-09-28	2927	25	18.25	Trip in to 2846m - wash and ream 2846m-2897m ream underguage hole 2897m- 2902m no fill - Survey - directional drill 311mm hole with 197mm 1.83deg Vector mud motor and survey with MWD/GR 2902m-2927m - change head on pump 2
97-09-29	2936	9	8.8	Directional drill 311mm hole with 197mm 1.83deg vector mud motor and survey with MWD/GR 2927-2936m -work junk sub -circ out 6stds -pump pill - trip out -change mud motor and bit -service MWD -make up BHA - slip and cut drilling line -trip in with bit 54 and trudrill mud motor.
97-09-30	2948	12	16	Trip in with bit - wash to bottom 2919-2936m no fill -drill ahead 311mm directional hole with 197mm 1.83deg trudrill mud motor and survey with MWD/GR 2936-2938m -flow check - circulate out trip gas 3656 units - directional drill 311mm hole 2938-2948m bit torque and rough drilling 2947.7-2948m

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-01	2960	12	21.5	Directional drill 311mm hole with trudrill 1.83deg mud motor and survey with MWD/GR 2948-2960m. Note: fracture at 2937m (3656unit gas show) is probable fault with last survey over this interval showing almost 2 deg right turn (4deg DL). Fracture with small rapidly depleting gas show (783 / 147) at 2948m.
97-10-02	2976	16	19.25	circ out gas cut mud at 2975m Max gas 2730m from fracture at 2973.6m. mix barite and cic out gas. drill ahead to 2976
97-10-03	2984	8	4.75	Drill to 2977m Circulate sample and work junk sub. Circulate 6 stds out and pull 6 stds. BOP drill. Pump trip pill and hoist. Hole was good. Lay down junksub and motor. Service MWD and pick up Dynadrill and set to 1.83deg. RIH, Check MWD and stage motor in hole. Wash to bottom from 2935m. Drill ahead 311mm directional hole , circulate cut trip gas 3300 units. drill ahead 311mm directional hole 2977-2984m
97-10-04	3012	28	20	Drill 311mm hole with rig service and survey with MWD/GR to 2999.77m. repair steel ring gasket on discharge tee #2 pump. Drill ahead 311mm directional hole to 3012m.
97-10-05	3017	5	6	Drill 311mm hole with rig service and survey with MWD/GRto 3017m Pressure and torque spikes. Circ bottoms up sample. Circulate and hoist to 2742m. Flow check and pump trip pill. Hoist and lay down 25 joints of XHE drill pipe. Change out motors, check MWD. Pick up new vector mud motor and bit. RIH with BHA. ick up 25 jts of good hard band XHE pipe nad RIH.
97-10-06	3032	15	14.25	Finish in hole. Wash and ream 2 stds to bottom. Work Junk sub. Drill 311mm directional hole with vector low speed mud motor and survey with MWD/GR to 3032.5m. Circulate sample

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-07	3048	16	21.75	Drill ahead 311mm directional hole with low speed vector mud motor and survey with MWD/GR 3032-3048m.
97-10-08	3053	5	6.25	Drill 311mm hole to 3053m. Circulate sample. Drill to 2053m and circulate sample. Bit torqued up. Mix pill and circulate out 6 stands. Pump pill and hoist. Lay out singles with worn hard band. Clean junk sub, and lay out motor. Check MWD. Pick up new motor and bit. Hole was good on trip out. Rotate 5m. Hole drag up 20/30 dan. Hole drag down 10/15 dan. Background gas 700 units. Mud lost last 24 Hrs 4.2m3.
97-10-09	3055	2	3.25	Run in hole. Pick up singles with good hard banding. Slip and cut line. Run in. Two screens down. Work on panels. Blown fuses and RLI relays. Finish in with MWD check and staging motor to 3020m. Ream to bnottom and work junk sub. Circulate out trip gas maximum 4050 units. Work on #2 pump. Drill 311mm hole. Survey. Circulate 3055m sample. Rotate 2m. Hole drag up 15/30 dan. Hole drag down 15/20dan. Torque on bottom 1350/1650 psi. Background gas 156 units. Mud lost last 24 hrs 2.7m3.
97-10-10	3068	13	21.00	Circulate 3055m sample. Drill 311mm hole with rig service and surv ey. Work on both pumps. Rotate 13m. Hole drag up 35/45 dan. Hole drag down 20/25 dan. Torque on bottom 1350/1600 psi. Background gas 120 units. Mud lost last 24hr 3m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-11	3072	4	5.75	Drill 311mm hole with Vector 1.83 degrees slow speed mud motor. Rig service, MWD surveys, and Gamma ray logging. Circulate 3072m sample. Work on junk sub and hoist for bit. Circulate 6 stands out, pump trip pill and hoist to 2010m. Check Elmago, outside bearing was worn. Pull into casing. Circulate hole and work Elmago brake. Wait on bearing. Rotate 4m. Hole drag up 25/35 dan. Hole drag down 10/15 dan. Torque on bottom 1350/1500 psi. Back ground gas 125 units. Mud lost last 24 hrs 2.6m3.
97-10-12	3072	0	0	Wait on mechanic and repairs for Elmago (inertia hydromatic) brake. Change bearings. Finish out of hole. Lay down motor and junk sub. Pick up a new Tru drill motor set at 1.832 degrees. Run in hole. Shallow test MWD at 1124m. Stage in motor. Background gas 0 units. No mud lost last 24 hrs.
97-10-13	3084	12	18.75	Finish in hole with new bit. Wash and ream from 3014m. Drill 311mm hole with Tru Drill 1.83 degrees motor. Rig service and survey. Rotate 12m. Hole drag up 20/30 dan. Hole drag down 15/20 dan. Torque on bottom 1300/1500 p.s.i. Background gas 50. Mud lost last 24 hrs 3m3.
97-10-14	3095	11	21.50	Drill 311mm hole with Tru Drill 1.83 degrees slow speed motor. Rig service and MWD survey. Repair mud pumps. Rotate 11m. Hole drag up 20/30 dan. Hole drag down 10/15 dan. Torque on bottom 1400/1550 psi. Back ground gas 80 units. Mud lost last 24 hrs 1.5m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-15	3098	3	7.25	Directional drill 311mm hole with Tru Drill 1.83 degrees motor, MWD survey, and Gamma ray logging from 3095m to 3098.68m. Trip for bit and/or motor. Hoist, mix pill and pump trip pill, trip with flow check and rig service. Handle directional tools. Run in hole with MWD check at 1128m.
97-10-16	3115	17	13.50	Run in hole, circulate, and ream. Finish staging motor, and tagged bottom at 3101m. This is 2.32m lower than measured at beginning of this trip. Directional drill 311mm hole with Dyna Drill 1.83 degrees mud motor, MWD surveys, Gamma ray logging, rig service, and circulating bottom samples from 3101m-3115m.
97-10-17	3115	0	0	Circulate 3115 m sample. Circulate. Mix trip pill. Hoist several stands. Pump pill. Handle and lay down directional tools. Change bit.Run in Slide 0m. Rotate 8m. Hole drag up 25/30dan. Hole drag down 15/20dan. Torque on bottom 1300/1550 p.s.i. Back ground gas 80 units. Trip gas 1080 units. Mud lost last 24 hrs 2.8m3.
97-10-18	3115	0	0	Circulate hole for logging. Circulate out 6 stands. Pump pill trip out. Rig to log with Computalog. Run in with XY-GR-DAR-STI tools. Tools failed except XY calipers at 2800m. Check tools and bridle on surface. Run log tools to 3000m. Tools failed, pull tools. Geologist changed logging program. Run in with STI -GR and wait on new DAR tool. Hole bridged at 1900m. Pull log tools out. Wire line damaged, birds nest at 700m, due repeated efforts to get tool through bridge. Rig down loggers. Hole drag up 25/30dan, Hole drag down 15/20dan. Torque on bottom 1325/1430 p.s.i. Background gas 80 units. Trip gas 1980 units (Was much higher estimated at 3200 units. This was not recorded because the high gas reading unit in Minipac 2100 failed.) Mud lost last

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
				24 hrs 4.2m3. Geologist proposed to rig out loggers and proposed changed logging program to collect needed data before jeapordizing hole.
97-10-19	3115	0	0	Rig out loggers. Trip with RR #59 bit. No hole problems to 3105m. Wash and ream 3105m-3115m. 1.5m fill. Drill on rubber bull nose loggers lost in hole. Work tight hole. Drill up rubber bull nose. Circulate condition hole. Circulate out 6 stands. Pump pill trip out. Rig to log and log with Computalog. Hole drag up 25/30 dan. Hole drag down 15/20dan. Torque on bottom 1325/1430 psi. Background gas 120 units. Trip gas 3240 units. Mud lost last 24 hrs 1.0m3.
97-10-20	3115	0	0	Log well with Computalog STI-BCS-GR 3116.4m-1006.4m. Tight hole at 1490m-1478m. Loggers pulled 400 psi. over normal weight to loosen tool. Geologist stopped logging operations. Wait on orders. Senior V.P. Ranger ordered rig out loggers, to condition hole for setting casing. Trip in with bit # 60 to 1250m. Circulate and work pipe, Hole condition good. Pump pill trip out. Pick up 3pt reamer. Trip in BHA. Slip and cut drill lie. Repair mud manifold valves. Trip in to 1326m. Strap hole. Wash and ream 1326m -1565m. Hole drag up 2/5000dan. Hole drag down 1/2dan. Torque on bottom 920/1270 psi. Background gas 20. Mud lost last 24 hrs 3.5m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-21	3115	0	0	Pull up to 1485m. Circulate change to 84 mesh shaker screens. Ream with bit and 3 point reamer 1485m-1584m. Hole unloading shale 1485m-1548m. Work pipe circulate hole clean. Ream with bit and 3 point reamer 1548m-3115m. 2.5m fill on bottom. Circulate and work pipe condition for casing. Hole drag down 5/15dan. Hole drag up 2/8 dan. Torque on bottom 1450/1740 psi. Background gas 85 units. Trip gas 950 units. Mud lost last 24 hrs 4.5m3.
97-10-22	3115	0	0	Circulate condition hole for casing. Wiper trip out to 1300m. Hole tight 1468m-1395m. Wash and ream 1325m-1500m. Circulate and work pipe, hole unloading 1/8" -3/4" in size. Circulate out to 1293m. Wash and ream 1310m-1530m. Hole cleaned up. Trip in with bit and 3point reamer to bridge at 1675m. Wash and ream 1675m-1756m. Hole drag up 5/15dan. Hole drag down 1/5dan. Torque on bottom 1450/1740 psi. Background gas 25 units. Mud lost last 24 hrs 1.5m3.
97-10-23	3115	0	0	Wash and ream 1756m-1786m. Trip out. Tight hole at 1438m-1430m. Lay down 3 ppoint reamer. Trip in BHA. Slip and cut drill line. Trip in with RR #60 bit. Wash and ream bridges 1440m-1462m, 1662m-1842m, 1936m-1952m. Repair top drive. Trip in. Clean fill 3104m-3115m. Circulate condition hole and mud. Hole drag up 10/25dan. Hole drag down 2/5dan. Torque on bottom 1450/1740 psi. Background gas 180 units. Trip gas 3240 units. Mud lost last 24 hrs 2.1m3.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-24	3115	0	0	Circulate condition hole and mud. Circulate out 1 stand. Trip out tight hole at 2518m-2522m & 1438m-1444m. Trip out to 1000m. Trip in. Wash and ream 3098m-3115m. 1.0m fill. Circulate condition hole for casing. Circulate out 1 stand. Pump pill trip out to run casing. Hole drag up 10/15 dan. Hole drag down 5dan. Torque off (??) bottom 1400/1650 p.s.i. Back ground gas 185 units. Trip gas 2220 units. Mud lost last 24 hrs 1.8m3
97-10-25	3115	0	0	Trip out. Lay down 228mm DCS. Pull wear bushing. Change top pipe rams to 244.5mm and test gate seals to 1400 kpa and 15 kpa. Rig up to run 244.5mm casing. Safety meeting. Run 244.5 mm casing. Changed to 350 ton slips and elevators at casing shoe. Mud lost last 24 hrs 0.8m3.
97-10-26	3115	0	0	Run 51 joints 244.5mm 662.42m 79.62kg/m L-80 Butress - 180 joints 244.5mm 2460.04m 69.94 kg/m L-80 Butress Landed @ 3114.80m. Weatherford stage cementer landed @ 1300.40m. Circulate condition hole for cement. Unable to reciprocate casing. Drill line on dead line anchor slipped at 260 dan. Safety meeting. Rig to cement. Pump 3m3 Diesel -3m3 CW8 preflush. Pressure test lines to 21000 kpa. Cement with 17 tonnes "G" + 35% D66 + 1.25% D160 + 0.5% D65 + 0.5% D-28 displaced with 67.93m3 water, 3.0m3 Diesel, 46.97m3 Invert mud. Plug down at 06:45 hrs. Over displaced 0.5m3 with out bumping plug. Floats held. Drop dart opened stage cementer with 900kpa. Circulate W.O.C. Hole drag up with casing unknown. Hole drag down 32 dan. Back ground gas 84 units. Trip gas 1348 units.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-10-27	3115	0	0	Circulate through stage cementer. Load plug in head. Safety meeting. Pump 3m3 Diesel, 3m3 CW8 preflush. Cement with 68 tonnes "G" + 0.3% B71 + 0.5% D65 displace with Weatherford plug and 49.97m3 water. Bump plug with 19000kpa closed stage cementer. Plug down at 16:00 hrs. Rig out Dowell. Rig down BOP to set slips. Centrifuge mud. 160m3 in mud tanks. 204m3 in tank farm.
97-10-28	3115	0	0	Rig down BOP. Set casing slipsa. Rig up BOP. Centrifuge mud and clean suction tank.
97-10-29	3115	0	0	Rig up BOP. Change top pipe rams to 127mm. Pressure test upper and lower pipe rams, blind rams, HCRs and BOP valves, manifold valves and lines, stabbing valve, kelly valves to 1400kpa low and 3400 kpa high for 10 minutes each. Pressure test annular BOP to 1400 kpa and 10500 kpa. Mud line manifold failed test. repair valves. Centrifuge invert mud. Strip down #2 mud pump for repair. Weld on suction tank and mixing system.
97-10-30	3115	0	0	Repair mud line manifold and stand-pipe valves. Pressure test mud lines and valves to 1500 kpa and 21000 kpa. Test annular BOP to 1500 kpa and 17500 kpa. Clean mud tanks and level same. Repair #2 mud pump. Function test accumulator start pressure 20500 kpa, open HCR, close annular BOP upper and lower rams, open lower pipe rams pressure remaining 11600 kpa. Recharge time 1 minute and 31 seconds. Recharge pressure 7500 kpa.
97-10-31	3115	0	0	Clean mud tanks. Make up BHA. Repair #2 mud pumps.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-11-01	3115	0	0	Strap in to 1280m. Drill oout cement, plug andstage cementer. Stage cementer at 1300.4m. Circulate bottoms up. Pressure test casing to 27000 kpa. Strap in tag cement at 3070m. Float collar at 3101m. Drill out float and cement. Change swivel packing. Circulate mix mud and chemicals. Repair #2 mud pump.
97-11-02	3115	0	0	Mix and condition mud. Wait on #2 pump repairs.
97-11-03	3115	0	0	Mix and condition mud. Wait on #2 pump repairs.
97-11-04	3128	13	7.50	Mix and condition mud. Wait on #2 pump repairs. Drill out cement and shoe. Work on pumps. Work on the top drive. Circulate samples 3120m and 3125m. Work on pumps. Survey. Mix and pump pill. Trip out.
97-11-05	3128	0	0	Mix and condition mu. Repair #2 mud pump. Drill out cement and shoe. Work on pumps. Work on top drive. Drill 216mm hole 3115m-3120m. Circulate up sample. Poor sample. Drill 216mm hole 3120m-3125m. Circulate sample. Poor sample. Drill 216mm hole 3125m-3128m. Circulate and survey. Mix and pump pill. Trip out to pick up stabilization. Repair draworks low chain. Circulate sample.
97-11-06	3128m	0	0	Tripped out, changed out BHA, pick up extra pipe. Run in hole.
97-11-07	3128m	0	0	Wash and ream to bottom. Drill 216mm hole 3128m-3177m. Work on pipe every 9m. Stuck on bottom. Circulate and jar. Mix ID Free and Diesel 5.4m3. Spot pill 3177m -3140m. Pump 10 strokes every 1/2 hour. Jar pipe no movement. Max pull 23 dan.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00
97-11-08	3128m	0	0	Jar stuck pipe unable to circulate. Jar stuck pipe wit on wire line personel and tools. Rig to and run free-point with Computalog. Free-point tool hanging up at 2960m. Pull out free-point tool. Rig to run sinker bars and driving tool. Damaged wire-line and rope-socket while picking up the tools. Wait on wire line tools from 19:40 hrs.
NO GEOLOGIST ON LOCATION TILL 23 JANUARY 1998				
98-01-23	3098m	0	0	0000-0015 rig service 0015-0400 pooh laydown & change BHA 0400-0800 run in hole 0800-0815 BOP function 0815-0845 RIH break circ. 0845-1115 drill cmt from 3098-3144 (top fish) 1115-1230 circ. 1230-1600 pooh 1600-1615 rig service 1615-1915 pooh 1915-2045 make up BHA, run in hole 2045-2130 slip & cut line 2130-2400 run in hole
98-01-24	3144	46	0	0000-0015 rig service 0015-0245 circ. 0245-0445 rig up cementers,plug back 0445-0600 pull out of plug 0600-0715 circ. 0715-0800 hoist out 0800-0815 bop drill 0815-1600 pick up bha & rih 1600-1615 rig service 1615-2130 break circ. 2130-2230 rih to 3048 2230-2400 circ.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00	
98-01-25	3116	0	0	0000-0015	rig service
				0015-0700	circ.
				0700-0800	tag cement @ 3069.52 to 3078
				0800-0815	rig service
				0815-1000	drill cement 3078 to 3116
				1000-1130	circ.
				1130-1600	poor & flow @ 1350
				1600-1615	rig service
				1615-1800	pooh
				1800-2100	pick up dir. drill tools
				2100-2115	break circ.
				2115-2400	rih
98-01-26	3116	0	0	0000-0015	rig service
				0015-0300	rih break circ. every twelve stands
				0300-0500	rih unable to break circ.
				0500-0800	pooh
				0800-0815	rig service
				0815-1345	pooh
				1345-1600	handle dir tools
				1600-1615	rig service
				1615-1815	handle dir drill tools test mwd
				1815-1845	rih
				1845-1930	slip & cut line
				1930-2300	rih to 2459
				2300-2400	circ. & wash to bottom
98-01-27	3128	12	22 3/4	0000-0015	rig service
				0015-0800	drill
				0800-0815	rig service
				0815-2400	drill and slide
98-01-28	3140	6	6 1/2	0000-1600	rig service, drill slide pooh
				1600-1845	lay down mud motor pick up slow speed
				1845-1915	shallow test mwd tool
				1915-2400	rih
98-01-29	3176	36	14 1/4	0000-0015	rig service
				0015-0115	break circ. wash to bottom
				0115-0230	work on no.2 pump
				0230-2400	drill, rotate, survey, work pipe

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00	
98-01-30	3224	48	13 3/4	0000-0015	rig service
				0015-2115	drill, rotate, survey, work pipe
				2115-2400	pump 5 std, pump pill, pooh
98-01-31	3251	27	8	0000-0015	rig service
				0015-0145	pooh
				0145-0215	held safety meeting
				0215-0545	pooh
				0545-0745	handle dir tools
				0745-0800	rih
				0800-0815	rig service
				0815-0830	run in bha
				0830-0900	shallow test mwd tool
				0900-0945	slip and cut line
				0945-1345	rih
				1345-1430	wash to bottom
				1430-2400	drill,survey,rotate
98-02-01	3321	70	17 3/4	0000-0015	rig service
				0015-0815	drill,rotate,survey,work pipe
				0815-0830	pump lost circ.material
				0830-1115	wiper trip
				1115-2400	drill,rotate,survey,work pipe
98-02-02	3377	56	17 1/2	0000-0015	rig service
				0015-2400	drill,rotate,survey,work pipe
98-02-03	3464	87	20	0000-0015	rig service
				0015-2400	drill,rotate,survey,work pipe
98-02-04	3500	36	3 1/2	0000-0015	rig service
				0015-0415	drill,rotate,survey,work pipe
				0415-0530	circ. sample
				0530-0700	pump out 14 stands
				0700-0715	flow check & pump pill
				0715-1415	pooh, lay bown dir drill tools
				1415-2200	rih,break circ. every 12 stands
				2200-2345	wash to bottom
				2345-2400	circ.

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00	
98-02-05	3500	0	0	0000-0015	rig service
				0015-0245	circ.
				0245-0545	wiper trip 15 stands
				0545-0800	circ.
				0800-0815	rig service
				0815-1015	pump out 14 stds
				1015-1030	flow & pump pill
				1030-1600	pooh
				1600-1615	rig service
				1615-1630	rig up loggers
				1630-1830	run log no.1
				1830-1930	pull out log no. 1 can't reach bottom
				1930-2030	rig out loggers
				2030-2145	run in hole
				2145-2400	slip & cut line & rih
98-02-06	3500	0	0	0000-0015	rig service
				0015-0215	rih break circ, 1800m & every 12 stds
				0215-0445	wash to bottom from 3107
				0445-0800	circ.
				0800-1630	circ. & wiper trip
				1630-2130	pooh
				2130-2300	rih to bot of csg.
				2300-2330	circ.
				2330-2400	shut in well Read & record

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00	
98-02-07	3500	0	0	0000-0015	rig service
				0015-0030	circ. kick
				0030-0045	shut well
				0045-0230	circ. kick no mud returns
				0230-0800	shut in well , mix mud
				0800-0815	rig service
				0815-1100	well shut in , mix mud
				1100-1330	circ. gas
				1330-1345	shut in well
				1345-1530	open well & circ.,flow check
				1530-1545	flow check
				1545-1600	circ.
				1600-1615	rig service
				1615-1700	run in to 3280
				1700-2030	circ. through chock
				2030-2300	circ. open well
				2300-2330	run in 4 stnds
				2330-2400	circ. @ 55 strokes/min
98-02-08	3500	0	0	0000-0015	rig service
				0015-0200	circ 55 stroks/min till bottom up
				0200-0330	circ 85 stroks/min till bottom up
				0330-0430	rih tag bottom
				0430-0715	circ 55 stroks/min till bottom up
				0715-0800	circ 85 stroks/min till bottom up
				0800-0815	rig service
				0815-1245	circ. 85 stroks/min
				1245 1415	wiper trip to csg 15 stds
				1415-1445	flow check
				1445-1600	rih to bottom
				1600-1615	rig service
				1615-2030	circ
				2030-2045	pump pill
				2045-2400	pooh to log

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00	
98-02-09	3500	0	0	0000-0015	rig service
				0015-0345	pooh
				0345-0415	rig up loggers
				0415-0515	run in log no. 1
				0515-0800	pull out log no.1 STI & SONIC
				0800-0815	rig service
				0815-0845	pooh change tools
				0845-0945	run in log no.2
				0945-1300	pooh & log density
				1300-1345	run in to log no.3
				1345-1600	pooh and log no.3
				1600-1615	rig service
				1615-1800	log no.3
				1800-1945	run in log no.4
				1945-2200	pooh with log no.4
				2200-2230	lay down logging tools
				2230-2400	rih break circ. at 1200m & 2000m
98-02-10	3500	0	0	0000-0015	rig service
				0015-0445	rih break circ at 1200 & 2000
				0445-0615	break circ at 3100 & circ bottom up
				0615-0800	wash to bottom
				0800-0815	rig service
				0815-1600	circ cond mud
				1600-1615	rig service & function chock
				1615-1815	circ. mix pill, pump pill
				1845-2100	slip & cut line, break circ.
				2100-2400	circ. & cond mud

DAILY DRILLING CHRONOLOGY

Date	Depth 24:00	Progress (24 hrs)	Drilling (hrs)	Rig activity 00:00 - 24:00	
98-02-11	3500	0	0	0000-0015	rig service
				0015-0030	circ
				0030-0130	run in hole break circ at 3270
				0130-0315	circ & monitor gas
				0315-0800	circ & cond mud
				0800-0815	rig service
				0815-1015	circ & cond mud
				1015-1145	pump pill pooh
				1145-1230	hole gained 47m3 rih wash to
				1230-1600	circ bottom up, circ cond mud
				1600-1615	rig service
				1615-1845	pump pill pooh
				1845-1945	rih break circ wash to bottom
				1945-2400	circ & cond mud
98-02-12	3500	0	0	0000-0015	rig service
				0015-0045	circ.
				0045-0800	pooh
				0800-0815	rig service
				0815-0900	rig up tong hand
				0900-0915	held safety meeting
				0915-1315	run in csg
				1315-1600	run in pipe(strap in)
				1600-1615	rig service
				1615 2400	run in csg (strap in)
98-02-13	3500	0	0	0000-0015	rig service
				0015-0515	run in csg.
				0515-	

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1325 - 1355	**SHALE** - medium - dark gray, subfissile, blocky, trace slickensides in part, slightly dolomitic, trace calcite micro fracture fill;
1355 - 1385	**SHALE** - dark gray, medium gray in part, fissile, platy in part, blocky in part, trace slickensides, in part trace thin interbedded dark gray microcrystalline argillaceous **LIMESTONE**, no visual show, no visible porosity, thin interbedded medium gray **CLAYSTONE**, slightly calcareous in small part, slightly dolomitic, trace calcite sparry micro fracture fill, trace pyrite disseminated;
1385 - 1410	**SHALE** - medium gray - dark gray, fissile, platy, blocky in part, rare slickensides, slightly silty, rare dolomitic, rare pyrite;
1410 - 1435	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, slightly calcareous, abundant calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part;
1435 - 1460	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, slightly calcareous, abundant calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part;
1460 - 1469	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, slightly calcareous, abundant calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part;
1469 - 1484	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, slightly calcareous, abundant calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1484 - 1500	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded **CLAYSTONE, SHALE** medium gray - dark gray, platy, blocky, rare slickensides, slightly calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill;
1500 - 1512	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded **CLAYSTONE, SHALE** medium gray - dark gray, platy, blocky, rare slickensides, slightly calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill;
1512 - 1525	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE, SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning;
1525 - 1535	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE, SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning;
1535 - 1552	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE, SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1552 - 1570	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; **SHALE** - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, mixed with parallel micro calcite lenses, slightly silty, rare pyrite, disseminated, rare fragments;
1570 - 1580	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; **SHALE** - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, mixed with parallel micro calcite lenses, slightly silty, rare pyrite, disseminated, rare fragments;
1580 - 1598	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE**, **SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; **SHALE** - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, mixed with parallel micro calcite lenses, slightly silty, rare pyrite, disseminated, rare fragments;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1598 - 1610	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE, SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; **SHALE** - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, slightly silty, rare pyrite, disseminated, rare fragments;
1610 - 1620	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE, SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; **SHALE** - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, slightly silty, rare pyrite, disseminated, rare fragments;
1620 - 1645	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE, SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; **SHALE** - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, slightly silty, rare pyrite, disseminated, rare fragments;
1645 - 1665	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE, SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; **SHALE** - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, slightly silty, rare pyrite, disseminated, rare fragments;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1665 - 1680	**SHALE** - medium gray - dark gray, fissile, blocky in part, thin interbedded light gray brown **CLAYSTONE, SHALE** medium gray - dark gray, platy, blocky, rare slickensides, moderately calcareous, common calcite micro fracture fill, scattered pyrite in part, minor micromicaceous, slightly silty in part, rare quartz micro fracture fill, euhedral crystals, abundant calcite micro fracture fill, multiple zoning; **SHALE** - dark gray - black, irregular blocky, medium hard - hard, slickensides, wavy, lustre, slightly silty, rare pyrite, disseminated, rare fragments;
1680 - 1690	**SHALE** - dark gray - black, irregular blocky, medium hard - hard, rare slickensides, wavy, lustre, slightly silty, minor calcite micro fracture fill, multiple zoned;
1690 - 1695	**SHALE** - dark gray - black, irregular blocky, medium hard - hard, rare slickensides, wavy, lustre, slightly silty, minor calcite micro fractures fill, multiple zoned;
1695 - 1700	**SHALE** - medium gray - dark gray, subfissile, blocky, medium hard, moderately calcareous, trace slickensides in part, rare dolomitic, moderately calcite micro fractures fill; **SHALE** - dark gray - black, irregular blocky, medium hard - hard, rare slickensides, slightly silty, minor calcite micro fracture fill, multiple zoned, rare pyrite thin beds and thin streaks of disseminated micro crystals, and in calcite micro fractures fill;
1700 - 1705	**SHALE** - dark gray - black, irregular blocky, medium hard - hard, rare slickensides, slightly silty, minor calcite micro fracture fill, multiple zoned, rare pyrite thin beds and thin streaks of disseminated micro crystals, and in calcite micro fractures fill;
1705 - 1710	**SHALE** - medium gray - dark gray, subfissile, blocky, medium hard, moderately calcareous, trace slickensides in part, rare dolomitic, moderately calcite micro fractures fill;
1710 - 1715	**SHALE** - dark gray - black, irregular blocky, medium hard - hard, rare slickensides, slightly silty, minor calcite micro fracture fill, multiple zoned, rare pyrite thin beds and thin streaks of disseminated micro crystals, and in calcite micro fractures fill;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1715 - 1720	**SHALE** - dark gray - black, irregular blocky, medium hard - hard, rare slickensides, slightly silty, minor calcite micro fracture fill, multiple zoned, rare pyrite thin beds and thin streaks of disseminated micro crystals, and in calcite micro fractures fill;
1725 - 1735	**SHALE** - medium gray - dark gray, subfissile, blocky, medium hard, moderately calcareous, trace slickensides in part, rare dolomitic, moderately calcite micro fractures fill;
1735 - 1740	**SHALE** - medium gray - dark gray, subfissile, blocky, medium hard, moderately calcareous, trace slickensides in part, rare dolomitic, moderately calcite micro fractures fill;
1740 - 1760	**SHALE** - medium gray - dark gray, subfissile, blocky, medium hard, moderately calcareous, trace slickensides in part, rare dolomitic, moderately calcite micro fractures fill;
1760 - 1780	**SHALE** - medium gray - dark gray, subfissile, blocky, medium hard, moderately calcareous, trace slickensides in part, rare dolomitic, moderately calcite micro fractures fill; **SHALE** - dark gray - black, platy, irregular blocky, medium hard, slightly silty, some calcite micro fracture fill;
1780 - 1795	**SHALE** - medium gray - dark gray, subfissile, blocky in part, medium hard, slightly calcareous, trace slickensides in part, rare dolomitic streaks in part, scattered calcite micro fracture fill;
1795 - 1800	No sample - sample not circ'd;
1800 - 1815	**SHALE** - medium gray - dark gray, subfissile, blocky in part, medium hard, slightly calcareous, trace slickensides in part, rare dolomitic streaks in part, trace calcite micro fracture fill;
1815 - 1825	**SHALE** - medium gray - dark gray, subfissile, blocky in part, medium hard, slightly calcareous, trace slickensides in part, rare dolomitic streaks in part, trace calcite micro fracture fill;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
1825 - 1837	**SHALE** - medium gray - dark gray, subfissile, blocky in part, medium hard, slightly calcareous, trace slickensides in part, rare dolomitic streaks in part, trace calcite micro fracture fill;
1837 - 1840	No sample - sample not circ'd;
1840 - 1855	**SHALE** - medium gray - dark gray, subfissile, blocky in part, medium consolidated, trace slickensides in part, slightly dolomitic, trace calcite micro fracture fill in small part;
1855 - 1865	**SHALE** - medium gray - dark gray, subfissile, blocky in part, medium consolidated, trace slickensides in part, slightly dolomitic, trace calcite micro fracture fill in small part; **SHALE** - dark gray - black, medium gray in part, subfissile, medium hard, trace micromicaceous;
1865 - 1880	**SHALE** - dark gray - black, medium gray in part, subfissile, medium hard, trace micromicaceous;
1880 - 1900	**SHALE** - dark gray - black, medium gray in part, subfissile, soft, trace micromicaceous, trace carbonaceous in part;
1900 - 1920	**SHALE** - dark gray - black, medium gray in part, subfissile, soft, trace micromicaceous, trace carbonaceous in part;
1920 - 1940	**SHALE** - dark gray - black, medium gray in part, subfissile, soft, trace micromicaceous, trace carbonaceous in part;
1940 - 1960	**SHALE** - dark gray - black, medium gray in part, subfissile, soft, trace siliceous micro fracture fill, trace carbonaceous in part;
1960 - 1980	**SHALE** - dark gray - black, medium gray in part, subfissile, soft, trace siliceous micro fracture fill, trace carbonaceous in part, trace pyrite in part;
1980 - 2000	**SHALE** - dark gray - black, medium gray in part, subfissile, soft, trace siliceous micro fracture fill, trace carbonaceous in part, trace pyrite in part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2000 - 2020	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2020 - 2040	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2040 - 2050	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2050 - 2068	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2068 - 2080	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2080 - 2101	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2101 - 2118	**SHALE** - medium gray - dark gray, subfissile, blocky in part, medium consolidated, trace slickensides in part, slightly dolomitic, trace calcite micro fracture fill in small part; **SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;
2118 - 2125	**SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2125 - 2140	**SHALE** - medium gray - dark gray, subfissile, blocky in part, medium consolidated, trace slickensides in part, slightly dolomitic, trace calcite micro fracture fill in small part; **SHALE** - dark gray - black, becoming brown in part, subfissile, soft, trace pyrite in small part, slightly dolomitic in part; Note: There is an increasing percentage of 1) **SHALE** - dark gray, medium hard, irregularly blocky, rare opaque calcite micro fracture fill, occasional clear quartz micro fracture fill with common clear euhedral quartz crystals, occasional pyrite fragments, common disseminated pyrite, slightly micromicaceous, minor slickensides in part, and of 2) **SILTSTONE** - black, hard to very hard, irregularly blocky, common micromicaceous, common disseminated pyrite, common quartz micro fracture fill with common euhedral quartz crystals.
2140 - 2145	**SHALE** - dark gray - black, medium hard, irregularly blocky, medium slickensides in part, rare calcite opaque micro fracture fill, occasional quartz micro fracture fill with common clear euhedral crystals, occasional pyrite fragments, common pyrite disseminated, slightly micromicaceous; **SILTSTONE** - black, hard - very hard, irregular blocky, common micromicaceous, common pyrite disseminated, common quartz micro fracture fill with common euhedral clear quartz crystals;
2145 - 2155	**SHALE** - dark gray - black, medium hard, irregularly blocky, medium slickensides in part, rare calcite opaque micro fracture fill, occasional quartz micro fracture fill with common clear euhedral crystals, occasional pyrite fragments, common pyrite disseminated, slightly micromicaceous; **SILTSTONE** - black, hard - very hard, irregularly blocky, common micromicaceous, common pyrite disseminated, common quartz micro fracture fill with common euhedral clear quartz crystals; siliceous in part.

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2155 - 2160	**SHALE** - dark gray - black, medium hard, irregularly blocky, medium slickensides in part, rare calcite opaque micro fracture fill, occasional quartz micro fracture fill with common clear euhedral crystals, occasional pyrite fragments, common pyrite disseminated, slightly micromicaceous; **SILTSTONE** - black, hard - very hard, irregularly blocky, common micromicaceous, common pyrite disseminated, common quartz micro fracture fill with common euhedral clear quartz crystals;
2160 - 2170	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, occasional quartz micro fracture fill with rare clear euhedral crystals, rare pyrite disseminated, slightly micromicaceous; **SILTSTONE** - black, hard - very hard, irregular blocky, siliceous, common micromicaceous, occasional pyrite disseminated, common quartz micro fracture fill with rare euhedral clear quartz crystals;
2170 - 2180	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, occasional quartz micro fracture fill with rare clear euhedral crystals, rare pyrite disseminated, slightly micromicaceous; **SILTSTONE** - black, hard - very hard, irregular blocky, siliceous, common micromicaceous, occasional pyrite disseminated, common quartz micro fracture fill with rare euhedral clear quartz crystals;
2180 - 2185	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, occasional quartz micro fracture fill with rare clear euhedral crystals, rare pyrite disseminated, slightly micromicaceous; **SILTSTONE** - black, hard - very hard, irregular blocky, siliceous, common micromicaceous, occasional pyrite disseminated, common quartz micro fracture fill with rare euhedral clear quartz crystals;
2185 - 2190	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, rare pyrite diseminated slightly micromicaceous; **SILTSTONE** - black, hard -very hard, irregular blocky, siliceous, common micromicaceous, occasional pyrite disseminated, sparse quartz micro fracture fill with rare euhedral clear quartz crystals;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2185 - 2190	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, rare pyrite disseminated; **SILTSTONE** - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite disseminated, some quartz micro fracture fill with clear euhedral crystals, common siliceous;
2190 - 2195	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, rare pyrite disseminated; **SILTSTONE** - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite disseminated, some quartz micro fracture fill with clear euhedral crystals, common siliceous;
2195 - 2200	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, rare pyrite disseminated; **SILTSTONE** - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite disseminated, some quartz micro fracture fill with clear euhedral crystals, common siliceous;
2200 - 2205	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, rare pyrite disseminated; **SILTSTONE** - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite disseminated, some quartz micro fracture fill with clear euhedral crystals, common siliceous;
2205 - 2210	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, rare pyrite disseminated; **SILTSTONE** - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite disseminated, some quartz micro fracture fill with clear euhedral crystals, common siliceous;

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Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2210 - 2215	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, rare pyrite disseminated; **SILTSTONE** - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite disseminated, some quartz micro fracture fill with clear euhedral crystals, common siliceous;
2215 - 2220	**SHALE** - dark gray - black in part, soft - medium hard, platy - blocky, rare slickensides in part, rare quartz micro fracture fill with rare clear euhedral crystals, slightly micromicaceous, abundant pyrite disseminated; **SILTSTONE** - black, hard - very hard, irregular blocky, common micromicaceous, trace pyrite fragments and disseminated, rare quartz micro fracture fill, some siliceous , common in part;
2220 - 2225	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, hard - very hard, irregular blocky, some micromicaceous, rare quartz micro fracture fill, common siliceous, some pyrite disseminated; **SILTSTONE** - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;
2225 - 2230	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, hard - very hard, irregular blocky, some micromicaceous, rare quartz micro fracture fill, common siliceous, some pyrite disseminated;
2230 - 2235	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, hard - very hard, irregular blocky, some micromicaceous, rare quartz micro fracture fill, common siliceous, some pyrite disseminated; **SILTSTONE** - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;

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Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2235 - 2240	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;
2240 - 2255	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, hard - very hard, irregular blocky, some micromicaceous, rare quartz micro fracture fill, common siliceous, some pyrite disseminated; **SILTSTONE** - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;
2255 - 2265	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;
2265 - 2270	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;
2270 - 2275	**SHALE** - dark gray - black in part, medium hard, blocky, rare slickensides in part, slightly micromicaceous, rare pyrite disseminated, rare quartz micro fracture fill; **SILTSTONE** - black, medium hard - hard, irregular blocky, rare quartz micro fracture fill, some siliceous in part, abundant pyrite disseminated, slightly micromicaceous;
2275 - 2285	**SHALE** - medium gray - dark gray, platy, soft, rare slickensides, slightly calcareous, trace dolomitic, trace silty, moderately micromicaceous, rare pyrite disseminated;

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Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2285 - 2295	**SILTSTONE** - black, medium hard - hard, irregular blocky, slightly micromicaceous to common micromicaceous in part, some siliceous in part, common pyrite disseminated, rare pyrite fragments; **SHALE** - medium gray - dark gray, platy, soft, rare slickensides, slightly calcareous, trace dolomitic, trace silty, moderately micromicaceous, rare pyrite disseminated;
2295 - 2310	**SILTSTONE** - black, medium hard - hard, irregular blocky, slightly micromicaceous to common micromicaceous in part, some siliceous in part, common pyrite disseminated, rare pyrite fragments; **SHALE** - medium gray - dark gray, platy, soft, rare slickensides, slightly calcareous, trace dolomitic, trace silty, moderately micromicaceous, rare pyrite disseminated;
2310 - 2315	**SHALE** - medium gray - dark gray, platy, soft, rare slickensides, slightly calcareous, trace dolomitic, trace silty, moderately micromicaceous, rare pyrite disseminated;
2315 - 2340	**SHALE** - medium gray - dark gray, platy, soft, rare slickensides, slightly calcareous, trace dolomitic, trace silty, moderately micromicaceous, rare pyrite disseminated;
2340 - 2360	**SHALE** - medium gray, dark gray in part, platy, soft, becoming slightly calcareous in part, trace micromicaceous, trace pyrite in part;
2360 - 2380	**SHALE** - medium gray, dark gray in part, platy, soft, becoming black in part, becoming slightly calcareous in part, trace micromicaceous, rare pyrite in part;
2380 - 2395	**SHALE** - medium gray, dark gray in part, platy, soft, becoming black in part, becoming slightly dolomitic in part, slightly micromicaceous, trace calcareous streaks in part;
2395 - 2410	**SHALE** - medium gray, dark gray in part, platy, soft, becoming black in part, slightly micromicaceous, slightly dolomitic, rare pyrite;

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Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2410 - 2415	**SHALE** - medium gray, dark grav in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, rare pyrite;
2415 - 2425	**SHALE** - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, rare pyrite;
2425 - 2430	**SHALE** - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, trace pyrite;
2430 - 2440	**SHALE** - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, trace pyrite;
2440 - 2450	**SHALE** - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, trace pyrite;
2450 - 2470	**SHALE** - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, trace pyrite;
2430 - 2440	**SHALE** - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly micromicaceous, slightly dolomitic, trace pyrite;
2470 - 2495	**SHALE** - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly dolomitic;
2495 - 2510	**SHALE** - medium gray, dark gray in part, platy, soft, becoming black in part, occasionally slightly calcareous in part, moderately consolidated in part, slightly dolomitic;

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Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2510 - 2535	**SHALE** - medium gray, subfissile, becoming dark gray in part, soft, slightly dolomitic, trace micromicaceous in part;
2535 - 2560	**SHALE** - medium gray, subfissile, becoming dark gray in part, soft, slightly dolomitic, trace micromicaceous in part;
2560 - 2575	**SHALE** - medium gray, subfissile, becoming dark gray in part, soft, slightly dolomitic, trace micromicaceous in part;
2575 - 2590	**SHALE** - medium gray, dark gray in part, soft, subfissile, samples poor quality - heavy contamination by mud products, slightly dolomitic in part;
2590 - 2595	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor - heavy contamination by unassimilated mud products, slightly dolomitic;
2595 - 2600	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic;
2600 - 2620	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic;
2620 - 2635	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic;
2635 - 2640	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, abundant pyrite, fragments;
2640 - 2645	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic;

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Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2645 - 2650	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, occasional pyrite fragments and disseminated;
2650 - 2660	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, occasional pyrite fragments and disseminated; **SILTSTONE** - black, blocky, occasional pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills;
2660 - 2675	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, occasional pyrite fragments and disseminated; **SILTSTONE** - black, blocky, occasional pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills;
2675 - 2690	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, some pyrite fragments and disseminated; **SILTSTONE** - black, blocky, occasional pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills, rare quartz micro fracture fill;
2690 - 2695	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, some pyrite fragments and disseminated; minor **SILTSTONE** - black, hard to very hard, blocky with sharp ribs, rare pyrite disseminated and fragments, some quartz micro fracture fill.
2695 - 2700	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, some pyrite fragments and disseminated; rare calcite micro fracture fill, rare clear calcite crystals; minor **SILTSTONE** - black, hard - very hard, blocky with sharp ribs, rare quartz micro fracture fill.
2700 - 2710	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, some pyrite fragments and disseminated;

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Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2710 - 2715	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, sample quality poor, slightly dolomitic, some pyrite fragments and disseminated; **SILTSTONE** - black, blocky, occasional pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills, rare quartz micro fracture fill;
2715 - 2720	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, rare calcite micro fracture fill, rare pyrite disseminated and fragments;
2720 - 2730	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, rare calcite micro fracture fill, rare pyrite disseminated and fragments; **SILTSTONE** - black, hard - very hard, blocky, rare pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills, rare quartz micro fracture fill;
2730 - 2740	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, rare calcite micro fracture fill, rare pyrite disseminated and fragments; **SILTSTONE** - black, hard - very hard, blocky, rare pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills, rare quartz micro fracture fill;
2740 - 2745	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, rare calcite micro fracture fill, rare pyrite disseminated and fragments;
2745 - 2760	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, rare calcite micro fracture fill, rare pyrite disseminated and fragments; **SILTSTONE** - black, hard - very hard, blocky, rare pyrite disseminated and fragments, common siliceous, some calcite micro fracture fills, rare quartz micro fracture fill;
2760 - 2770	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, rare calcite micro fracture fill, rare pyrite disseminated and fragments; **SILTSTONE** - black, hard - very hard, blocky, rare pyrite disseminated and fragments, common siliceous, some calcite micro fracture fill fills, rare quartz micro fracture fill;

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Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2770 - 2780	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated;
2780 - 2785	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, very poor quality sample;
2785 - 2795	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, very poor quality sample;
2795 - 2805	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, very poor quality sample;
2805 - 2820	**SHALE** - medium gray, dark gray in part, subfissile, soft to moderately consolidated, very poor quality sample;
2820 - 2835	**SHALE** - black, platy, soft - hard, common pyrite disseminated and thin streaks;
2835 - 2848	**SHALE** - black, platy, soft - hard, common pyrite disseminated and thin streaks;
2848 - 2855	**SHALE** - black, dark gray in part, fissile, brittle, hard - moderately consolidated, minor trace calcite fracture fill in part, scattered pyrite disseminated and thin streaks, trace siliceous streaks in part;
2855 - 2865	**SHALE** - black, fissile, brittle, hard - moderately consolidated, minor trace calcite fracture fill in part, scattered pyrite disseminated and thin streaks, trace siliceous streaks in part;
2865 - 2870	**SHALE** - black, occasionally dark gray in part, fissile, moderately consolidated, minor trace calcite fracture fill in part, scattered pyrite disseminated and thin streaks, trace siliceous streaks in part;
2870 - 2885	**SHALE** - black, fissile - subfissile, moderately consolidated, trace pyrite disseminated and thin streaks, slightly dolomitic;
2885 - 2895	**SHALE** - black, fissile - subfissile, moderately consolidated, trace pyrite disseminated and thin streaks, slightly dolomitic;

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Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2895 - 2915	SHALE - black, fissile, moderately consolidated, trace pyrite disseminated, moderately dolomitic;
2915 - 2927	SHALE - black, fissile, moderately consolidated to hard, trace pyrite disseminated, moderately dolomitic, slightly calcareous in part;
2927 - 2935	SHALE - black, fissile, moderately consolidated, brittle in part, trace pyrite disseminated, slightly dolomitic, moderately calcareous in part;
2935 - 2940	SHALE - black, fissile, moderately consolidated, brittle in part, trace pyrite disseminated, slightly dolomitic, moderately calcareous in part; SHALE - dark gray - black, subfissile, hard, brittle in part, trace fracture fill calcite in small part, trace pyrite, moderately calcareous in part;
2940 - 2945	SHALE - dark gray - black, subfissile, hard, brittle in part, trace fracture fill calcite in small part, trace pyrite, moderately calcareous in part;
2945 - 2950	SHALE - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous in part;
2950 - 2960	SHALE - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous in part;
2960 - 2970	SHALE - black, fissile, moderately consolidated, brittle in part, trace pyrite disseminated, slightly dolomitic, moderately calcareous in part; SHALE - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous in part;
2970 - 2975	SHALE - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous in part; SHALE - black, dark gray in part, blocky, subfissile in part, hard, fair fracture porosity, trace pyrite disseminated, moderately calcareous in part, scattered calcite fracture fill;

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Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
2975 - 2980	**SHALE** - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous in part;
2980 - 2995	**SHALE** - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, scattered pyrite disseminated, moderately calcareous in part;
2995 - 3010	**SHALE** - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous in part;
3010 - 3015	**SHALE** - black, dark gray in part, blocky, subfissile in part, hard, trace fracture fill calcite in small part, trace pyrite disseminated, slightly calcareous in part;
3015 - 3025	**SHALE** - dark gray, black in part, blocky, moderately consolidated, trace fracture fill calcite in small part, trace pyrite disseminated, moderately calcareous;
3025 - 3030	**SHALE** - dark gray, black in part, blocky, moderately consolidated, scattered fracture fill calcite in small part, scattered pyrite disseminated, moderately calcareous;
3030 - 3032	**SHALE** - dark gray, black in part, blocky, moderately consolidated, scattered fracture fill calcite in small part, scattered pyrite disseminated, moderately calcareous;
3032 - 3035	**SHALE** - dark gray, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part;
3035 - 3040	**SHALE** - dark gray, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part;
3040 - 3044	**SHALE** - dark gray, mottled white calcareous streaks in part, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part;

LITHOLOGY

Formation tops
Sample interval
(in meters) SAMPLE DESCRIPTION

The interval from 2833m to 3053m contains dark grey to black, blocky to irregular blocky, hard to very hard, siliceous, **SHALE**, silty in part. This lithology has been described as **SILTSTONE** by H. Wennekers. The cuttings are multi and irregularly faceted, with some cutting surfaces appearing as shell-like and even amygdaloidal; not uncommon for chert fracturing. Cuttings of this lithology may include cavings, which though seems unlikely with the slightly over gauge, clean, hole, and the high viscosity (117) and heavy (1430kg/m3) drilling mud. Drilling bits ware on this lithology. Drilling bit shanks wore and some of the bits were 1/2" under gauge. This lithology has been mistakenly been described as "chert" from this lowermost interval (the Horn River) of the Besa River in some wells in the region.

3044 - 3045 **SHALE** - dark gray, mottled white calcareous streaks in part, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part;

3045 - 3055 **SHALE** - dark gray, mottled white calcareous streaks in part, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part; **SHALE** - dark gray - black, hard - very hard, blocky, abundant siliceous, common calcareous, some calcite white micro fracture fill, rare quartz euhedral crystals, common pyrite disseminated and fragments;

3055 - 3065 **SHALE** - dark gray, mottled white calcareous streaks in part, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part; **SHALE** - dark gray - black, hard - very hard, blocky, abundant siliceous, common calcareous, some calcite white micro fracture fill, common quartz micro fracture fill and euhedral crystals, common pyrite disseminated and fragments;

3065 - 3068 **SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3068 - 3072	**SHALE** - dark gray - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, trace quartz micro fracture fill, rare pyrite disseminated;
3072 - 3080	**SHALE** - dark gray, mottled white calcareous streaks in part, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part; **SHALE** - dark gray - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, trace quartz micro fracture fill, rare pyrite disseminated;
3080 - 3090	**SHALE** - dark gray, mottled white calcareous streaks, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part, rare dolomite clear euhedral crystals in calcite micro fracture fill; **SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments; **LIMESTONE** - gray brown, platy, mottled, microcrystalline, calcite fossil mould, common argillaceous, some calcite white calcite micro fracture fill;
3090 - 3095	**SHALE** - dark gray, mottled white calcareous streaks in part, black in part, blocky, moderately consolidated, trace pyrite disseminated, moderately calcareous, scattered calcite fracture fill in small part; **SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments; **LIMESTONE** - gray brown, platy, mottled, microcrystalline, calcite fossil, small angle top cone Tentaculites, common argillaceous, some calcite white calcite micro fracture fill;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3095 - 3098	**SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments; **LIMESTONE** - gray brown, platy, mottled, microcrystalline, calcite fossil, small angle top cone Tentaculites, common argillaceous, some calcite white calcite micro fracture fill;
3098 - 3099	**SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments;
3099 - 3102	No sample; A 2.32m discrepancy in bottom hole depth.
3102 - 3105	**SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments; **LIMESTONE** - gray brown (whitish-gray to dark gray speckled, platy, mottled, microcrystalline, calcite fossil, small angle top cone Tentaculites, common argillaceous, some calcite white calcite micro fracture fill.
3105 - 3110	**SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments; **LIMESTONE** - gray brown (whitish - gray to dark gray speckled), platy, mottled, microcrystalline, calcite fossil, small angle top cone Tentaculites, common argillaceous, some calcite white calcite micro fracture fill;
3110 - 3113	**SHALE** - black, hard - very hard, blocky, abundant siliceous, moderately calcareous, some calcite white micro fracture fill, common pyrite disseminated, streaks, and fragments; **LIMESTONE** - gray brown - dark gray, mottled, hard, brittle, platy, microcrystalline, calcite fossil, small angle top cone Tentaculites, common argillaceous, some calcite white calcite micro fracture fill, rare bitumen black, high lustre, amygdaloidal fractures;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3113 - 3115	**LIMESTONE** - gray brown - dark gray, mottled, hard, brittle, platy, microcrystalline, dried bitumen in microfracture lined with calcite crystals, calcite fossil, small angle top cone Tentaculites, common argillaceous, some calcite white calcite micro fracture fill, rare bitumen black, high lustre, amygdoidal fractures;

Some notes on the lithology of the rocks drilled in P-66-A between 3080m and 3115m.

The rock encountered from 3080m to 3115m contains what appears two units with limestone separated by shale. This could be a repeat section, or it represents an undisturbed succession. The lowermost sample of this interval from 3112.50m to 3115.00m contains abundant pieces of opaque calcite, common pieces of quartz and small clear quartz crystals, and pieces of opaque to translucent dolomite. Also encountered were small pieces of brittle dried bitumen, black, high luster, with amygdaloidal-like fractures. A few pieces had already been found in sample 3112.50m, but then a decision as to its origin waivered between in-situ and/or a mud additive. This riddle was solved when, in circulated 3115.00m bottom hole sample, a cutting was found that contained limestone and part of a micro fracture almost filled with calcite crystals; not closed, but with space left between the two surfaces of crystal tops, indicating crystal growth was from the fracture walls towards the centre of the fracture. The open space between the two opposite surfaces studded with crystal tops, is filled with black shiny dried bitumen. This was a most wonderful discovery, since similar fractures filled with dried bitumen (Gilsonite) are characteristic of the Nahanni limestone and dolomite in wells drilled in the Pointed Mountain Field and in other wells that were drilled in the region. At this time, it is not known how far the 3115.00m bottom hole depth is from the top of the Nahanni dolomites. It might be concluded that the limestone we have seen in the last 35 meters of the P-66-A hole might include basal Horn River limestones and uppermost limestones of the Nahanni Formation.

The limestones encountered in the 3080m to 3098m interval are not sedimentary limestones. It appears that these Limestones are defined as Limiestones, because of their reaction with 0.1normal HCL acid, leaving some argillaceous residue. In places, the distinction between argillaceous Limestone and calcareous shale is very difficult; if not impossible. In addition, it is more than likely that these limestone are the result of a series of complex diagenitic events.

LITHOLOGY

Formation tops
Sample interval
(in meters) SAMPLE DESCRIPTION

It appears, that a mainly argillaceous black rock, claystone to shale, containing abundant pyrite, went through a silicification cycle, changing the rock into a very hard siliceous claystone-shale, that I have described in many cases as a siltstone; gritty feel and hard. This "siltstone" then was subjected to a calcification process, which diagenetically converted the "siltstone" to varying degrees into a mottled rock, that reacts actively with 0.1 normal HCL acid, suggesting it is a limestone; very little residue is left after acid has removed all calcite. The limestone designation seems logic as the rock contains calcified fossils. Unfortunately, such calcified fossils are also present in siliceous shales/claystones. These fossils include, Tentaculites; three dimensional, suggesting that hardening of this rock, due silification, occurred somewhere prior to advanced induration. Or, as an alternative, local calcification of these fossils occurred early in the induration process.

It is noted here, that the calcification of the "siltstone" occurred as if it followed original very fine bedding in the "siltstone". A bedding that can not be detected when cuttings of non-calcified "siltstone" are examined in detail. Thus, calcification highlights that "bedding". Also, the calcification process, although appearing to follow original bedding, has the appearance, on a cross section surface, not of thin beds, but of a string of flattened beads. With more advanced calcification, the "partially calcified siltstone" is converted into a grayish brown coloured limestone. Following that, it appears that further calcification results in a grayish brown to whitish and dark gray "salt and pepper" microcrystalline limestone. Usually, the description "salt and pepper" is used for sandstone, but that is how it looks. Further calcification results in a microcrystalline whitish-blackish salt and pepper limestone.

Note: The content of the above two pages is based on visual observations on location P-66-A, and not on reviews of literature and other sources.

[An alternate interpretation might envision diagenetically changed original sedimentary argillaceous limestones and possibly calcareous shales of the Nahanni, between 3102m and 3115m?; silicification to varying degrees?]

3115 - 3125 **DOLOMITE** - light tan, light brown, microcrystalline, dried brittle black bitumen and soft black bitumen, abundant calcite, pieces of crystals, some blackish due to bitumen;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
	Sample descriptions that follow [3115-3500] whipstock no.4 were logged by Fred Richardson January 27/98 to February 4/98
3115 - 3120	Sample is 100% cement;
3120 - 3125	Sample is 100% cement; No sample - teflon beads;
3125 - 3130	Teflon beads; **DOLOMITE** - dark gray, fine crystalline to medium crystalline and some coarse crystalline; **DOLOMITE** - white, medium crystalline to coarse crystalline and some fine crystalline, fair intercrystalline porosity, fair vuggy porosity;
3125 - 3130	**DOLOMITE** - white, fine crystalline to medium crystalline, no gas show, sample ground very fine, and abundant cement, difficult to access porosity, occasional bitumen; 40-50% of sample is cement;
3130 - 3135	**DOLOMITE** - white, fine crystalline to medium crystalline, no gas show, sample ground very fine, and abundant cement, difficult to access porosity, occasional bitumen;
3135 - 3140	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - dark gray, black, fine crystalline to medium crystalline, trace intercrystalline porosity;
3140 - 3145	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - dark gray, black, fine crystalline to medium crystalline, trace intercrystalline porosity;
3145 - 3150	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3150 - 3155	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;
3155 - 3160	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;
3160 - 3165	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;
3165 - 3170	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;
3170 - 3175	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;
3175 - 3180	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3180 - 3185	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, fair intercrystalline porosity, fair vuggy porosity;
3185 - 3190	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity;
3190 - 3195	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity;
3195 - 3200	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3200 - 3205	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; **DOLOMITE** - gray, gray - brown, fine crystalline to microcrystalline, rare intercrystalline porosity;
3205 - 3210	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - gray, gray - brown, fine crystalline to microcrystalline, rare intercrystalline porosity;
3210 - 3215	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; **DOLOMITE** - as above, fine crystalline to microcrystalline, rare intercrystalline porosity;
3215 - 3220	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3220 - 3225	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; **DOLOMITE** - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous;
3225 - 3230	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3230 - 3235	**DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; **DOLOMITE** - gray, gray - brown, fine crystalline to microcrystalline, rare intercrystalline porosity; **DOLOMITE** - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3235 - 3240	**DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; **DOLOMITE** - gray, gray - brown, fine crystalline to microcrystalline, rare intercrystalline porosity; **DOLOMITE** - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous;
3240 - 3245	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3245 - 3250	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3250 - 3255	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3255 - 3260	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3260 - 3265	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3265 - 3270	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3270 - 3275	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3275 - 3280	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; **DOLOMITE** - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3280 - 3285	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous;
3285 - 3290	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3290 - 3295	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3295 - 3300	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3300 - 3305	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to medium crystalline, rare intercrystalline porosity; **DOLOMITE** - brown, fine crystalline to cryptocrystalline, trace intercrystalline porosity, occasionally calcareous;
3305 - 3310	**DOLOMITE** - gray, gray - brown, fine crystalline to microcrystalline, rare intercrystalline porosity; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3310 - 3315	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;
3315 - 3320	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, rare vuggy porosity, occasionally calcareous;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3320 - 3325	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace of intercrystalline porosity, trace of vuggy porosity, trace gas, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace porosity, trace of vuggy porosity, trace gas, occasionally calcareous;
3325 - 3330	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair intercrystalline porosity, fair vuggy porosity, gas, some clear quartz crystals, occasionally calcareous;
3325 - 3330	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals;
3330 - 3335	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity;
3335 - 3340	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, pocr intercrystalline porosity;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3340 - 3345	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, light gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;
3345 - 3350	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;
3350 - 3355	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;
3355 - 3360	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3360 - 3365	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3365 - 3370	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3370 - 3375	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3375 - 3380	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3380 - 3385	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;
3385 - 3390	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;
3390 - 3395	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity;
3395 - 3400	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen;
3395 - 3400	**DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace vuggy porosity, trace clear quartz crystal, trace calcareous;
3400 - 3405	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3405 - 3410	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace vuggy porosity, trace clear quartz crystal, trace calcareous;
3410 - 3415	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace vuggy porosity, trace clear quartz crystal, trace calcareous;
3415 - 3420	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3420 - 3425	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, trace vuggy porosity, trace clear quartz crystal, trace calcareous;
3425 - 3430	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3430 - 3435	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3435 - 3440	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3440 - 3445	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, fair vuggy porosity, slight trace of calcite, occasionally calcareous; **DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, poor intercrystalline porosity; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3445 - 3450	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, slight trace of calcite, occasionally calcareous; **DOLOMITE** - gray, dark gray, black, fine crystalline to very fine crystalline, occasional clear quartz crystals; **DOLOMITE** - gray, fine crystalline to very fine crystalline, trace intercrystalline porosity, some intercrystalline bitumen; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3450 - 3455	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; **DOLOMITE** - gray, dark gray, very fine crystalline to fine crystalline and some medium crystalline, fair fracture porosity; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight;
3455 - 3460	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight; **DOLOMITE** - gray, dark gray, fine crystalline to medium crystalline;
3460 - 3465	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight; **DOLOMITE** - gray, dark gray, fine crystalline to medium crystalline;
3465 - 3470	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight; **DOLOMITE** - gray, dark gray, fine crystalline to medium crystalline;
3470 - 3475	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight; **DOLOMITE** - gray, dark gray, fine crystalline to medium crystalline;
3475 - 3480	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous;
3480 - 3485	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight; **DOLOMITE** - gray, dark gray, fine crystalline to medium crystalline;

LITHOLOGY

Formation tops Sample interval (in meters)	SAMPLE DESCRIPTION
3485 - 3490	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight; **DOLOMITE** - gray, dark gray, fine crystalline to medium crystalline;
3490 - 3495	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight; **DOLOMITE** - gray, dark gray, fine crystalline to medium crystalline;
3495 - 3500	**DOLOMITE** - white, coarse crystalline to very coarse crystalline, poor vuggy porosity, occasional clear quartz crystal, occasionally calcareous; **DOLOMITE** - brown, cryptocrystalline to microcrystalline, tight; **DOLOMITE** - gray, dark gray, fine crystalline to medium crystalline;
TOTAL DEPTH	3500m

GEOLOGICAL SUMMARY AND CONCLUSIONS

Side track #3, Ranger Fort Liard P66A, kicked off at around 1400m. Directional drilling, building up to a 45 degrees angle was drilled to 3115m when intermediate casing was set. Hole conditions were excellent from around 1950m down to 3115m, but many tight hole intervals, unloading of shale, and large diameter hole caused considerable concern for the integrity of the hole until it was finally cased. The section drilled between 1400m and 1950m contains medium gray to dark gray to light brown to tan, soft, platy, sometimes blocky, shale, micromicaceous in places, calcareous to varying degrees, sometimes slightly dolomitic. This shale unloads easily when mud pressure is lowered or when there is much activity in the hole. While the directional drilling had build up to, and reached, the 45 degrees angle, the production of finely ground up rock so characteristic of drilling that interval, continued even when the harder more stable strata were drilled from 1950m to 3115m. Well cutting samples contained at times almost no cuttings, but were dominated by pieces of mud solids, scraped of the well bore wall and characterized by shiny black surfaces, almost resembling slickensides. In this case, they are recent slickensides; actual friction surfaces. With the high downhole temperatures and pressures, it is increasingly difficult to assess what actually took place at the bit. Not mechanically, but physically and chemically. From time to time the hole dragged and with a mud, containing irregular and sometimes very high percentages of mud solids, the hole drag increased. From time to time, efforts were made to decrease the hole drag and bottom torque. This was done by adding crushed wallnut shells to the mud. Interesting to note that the mud company does not carry tables and graphs that show that these wallnut shells at 1000 to 5000 psi are compacted to very small pieces indeed. In this hole it was clearly visible that below 1950m the real cuttings of the silicified shale were larger than the compressed crushed wallnut pieces. In effect a useless addition to the mud, that tended to pack off the MWD tool and caused problems in the mud pumps. The most important adaptation to the lithologies in this hole was the production of very clean mud that had no problems carrying sloughings and cuttings. That was all that there is to it.

Sidetrack no.4 was required because a fish was left in the hole and had to be cemented off and sidetracked around. Kick off point was 3115m [measured] and directional drilling started on January 27, 1998 and successful drilled past the fish and to TD of 3500m at 04:00 hrs February 4, 1998. Drilling was completed without any major problems.

The lithology consisted prima ily of white Dolomite very course crystalline with some spotty vuggy porosity to 10 or 12 % . Forty to fifty per cent of the samples are dark grey to black Dolomite, very fine crystalline and tight. One good gas show was encountered at 3166m [2280] units. Smaller gas shows are as follows: 346 units at 3378m and 760 units at 3408m.

Logging operations began February 5, 1998 18:00 to 20:00 and could not reach bottom , Hole was bridged off at 3288m . A clean out trip followed and an

GEOLOGICAL SUMMARY AND CONCLUSIONS (cont.)

obstruction was felt at 3288m . While circulating on bottom at 3106m the well kicked gas in the early morning hours February 7, 1998. The gas kick was controlled, and 25m3 of mud was lost to the formation. After mud volume was rebuilt and all gas circulated out of mud we were ready to log again at 05:15 February 9, 1998. And all logs were completed at 20:00 hrs. Logs run were STI, Sonic, Density, Laterolog, & EMI.

The next (October 10, 1998) we receive orders to run 177.8 mm casing.

NORWARD FIELD NOTES

1823
9211-R36-1-2RE

NORWARD ENERGY SERVICES

Customer: Ranger Oil Limited
Wellname: ~~Fort~~ North Liard
Well Location: P-66-A
Start Date: 07-Jul-98
Formation: TIGHT HOLE

Job Number: GP98-114 RANGER01.FAS
Supervisors: M. Mueller, B. Metcalf
Customer Reps: R. Elliot, W. Cassler
Test Unit: 29
Test Type: TIGHT HOLE

Notes: July 6, 1998 - Rig in equipment.
RTR = Real Time Recorders

NATIONAL ENERGY BOARD
ENGINEERING
SEP 2 8 1998

FINAL Copies edited at Norward Head Office

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Well Name: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Gas Meter 1

Meter Type:	Orifice	
Meter Run Size:	147.0200	mm
Previous Gas Production:	0.000	10^3m3
Tap Type:	Flange	
Tap Location:	Downstream	
Gauge to Absolute Adjustment:	90.0	
Gas Gravity:	0.73	decimal
CO2:	15.64	%
H2S:	0.85	%
N2:	4.97	%
Critical Temperature:	206.5	K
Critical Pressure:	5010.0	kPa
Condensate:	No	

Gas Meter 2

Meter Type:	Orifice	
Meter Run Size:	147.0200	mm
Previous Gas Production:	0.000	10^3m3
Tap Type:	Flange	
Tap Location:	Downstream	
Gauge to Absolute Adjustment:	90.0	
Gas Gravity:	0.65	decimal
CO2:	0.00	%
H2S:	0.00	%
N2:	0.00	%
Critical Temperature:	207.3	K
Critical Pressure:	4625.7	kPa
Condensate:	No	

Water Meter 1

Meter Type:	&Previous Water Production	
Measurement Type:	Incremental	
Previous Fluid Production 1:	0.000	m3

Water Meter 2

Meter Type:	&Previous Water Production	
Measurement Type:	Incremental	
Previous Fluid Production 1:	0.000	m3

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1	1998/07/06	08:00:00	0.00	Rig up test equipment															
2	1998/07/07	02:00:00	18.00	Rig up new wellhead.															
3		04:00:00	20.00	Rig flowline up to wellhead and prepare to pressure test.															
4		11:00:00	27.00	Pressure test no good.															
5		19:00:00	35.00	ESD and flowline is flanged up again.															
6		23:00:00	39.00	Unified ESD functioned well except for a binding effect of the stem on the open motion. Not taking any chances.															
7	1998/07/08	14:15:00	54.25	New ESD and flowline is flanged up.															
8		15:30:00	55.50	Pressure test complete.															
9		16:15:00	56.25	Two way check valve pulled. ABB vetco rig off.															
10		16:45:00	56.75	Pressure test on tubing complete.															
11		17:45:00	57.75	Pressure test wireline BOP's.															
12		22:00:00	62.00	Pull prong.															
13	1998/07/09	00:00:00	64.00	Pull plug to surface.															
14		00:48:00	64.80	Run in with gauge ring.															
15		00:48:00	64.80	2700	0														
16		01:00:00	65.00	2950	0														
17		01:30:00	65.50	3990	0														
18		02:00:00	66.00	5310	0														
19		02:01:00	66.02	Rig off wireline.															
20		02:30:00	66.50	6110	0														
21		03:00:00	67.00	6990	0														
22		03:30:00	67.50	8110	0														
23		04:00:00	68.00	9030	0														
24		04:30:00	68.50	10000	0														
25		05:00:00	69.00	10930	0			0.000	0.000	0	0.0	0.0	0.00	0.00	0.00	0.00	0.00		
26		05:00:00	69.00	Open to flow.															
27		05:03:00	69.05	Decrease choke to 11.11mm.															
28		05:10:00	69.17	13650	730		16.0	11.110											
29		05:13:00	69.22	Increase choke to 12.70mm.															
30		05:15:00	69.25	13700	2000		16.0	12.700											
31		05:30:00	69.50	18020	2200		20.0	12.700	0.000	0	0.0	0.0	0.00	0.00				7	
32		05:30:00	69.50	Increase choke to 14.29mm.															
33		05:45:00	69.75	Meter in service with a 82.55mm orifice plate.															
34		05:45:00	69.75	16800	2200		22.0	14.290	82.550	1200	45.0	22.0	335.28	3.49					
35	1998/07/09	06:00:00	70.00	16430	2950		22.0	14.290	82.550	1150	50.0	22.0	346.61	7.04	10.40	249.60	10.40	7	51800
36		06:05:00	70.08	Increase choke to 16.69mm.															
37		06:30:00	70.50	15480	3350		32.0	16.690	82.550	1450	53.0	26.0	395.61	14.78					
38		06:45:00	70.75	H2S = 1.3%															
39		07:00:00	71.00	15450	2600		36.0	16.690	82.550	1500	54.0	30.0	402.96	23.09	10.50	252.00	20.90	6	105000
40		07:00:00	71.00	Shut in well and monitor buildup pressures.															
41		07:00:00	71.00					0.000	0.000	0	0.0	0.0	0.00	23.09					
42		07:05:00	71.08	17950	2400														
43		07:10:00	71.17	20100	1000														
44		07:15:00	71.25	20270	200														
45		07:30:00	71.50	20570	0														
46		07:45:00	71.75	20950	0														
47		08:00:00	72.00	21280	200														
48		08:30:00	72.50	21300	300														
49		09:00:00	73.00	21500	300														
50		09:30:00	73.50	21670	225														
51		10:00:00	74.00	21690	200														
52		10:30:00	74.50	21690	200														
53		11:00:00	75.00	21690	200														
54		11:30:00	75.50	21660	200														
55		12:00:00	76.00	21650	200														
56		12:30:00	76.50	21640	200														
57		13:00:00	77.00	21620	300														

FAST

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
58	1998/07/09	13:30:00	77.50	21620	450				0.000										
59		13:50:00	77.83	Pressure test lubricator.															
60		19:00:00	83.00	21570															
61		19:30:00	83.50	21550															
62		20:00:00	84.00	21550															
63		20:30:00	84.50	21550															
64		21:00:00	85.00	21530															
65		21:30:00	85.50	21530															
66		22:00:00	86.00	21530															
67		22:30:00	86.50	21530															
68		23:00:00	87.00	21530															
69		23:00:00	87.00	Complete static gradient. Pressure test Computalog.															
70	1998/07/10	04:00:00	92.00	Run in hole with Computalog after pressure testing.															
71		04:00:00	92.00	21740															
72		04:30:00	92.50	21530															
73		05:00:00	93.00	21530															
74		05:30:00	93.50	21500	1400														
75	1998/07/10	06:00:00	94.00	21500	750														
76		06:20:00	94.33	Computalog pulling out of hole due to tool trouble.															
77		06:30:00	94.50	21500	750														
78		07:00:00	95.00	21500	900														
79		07:30:00	95.50	21500	1050														
80		07:50:00	95.33	Computalog out of hole. Bleed off lubricator.															
81		09:30:00	97.50	Pressure test lubricator with methanol due to hydrates encountered coming out of hole.															
82		10:30:00	98.50	Pressure test complete. Open master valve.															
83		10:30:00	98.50	21500	1600														
84		11:00:00	99.00	21450	1600														
85	1998/07/10	11:15:00	99.25	Computalog lost communication with tools. Pull out of hole to check.															
86		11:30:00	99.50	22430	1650														
87		11:30:00	99.50	Suspect tubing pressure incorrect due to partially closed needle valve in dead weight manifold.															
88		12:00:00	100.00	21410	1700														
89		12:30:00	100.50	21410	1700														
90		12:32:00	100.53	Computalog out of hole. Bleed off lubricator. Remove and check tools.															
91		13:20:00	101.33	Pressure test lubricator.															
92		13:32:00	101.53	Computalog running in hole to do production log.															
93		13:32:00	101.53	21370	1800														
94		13:40:00	101.67	Bleed off casing.															
95	1998/07/10	14:00:00	102.00	21380															
96		14:20:00	102.50	20650															
97		14:40:00	102.67	Finish bleeding off casing.															
98		15:00:00	103.00	21410	780														
99		15:30:00	103.50	21410	550														
100		15:50:00	103.83	Pressure up to choke.															
101		15:51:00	103.85	21200	800			0.000	0.000	0	0.0	0.0	0.00	23.09	0.00	0.00	20.90		
102		15:52:00	103.87	Open choke slowly to 16.67mm. Casing is open to bleed off expansion.															
103		15:55:00	103.92	19850	800														
104		16:00:00	104.00	17280	800		17.0												
105		16:08:00	104.13	Gas meter in service with a 82.55mm orifice plate.															
106		16:15:00	104.25	17880	1000		18.0	16.670	82.550	700	55.0	20.0	291.20	27.95					
107		16:19:00	104.32	Fluid to surface.															
108		16:30:00	104.50	15250	1400		18.0	16.670	82.550	700	58.0	14.0	302.51	31.04				7	123000
109		16:31:00	104.52	Decrease choke to 15.88mm.															
110		16:45:00	104.75	16110	2000		25.0	15.880	82.550	950	70.5	18.0	380.57	34.60					
111		17:00:00	105.00	16040	1200		27.0	15.880	82.550	950	71.5	20.0	381.91	38.57	6.05	126.26	26.95		
112		17:30:00	105.50	15790	2000		33.0	15.880	82.550	900	70.0	23.0	366.61	46.37				6	121000
113		18:00:00	106.00	15790	2000		38.0	15.880	82.550	950	70.0	26.0	373.72	54.08	10.25	246.00	37.20	6	123000
114		18:10:00	106.17	First rate of production log complete. Decrease choke to 13.49mm.															

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD energy services

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
115	1998/07/10	18:30:00	106.50	17280	1650		40.0	13.490	82.550	950	56.0	26.0	333.55	61.44				6	123000
116		19:00:00	107.00	17540	1300		42.0	13.490	82.550	950	56.0	26.0	333.55	68.39	4.30	103.20	41.50	6	123000
117		19:30:00	107.50	17370	1150		42.0	13.490	82.550	950	56.0	26.0	333.55	75.34				7	121000
118		20:00:00	108.00	17400	950		40.0	13.490	82.550	950	56.0	26.0	333.55	82.29	4.12	98.88	45.62	7	123000
119		20:01:00	108.02	Second rate of production log complete. Decrease choke to 11.11mm.															
120		20:30:00	108.50	19850	550		38.0	11.110	82.550	700	51.5	28.0	277.62	88.66				6	107770
121		20:50:00	108.83	Computalog stuck in hole, Increase choke to 15.88mm.															
122		21:00:00	109.00	15060	400		39.0	15.880	82.550	1200	79.0	24.0	444.45	96.18	1.90	45.60	47.52	6	123000
123		21:00:00	109.00	Shut in well Computalog run to surface.															
124		21:10:00	109.17	20000	200			0.000	0.000	0	0.0	0.0	0.00	96.18	0.00	0.00	47.52		
125		21:15:00	109.25	20350	120														
126		21:20:00	109.33	20490	50														
127		21:25:00	109.42	20950	0														
128		21:30:00	109.50	21300	20														
129		22:00:00	110.00	21550	50														
130		22:30:00	110.50	21750	100														
131		23:00:00	111.00	21830	150														
132		23:05:00	111.08	Computalog at surface.															
133	1998/07/11	00:00:00	112.00	Rig up wireline to pressure test and run recorders.															
134		02:35:00	114.58	Run in with recorders.															
135		02:35:00	114.58	21680	1200														
136		03:00:00	115.00	21680	1250														
137		03:30:00	115.50	21680	1300														
138		04:00:00	116.00	21690	1350														
139		04:01:00	116.02	Rig up RTR and pressure test.															
140		06:19:00	118.32	Run in hole with RTR.															
141		06:19:00	118.32	21620	1600														
142		07:00:00	119.00	21630	1000														
143		07:20:00	119.33	Open casing to bleed off.															
144		07:29:00	119.48	21630	800			0.000	0.000	0	0.0	0.0	0.00	96.18	0.00	0.00	47.52		
145		07:30:00	119.50	Pressure up to choke. Open slowly to 16.67mm.															
146		07:35:00	119.58	21050	650														
147		07:40:00	119.67	16710	600		22.0												
148		07:43:00	119.72	Fluid to surface.															
149		07:45:00	119.75	16270	600		22.0												
150		07:47:00	119.78	Gas meter in service with a 82.55mm orifice plate.															
151		07:58:00	119.97	Divert flow to hydralic choke and adjust to acheive flow rate of 425 10^3m3/d.															
152		08:00:00	120.00	20250	500		27.0	17.000	82.550	900	55.0	18.0	327.14	103.22					
153		08:15:00	120.25	14740	450		30.0	20.000	82.550	1100	66.0	20.0	392.29	106.97					
154		08:30:00	120.50	15120	450	24803	33.0	20.000	82.550	1100	64.0	23.0	384.07	111.01	6.00	141.64	53.52		
155		08:30:00	120.50	Agat lab rep. sample show H2S by tutweiller = 0.7708%															
156		09:00:00	121.00	14580	500	24642	40.0	21.000	82.550	1150	66.0	25.0	396.86	119.15				6	123000
157		09:30:00	121.50	14700	850	24601	44.0	21.000	82.550	1150	68.0	28.0	400.75	127.46	8.68	208.32	62.20	6	123000
158		09:30:00	121.50	Agat lab rep. Sample shows H2S by tutweiller = 1.1165%															
159		10:00:00	122.00	14750	900	24577	49.0	21.000	82.550	1150	68.0	31.0	398.61	135.78				6	121000
160		10:30:00	122.50	14910	950	24554	53.0	21.000	82.550	1150	68.0	34.0	396.51	144.06	7.70	184.80	69.90		
161		11:00:00	123.00	14900	950	24528	56.0	21.000	82.550	1200	68.0	38.0	401.66	152.38				6	123000
162		11:30:00	123.50	15050	800	24505	60.0	21.000	82.550	1200	68.0	40.0	400.28	160.73	8.11	194.64	78.01	6	123000
163	1998/07/11	12:00:00	124.00	15110	650	24479	61.0	21.000	82.550	1200	69.0	42.0	401.88	169.09					
164		12:00:00	124.00	Agat lab rep. sample shows H2S by tutweiller = 1.172 %															
165		12:30:00	124.50	14980	600	24469	62.0	21.000	82.550	1200	69.0	44.0	400.52	177.45	7.20	172.80	85.21		
166		13:00:00	125.00	15180	550	24429	65.0	21.000	82.550	1200	70.0	46.0	402.11	185.81				6	117000
167		13:30:00	125.50	15180	400	24428	66.0	21.000	82.550	1200	71.0	48.0	403.67	194.20	7.25	174.00	92.46		
168		14:00:00	126.00	15180	400	24430	67.0	21.000	82.550	1200	71.0	49.0	403.00	202.60				6	121000
169		14:30:00	126.50	15270	350	24400	68.0	21.000	82.550	1200	71.0	50.0	402.33	210.99	6.81	163.44	99.27		
170		15:00:00	127.00	15360	300	24409	70.0	21.000	82.550	1225	71.0	51.0	405.55	219.41				6	123000
171		15:30:00	127.50	15370	200	24385	72.0	21.000	82.550	1225	71.0	52.0	404.88	227.85	6.70	160.80	105.97		

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: PORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
172	1998/07/11	16:00:00	128.00	15360	200	24387	73.0	21.000	82.550	1225	71.0	53.0	404.22	236.28				6	127000
173		16:30:00	128.50	15360	200	24381	73.0	21.000	82.550	1225	72.0	54.0	406.44	244.72	6.46	155.04	112.43		
174		17:00:00	129.00	15420	300	24362	73.0	21.000	82.550	1225	72.5	55.0	407.21	253.20				6	121000
175		17:30:00	129.50	15440	450	24360	75.0	21.000	82.550	1225	72.5	56.0	406.55	261.67	6.40	153.60	118.83		
176	1998/07/11	18:00:00	130.00	15470	600	24352	76.0	21.000	82.550	1225	72.5	57.0	405.89	270.14					
177		18:00:00	130.00	Agat lab rep. sample shows H2S by lutweiler = 0.8537%															
178		18:30:00	130.50	15480	750	24345	75.0	21.000	82.550	1250	73.0	58.0	410.51	278.64	6.60	158.40	125.43	6	121000
179		19:00:00	131.00	15470	800	24342	75.0	21.000	82.550	1250	73.0	58.0	410.51	287.19					
180		19:30:00	131.50	15500	950	24327	75.0	21.000	82.550	1250	73.5	58.0	411.94	295.76	5.70	136.80	131.13	6	123000
181		20:00:00	132.00	15500	1100	24342	75.0	21.000	82.550	1250	73.5	58.0	411.94	304.34					
182		20:30:00	132.50	15520	1250	24308	78.0	21.000	82.550	1250	73.5	58.0	411.94	312.93	5.59	134.16	136.72	6	121000
183		21:00:00	133.00	15520	1400	24302	79.0	21.000	82.550	1250	73.5	59.0	411.28	321.50					
184		21:30:00	133.50	15535	1600	24300	80.0	21.000	82.550	1250	73.5	59.0	411.28	330.07	5.80	139.20	142.52	6	121000
185		22:00:00	134.00	15550	1600	24284	80.0	21.000	82.550	1250	73.5	59.0	411.28	338.64					
186		22:30:00	134.50	15550	1700	24293	79.0	21.000	82.550	1300	74.0	59.0	420.34	347.30	5.96	143.04	148.48	6	123000
187		23:00:00	135.00	15560	1800	24243	78.0	21.000	82.550	1300	74.0	59.0	420.34	356.06					
188		23:30:00	135.50	15560	1900	24291	76.0	21.000	82.550	1300	74.0	59.0	420.34	364.81	5.45	130.80	153.93	6	127000
189	1998/07/12	00:00:00	136.00	15560	2000	24270	76.0	21.000	82.550	1300	74.0	60.0	419.67	373.56					
190		00:00:00	136.00	Agat rep. H2S = 0.853%															
191		00:30:00	136.50	15580	2050	24273	80.0	21.000	82.550	1300	74.0	60.0	419.67	382.31	6.10	146.40	160.03	6	123000
192		01:00:00	137.00	15580	2100	24269	79.0	21.000	82.550	1300	74.0	60.0	419.67	391.05					
193		01:30:00	137.50	15580	2150	24261	79.0	21.000	82.550	1300	74.5	60.0	421.11	399.81	5.10	122.40	165.13	6	121000
194		02:00:00	138.00	15590	2150	24354	81.0	21.000	82.550	1300	74.5	60.0	421.11	408.58					
195		02:30:00	138.50	15600	200	24248	80.0	21.000	82.550	1300	74.5	61.0	420.43	417.35	5.19	124.56	170.32	6	131000
196		03:00:00	139.00	15600	300	24240	80.0	21.000	82.550	1300	74.5	61.0	420.43	426.11					
197		03:30:00	139.50	15605	375	24239	81.0	21.000	82.550	1300	74.5	61.0	420.43	434.87	5.30	127.20	175.62	6	131000
198		04:00:00	140.00	15605	425	24239	80.0	21.000	82.550	1300	74.5	61.0	420.43	443.62					
199		04:30:00	140.50	15610	700	24238	79.0	21.000	82.550	1300	74.5	61.0	420.43	452.38	4.71	113.04	180.33	6	137000
200		05:00:00	141.00	15610	750	24228	79.0	21.000	82.550	1300	74.5	61.0	420.43	461.14					
201		05:30:00	141.50	15610	800	24238	80.0	21.000	82.550	1300	74.5	61.0	420.43	469.90	5.20	124.80	185.53	6	137000
202	1998/07/12	06:00:00	142.00	15610	875	24237	79.0	21.000	82.550	1300	74.5	61.0	420.43	478.66					
203		06:00:00	142.00	H2S by Kitagawa = 1.1%															
204		06:30:00	142.50	15610	950	24240	80.0	21.000	82.550	1300	74.5	61.0	420.43	487.42	5.12	122.88	190.65	6	135000
205		07:00:00	143.00	15630	1000	24211	80.0	21.000	82.550	1300	74.5	61.0	420.43	496.18					
206		07:30:00	143.50	15600	1050	24209	80.0	21.000	82.550	1300	74.5	61.0	420.43	504.94	5.50	132.00	196.15	6	135000
207		07:45:00	143.75	Samples taking by Agat lab rep shows H2S by lutweiller = 1.0013%															
208		08:00:00	144.00	15620	1100	24207	80.0	21.000	82.550	1300	74.5	61.0	420.43	513.70					
209		08:30:00	144.50	15630	1150	24202	81.0	21.000	82.550	1300	74.5	61.0	420.43	522.46	5.00	120.00	201.15	6	137000
210		08:30:00	144.50	Shut in well and monitor buildups.															
211		08:35:00	144.58	20870	950			0.000	0.000	0	0.0	0.0	0.00	522.46	0.00	0.00	201.15		
212		08:40:00	144.67	21020	400														
213		08:45:00	144.75	21150	100	25890													
214		08:50:00	144.83	21250	150	25921													
215		09:00:00	145.00	21380	200	25952													
216		09:10:00	145.17	21520	150	25981													
217		09:20:00	145.33	21630	150	26005													
218		09:30:00	145.50	21720	150	26025													
219		09:40:00	145.67	21850	150	26042													
220		09:50:00	145.83	21880	150	26059													
221		10:00:00	146.00	21890	150	26073													
222		10:10:00	146.17	21890	150	26089													
223		10:20:00	146.33	21900	150	26102													
224		10:30:00	146.50	21900	150	26114													
225		10:40:00	146.67	21900	150	26125													
226		10:50:00	146.83	21900	200	26136													
227		11:00:00	147.00	21910	200	26146													
228		11:30:00	147.50	21900	200	26173													

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
229	1998/07/12	12:00:00	148.00	21900	250	26196			0.000										
230		12:30:00	148.50	21900	350	26215													
231		13:00:00	149.00	21890	450	26229													
232		13:30:00	149.50	21890	600	26244													
233		14:00:00	150.00	21880	700	26256													
234		14:30:00	150.50	21880	750	26267													
235		15:00:00	151.00	21870	800	26277													
236		15:30:00	151.50	21870	800	26287													
237		16:00:00	152.00	21870	875	26296													
238		16:30:00	152.50	21850	925	26303													
239		17:00:00	153.00	21850	1000	26311													
240		17:30:00	153.50	21840	1000	26317													
241		18:00:00	154.00	21840	1000	26323													
242		18:30:00	154.50	21840	1050	26328													
243		19:00:00	155.00	21840	1100	26333													
244		19:30:00	155.50	21820	1150	26339													
245		20:00:00	156.00	21830	1200	26344													
246		20:30:00	156.50	21815	1200	26348													
247		21:00:00	157.00	21805	1250	26352													
248		21:30:00	157.50	21805	1250	26357													
249		22:00:00	158.00	21805	1300	26361													
250		22:30:00	158.50	21805	1350	26365													
251		23:00:00	159.00	21805	1350	26369													
252		23:30:00	159.50	21805	1380	26372													
253	1998/07/13	00:00:00	160.00	21805	1400	26375													
254		00:30:00	160.50	21800	1400	26379													
255		01:00:00	161.00	21780	1450	26382													
256		01:30:00	161.50	21780	1450	26385													
257		02:00:00	162.00	21760	1500	26388													
258		02:30:00	162.50	21760	1500	26390													
259		03:00:00	163.00	21750	1550	26393													
260		03:30:00	163.50	21750	1550	26395													
261		04:00:00	164.00	21750	1600	26398													
262		04:30:00	164.50	21740	1600	26401													
263		05:00:00	165.00	21740	1600	26403													
264		05:30:00	165.50	21740	1650	26405													
265	1998/07/13	06:00:00	166.00	21730	1650	26408													
266		06:30:00	166.50	21730	1650	26410													
267		07:00:00	167.00	21720	1650	26412													
268		07:30:00	167.50	21720	1650	26423													
269		08:00:00	168.00	21725	1700	26441													
270		08:30:00	168.50	21720	1700	26417													
271		09:00:00	169.00	21710	1750	26419													
272		09:30:00	169.50	21710	1750	26423													
273		10:00:00	170.00	21720	1750	26421													
274		10:30:00	170.50	21720	1750	26421													
275		11:00:00	171.00	21720	1850	26421													
276		11:30:00	171.50	21700	1900	26427													
277	1998/07/13	12:00:00	172.00	21690	1800	26419													
278		12:30:00	172.50	21680	1800	26430													
279		13:00:00	173.00	21680	1800	26429													
280		13:30:00	173.50	21680	1800	26433													
281		14:00:00	174.00	21680	1850	26437													
282		14:30:00	174.50	21680	1850	26435													
283		15:00:00	175.00	21680	1875	26437													
284		15:30:00	175.50	21670	1875	26439													
285		16:00:00	176.00	21670	1875	26444													

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
286	1998/07/13	16:30:00	176.50	21670	1900	26437			0.000										
287		17:00:00	177.00	21670	1900	26434													
288		17:30:00	177.50	21660	1900	26443													
289	1998/07/13	18:00:00	178.00	21660	1950	26444													
290		18:30:00	178.50	21655	1950	26445													
291		19:00:00	179.00	21650	1990	26446													
292		19:30:00	179.50	21650	1990	26447													
293		20:00:00	180.00	21650	1990	26448													
294		20:30:00	180.50	21650	2000	26449													
295		21:00:00	181.00	21645	2000	26450													
296		21:30:00	181.50	21645	2000	26451													
297	1998/07/13	22:00:00	182.00	21645	2000	26452													
298		22:30:00	182.50	21645	2000	26453													
299		23:00:00	183.00	21645	2000	26454													
300		23:30:00	183.50	21645	2000	26455													
301	1998/07/14	00:00:00	184.00	21645	2000	26455													
302		00:30:00	184.50	21645	2000	26456													
303		01:00:00	185.00	21640	2050	26457													
304		01:30:00	185.50	21640	2050	26457													
305		02:00:00	186.00	21640	2050	26458													
306		02:30:00	186.50	21635	2050	26459													
307		03:00:00	187.00	21635	2050	26460													
308		03:30:00	187.50	21620	2050	26460													
309		04:00:00	188.00	21620	2050	26461													
310		04:30:00	188.50	21620	2100	26462													
311		05:00:00	189.00	21620	2100	26462													
312		05:30:00	189.50	21615	2100	26463													
313		06:00:00	190.00	21615	2100	26464													
314		06:30:00	190.50	21615	2100	26464													
315		07:00:00	191.00	21615	2100	26465													
316		07:30:00	191.50	21610	2100	26465													
317		08:00:00	192.00	21610	2100	26466													
318		08:30:00	192.50	21610	2100	26466													
319		08:30:00	192.50	Run RTR to surface and rig up slick line to pull recorders.															
320		09:00:00	193.00	21610	2125														
321		11:30:00	195.50	21610	2150														
322		12:00:00	196.00	21610	2175														
323		12:30:00	196.50	21570	2150														
324		13:30:00	197.50	21570	2150														
325		14:00:00	198.00	21570	2175														
326		15:30:00	199.50	21560	2175														
327		16:00:00	200.00	21570	2175														
328		16:30:00	200.50	21570	2175														
329		17:00:00	201.00	21580	2175														
330		17:30:00	201.50	21575	2175														
331	1998/07/14	18:00:00	202.00	21570	2200														
332		18:00:00	202.00	Bleed off casing pressure.															
333		18:30:00	202.50	21565	2100														
334		19:00:00	203.00	21570	1950														
335		19:30:00	203.50	21570	1600														
336		20:00:00	204.00	21570	1400														
337		20:05:00	204.08	Genco out of hole. Shut in well and bleed off lubricator.															
338		20:20:00	204.33	Genco rigs off of wellhead.															
339		20:30:00	204.50	Computalog gets ready to rig in.															
340		21:00:00	205.00	Safety meeting held.															
341	1998/07/14	21:30:00	205.50	Start to pressure test BOP's.															
342	1998/07/15	02:30:00	210.50	Dowell Schlumberger to pressure test Computalog's lubricator and flowline.															

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
343	1998/07/15	03:00:00	211.00	Computalog starts to run in with perf's.															
344		04:05:00	212.08	Perf guns on bottom. Pressure up to choke and record opening pressure.															
345		04:08:00	212.13	21540	650			0.000	0.000	0	0.0	0.0	0.00	522.46	0.00	0.00	201.15		
346		04:10:00	212.17	Open well to flow on a 21.03mm choke.															
347		04:14:00	212.23	Meter in service with a 82.55mm orifice plate.															
348		04:15:00	212.25	13000	600			21.030	82.550	2600	86.0	0.0	712.20	525.92					
349		04:20:00	212.33	12150	600														
350		04:25:00	212.42	12750	600			21.030	82.550	2100	69.0	0.0	571.43	530.38	1.77	149.93	202.92		
351		04:28:00	212.47	Shut in wing. Computalog waits for 15min before pulling out of well.															
352		04:35:00	212.58	20080	600			0.000	0.000	0	0.0	0.0	0.00	530.38					
353		04:40:00	212.67	20340	600														
354		04:45:00	212.75	20540	600														
355		05:00:00	213.00	20950	575														
356		05:15:00	213.25	21190	575														
357		05:30:00	213.50	21350	550														
358	1998/07/15	06:00:00	214.00	21590	550														
359		06:10:00	214.17	Computalog out of hole. Shut in well and remove lubricator to set up second set of perf guns.															
360		08:00:00	216.00	21595	400														
361		08:30:00	216.50	21600	100														
362		09:00:00	217.00	21580	450														
363		09:24:00	217.40	21585	500										0.00	0.00	202.92		
364		09:24:00	217.40	Computalog on bottom. Begin 15min flow bringing choke to 15.08mm.															
365		09:29:00	217.48	18170	500		11.0	15.080											
366		09:34:00	217.57	18080	550		23.0	15.080											
367		09:39:00	217.65	18010	600		26.0	15.080											
368		09:39:00	217.65	Perforate and shut in well. Wait on bottom for 15min then pull out of hole.											0.30	28.80	203.22		
369		09:45:00	217.75	21480	600														
370		09:50:00	217.83	21500	600														
371		09:55:00	217.92	21510	600														
372		10:00:00	218.00	21520	700														
373		10:15:00	218.25	21540	700														
374		10:30:00	218.50	21560	700														
375		11:00:00	219.00	21580	800														
376		11:15:00	219.25	Computalog at surface. Guns did not fire rig up new set.															
377		11:30:00	219.50	21575	850														
378		12:00:00	220.00	21565	875														
379		12:30:00	220.50	21580	950														
380		13:00:00	221.00	21580	1000														
381		13:30:00	221.50	21520	1050														
382		13:30:00	221.50	Run in hole with new set of perf guns.															
383		14:00:00	222.00	21470	1150														
384		14:30:00	222.50	21470	1200										0.00	0.00	203.22		
385		14:36:00	222.60	Guns on bottom. Open well to flow on a 13.49mm choke.															
386		14:36:00	222.60					0.000	0.000	0	0.0	0.0	0.00	530.38					
387		14:41:00	222.68	17740	1200		24.0	13.490											
388		14:46:00	222.77	17890	1250		25.0	13.490							0.20	18.00	203.42		
389		14:47:00	222.78	Shut in well and perforate.															
390		14:52:00	222.87	21470	1300														
391		14:57:00	222.95	21510	1300														
392		15:02:00	223.03	21530	1350														
393		15:15:00	223.25	21560	1350														
394		15:30:00	223.50	21580	1350														
395		15:45:00	223.75	21585	1400														
396		16:00:00	224.00	21585	1400														
397		16:30:00	224.50	Computalog at surface. Rig them off and rig on Genco.															
398		19:00:00	227.00	Genco rigged onto wellhead and start to pressure test.															
399		20:05:00	228.08	Genco run hole with recorders.															

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
400	1998/07/15	22:10:00	230.17	Pressure up to choke and record opening pressures.															
401		22:13:00	230.22	21570	1850			0.000	0.000	0	0.0	0.0	0.00	530.38	0.00	0.00	203.42		
402		22:15:00	230.25	Start to bleed off casing slowly.															
403		22:20:00	230.33	Open well to flow on a 21mm choke.															
404		22:25:00	230.42	13350	1700														
405		22:30:00	230.50	14090	1650														
406		22:30:00	230.50	Meter in service with a 82.55mm orifice plate.															
407		22:35:00	230.58	14700	1600		24.0												
408		22:36:00	230.60	Fluid to surface.															
409		22:45:00	230.75	14400	1450		27.0	21.000	82.550	1450	69.0	5.0	470.92	540.84					
410		23:00:00	231.00	14200	1450		30.0	21.000	82.550	1450	69.0	8.0	468.07	545.73	4.40	134.81	207.82	6	129000
411		23:15:00	231.25	14220	1450		32.0	21.000	82.550	1450	69.0	10.0	466.20	550.60					
412		23:30:00	231.50	14250	1450		35.0	21.000	82.550	1450	68.5	12.0	462.65	555.43					
413	1998/07/16	00:00:00	232.00	14390	1450		40.0	21.000	82.550	1450	69.0	17.0	459.87	565.04	9.16	219.84	216.98	6	133000
414		00:30:00	232.50	14465	1300		46.0	21.000	82.550	1500	69.5	22.0	464.59	574.67					
415		01:00:00	233.00	14550	1000		48.0	21.000	82.550	1500	70.0	26.0	462.91	584.34	7.30	175.20	224.28	6	135000
416		01:30:00	233.50	14600	700		52.0	21.000	82.550	1500	69.9	30.0	459.19	593.94					
417		02:00:00	234.00	14680	550		54.0	21.000	82.550	1500	70.5	33.0	458.69	603.50	9.70	232.80	233.98	6	133000
418		02:25:00	234.42	Genco starts to do production logging.															
419		02:30:00	234.50	H2S by tutweiler = 1.150%															
420		02:30:00	234.50	14735	425		56.0	21.000	82.550	1525	70.5	35.0	459.86	613.07					
421		03:00:00	235.00	14795	300		59.0	21.000	82.550	1550	70.5	38.0	461.82	622.67	6.94	166.56	240.92	6	133000
422		03:30:00	235.50	14820	200		62.0	21.000	82.550	1550	70.7	41.0	460.06	632.28					
423		04:00:00	236.00	14880	400		66.0	21.000	82.550	1550	71.0	44.0	458.66	641.85	6.55	157.20	247.47	6	133000
424		04:30:00	236.50	14940	450		68.0	21.000	82.550	1550	71.0	47.0	456.31	651.38					
425		05:00:00	237.00	14955	550		70.0	21.000	82.550	1550	72.0	48.0	458.77	660.91	6.31	151.44	253.78	6	133000
426		05:30:00	237.50	14975	600		70.0	21.000	82.550	1550	72.5	52.0	457.30	670.45					
427		06:00:00	238.00	14975	700		72.0	21.000	82.550	1550	72.5	52.0	457.30	679.98	6.60	158.40	260.38	6	135000
428		06:30:00	238.50	14990	825		74.0	21.000	82.550	1550	72.5	53.0	456.54	689.50					
429		07:00:00	239.00	15015	900		75.0	21.000	82.550	1550	72.5	54.0	455.78	699.00	6.05	145.20	266.43	6	135000
430		07:30:00	239.50	15020	1050		76.0	21.000	82.550	1550	72.5	55.0	455.03	708.49					
431		08:00:00	240.00	15040	1200		75.0	21.000	82.550	1550	73.0	57.0	455.12	717.97	5.88	141.12	272.31	6	131000
432		08:30:00	240.50	15050	1300		78.0	21.000	82.550	1550	74.0	57.0	458.27	727.48					
433		09:00:00	241.00	15065	1400		78.0	21.000	82.550	1550	74.0	58.0	457.52	737.02	5.70	136.80	278.01	6	131000
434		09:30:00	241.50	15070	1550		78.0	21.000	82.550	1600	74.0	59.0	463.75	746.62					
435		10:00:00	242.00	15090	1650		78.0	21.000	82.550	1600	74.0	60.0	463.00	756.27	6.27	150.48	284.28	6	131000
436		10:30:00	242.50	15070	1800		79.0	21.000	82.550	1600	74.0	60.0	463.00	765.92					
437		11:00:00	243.00	15090	1950		79.0	21.000	82.550	1600	74.0	61.0	462.25	775.56	5.70	136.80	289.98	6	131000
438		11:30:00	243.50	15050	2050		79.0	21.000	82.550	1600	74.0	61.0	462.25	785.19					
439		12:00:00	244.00	15100	2100		79.0	21.000	82.550	1600	74.5	61.0	463.83	794.83	5.78	138.72	295.76	6	135000
440		12:30:00	244.50	15115	2150		79.0	21.000	82.550	1600	74.5	61.0	463.83	804.50					
441		13:00:00	245.00	15120	2400		80.0	21.000	82.550	1600	74.5	62.0	463.08	814.15	5.50	132.00	301.26	6	133000
442		13:30:00	245.50	15130	2450		81.0	21.000	82.550	1600	74.5	62.0	463.08	823.80					
443		14:00:00	246.00	15115	2600		81.0	21.000	82.550	1600	74.5	62.0	463.08	833.45	5.89	141.36	307.15	6	135000
444		14:30:00	246.50	15130	2650		80.0	21.000	82.550	1600	74.5	63.0	462.33	843.09					
445		15:00:00	247.00	15110	2750		80.0	21.000	82.550	1600	74.5	63.0	462.33	852.72	5.30	127.20	312.45	6	133000
446		15:30:00	247.50	15155	2850		80.0	21.000	82.550	1600	74.5	63.0	462.33	862.35					
447		15:55:00	247.92	Decrease choke to 8.00mm.															
448		16:00:00	248.00	20210	2500		78.0	8.000	82.550	950	10.0	60.0	132.26	868.54	4.80	115.20	317.25	6	133000
449		16:30:00	248.50	20640	1350		74.0	8.000	82.550	950	9.5	58.0	129.31	871.27					
450		17:00:00	249.00	20870	750		70.0	8.000	82.550	900	12.0	46.0	144.57	874.12	2.62	62.88	319.87	6	135000
451		17:30:00	249.50	20890	650		67.0	8.000	82.550	850	12.0	40.0	142.25	877.11	0.10	4.80	319.97		
452		17:35:00	249.58	Metz line parted. Shut in wing valve.															
453		17:40:00	249.67	21510	600														
454	1998/07/16	18:00:00	250.00	21800	400														
455		18:30:00	250.50	21820	300														
456		19:00:00	251.00	21870	300														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
457	1998/07/16	19:30:00	251.50	21870	500				82.550										
458		20:00:00	252.00	21870	750														
459		20:30:00	252.50	21870	800														
460		21:00:00	253.00	21870	900														
461		21:30:00	253.50	21870	1000														
462		22:00:00	254.00	21870	1100														
463		22:30:00	254.50	21870	1200														
464		23:00:00	255.00	21870	1300														
465		23:30:00	255.50	21870	1400														
466	1998/07/17	00:00:00	256.00	21830	1400														
467		00:30:00	256.50	21830	1400														
468		01:00:00	257.00	21830	1500														
469		01:30:00	257.50	21830	1600														
470		02:00:00	258.00	21830	1600														
471		02:30:00	258.50	21810	1600														
472		03:00:00	259.00	21800	1700														
473		03:30:00	259.50	21800	1700														
474		04:00:00	260.00	21800	1750														
475		04:30:00	260.50	21800	1800														
476		05:00:00	261.00	21800	1800														
477		05:25:00	261.42	Open casing to bleed off slowly.															
478		05:30:00	261.50	21800	1825														
479	1998/07/17	06:00:00	262.00	21780	1850														
480		06:00:00	262.00	H2S sample taken on casing H2S = 0%															
481		06:30:00	262.50	21780	1500														
482		07:00:00	263.00	21780	1550														
483		07:30:00	263.50	21780	1600														
484		08:00:00	264.00	21780	1650														
485		08:30:00	264.50	21770	1700														
486		09:00:00	265.00	21770	1750														
487		09:30:00	265.50	21760	1800														
488		10:00:00	266.00	21740	1850														
489		10:30:00	266.50	21750	1900														
490		11:00:00	267.00	21750	1900														
491		11:30:00	267.50	21730	1950														
492	1998/07/17	12:00:00	268.00	21730	1975														
493		12:30:00	268.50	21730	1975														
494		12:31:00	268.52	Bleed of casing.															
495		13:00:00	269.00	21730	1000														
496		13:30:00	269.50	21730	700														
497		14:00:00	270.00	21730	700														
498		14:30:00	270.50	21730	600														
499		15:00:00	271.00	21720	500														
500		15:30:00	271.50	21720	400														
501		15:30:00	271.50	Shut in casing.															
502		16:00:00	272.00	21720	600														
503		16:30:00	272.50	21720	800														
504		17:00:00	273.00	21700	900														
505		17:30:00	273.50	21700	1000														
506	1998/07/17	18:00:00	274.00	21700	1050														
507		18:30:00	274.50	21690	1200														
508		19:00:00	275.00	21690	800														
509		19:30:00	275.50	21690	600														
510		20:00:00	275.00	21680	500														
511		20:30:00	276.50	21680	400														
512		21:00:00	277.00	21680	400														
513		21:30:00	277.50	21680	400														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: PORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
514	1998/07/17	22:00:00	278.00	21670	400				82.550										
515		22:30:00	278.50	21670	400														
516		23:00:00	279.00	21670	400														
517		23:30:00	279.50	21670	400														
518	1998/07/18	00:00:00	280.00	21670	400														
519		00:30:00	280.50	21660	400														
520		01:00:00	281.00	21660	400														
521		01:00:00	281.00	Safety meeting held.															
522		01:30:00	281.50	21670	375														
523		02:00:00	282.00	21665	375														
524		02:30:00	282.50	21665	400														
525		03:00:00	283.00	21660	400														
526		03:30:00	283.50	21660	400														
527		03:30:00	283.50	Shut in well to rig in Genco and do pressure test.															
528		05:00:00	285.00	Top BOP's not holding															
529	1998/07/18	06:00:00	286.00	Rig on BOP's and pressure test.															
530		06:30:00	286.50	Rig on lubricator and pressure test.															
531		07:20:00	287.33	Run in with slick line to retrieve RTR's.															
532		07:30:00	287.50	21620	0														
533		08:30:00	288.50	21625	0														
534		09:45:00	289.75	21590	0														
535		10:00:00	290.00	21590	900														
536		10:00:00	290.00	Bleed off casing.															
537		12:30:00	292.50	21540	450														
538		13:00:00	293.00	21550	600														
539		14:00:00	294.00	21520	750														
540		15:00:00	295.00	21540	650														
541		15:15:00	295.25	Fishing tool stuck in hole.															
542	1998/07/18	19:00:00	299.00	Tool out of hole. Shut in and rig off of wellhead to inspect.															
543		20:00:00	300.00		600														
544		20:30:00	300.50		600														
545		21:00:00	301.00		600														
546		21:00:00	301.00	Rig Genco in and try to run in hole.															
547		21:30:00	301.50	Pressure test BOP's and lubricator.															
548		22:00:00	302.00	Wireline cannot run in hole. Rig off and inspect. Piece of wire found above top master valve.															
549		22:30:00	302.50	Wireline rig and pressure test BOP's and lubricator.															
550		23:00:00	303.00	Wireline try to run in. Unable to do so. Rig off of wellhead and inspect BOP's.															
551		23:30:00	303.50	BOP s damaged unable to use.															
552	1998/07/19	00:00:00	304.00	Function test ESD valve. Valve failed to close. Unable to continue operation until new valve arrives.															
553		02:00:00	306.00	Open top master and record buildups.															
554		02:00:00	306.00	21590	500														
555		02:30:00	306.50	21555	500														
556		03:00:00	307.00	21580	500														
557		03:30:00	307.50	21580	500														
558		04:00:00	308.00	21580	500														
559		04:30:00	308.50	21580	500														
560		05:00:00	309.00	21575	500														
561		05:30:00	309.50	21575	500														
562	1998/07/19	06:00:00	310.00	21570	500														
563		06:30:00	310.50	21570	450														
564		07:00:00	311.00	21570	450														
565		07:30:00	311.50	21570	425														
566		08:00:00	312.00	21580	475														
567		08:30:00	312.50	21570	600														
568		09:00:00	313.00	21560	600														
569		09:30:00	313.50	21560	650														
570		10:00:00	314.00	21555	800														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
571	1998/07/19	10:30:00	314.50	21550	850				82.550										
572		11:00:00	315.00	21550	900														
573		11:30:00	315.50	21550	900														
574		12:00:00	316.00	21540	950														
575		12:30:00	316.50	21540	900														
576		13:00:00	317.00	21540	850														
577		13:30:00	317.50	21540	800														
578		14:00:00	318.00	21540	750														
579		14:30:00	318.50	21540	700														
580		15:00:00	319.00	21530	500														
581		15:30:00	319.50	21540	500														
582		16:00:00	320.00	21530	550														
583		16:30:00	320.50	21530	500														
584		17:00:00	321.00	21530	600														
585		17:30:00	321.50	21530	600														
586		18:00:00	322.00	21530	500														
587		18:30:00	322.50	21530	500														
588		19:00:00	323.00	21510	450														
589		19:30:00	323.50	21510	450														
590		20:00:00	324.00	21510	400														
591		20:30:00	324.50	21510	400														
592		21:00:00	325.00	21510	450														
593		21:30:00	325.50	21500	450														
594	1998/07/19	22:00:00	326.00	21490	450														
595		22:30:00	326.50	21490	450														
596		23:00:00	327.00	21480	500														
597		23:30:00	327.50	21480	500														
598	1998/07/20	00:00:00	328.00	21470	500														
599		00:30:00	328.50	21470	500														
600		01:00:00	329.00	21460	500														
601		01:30:00	329.50	21460	500														
602		02:00:00	330.00	21460	500														
603		02:30:00	330.50	21460	500														
604		03:00:00	331.00	21450	500														
605		03:30:00	331.50	21450	500														
606		04:00:00	332.00	21440	500														
607		04:30:00	332.50	21440	500														
608		05:00:00	333.00	21440	500														
609		05:30:00	333.50	21440	500														
610	1998/07/20	06:00:00	334.00	21440	500														
611		06:30:00	334.50	21430	500														
612		07:00:00	335.00	21430	500														
613		07:30:00	335.50	21420	500														
614		08:00:00	336.00	21420	525														
615		08:30:00	336.50	21420	550														
616		09:00:00	337.00	21420	575														
617		09:30:00	337.50	21420	575														
618		10:00:00	338.00	21420	575														
619		10:30:00	338.50	21420	575														
620		11:00:00	339.00	21420	575														
621		11:30:00	339.50	21420	575														
622	1998/07/20	12:00:00	340.00	21415	575														
623		12:30:00	340.50	21410	575														
624		13:00:00	341.00	21410	575														
625		13:30:00	341.50	21410	575														
626		14:00:00	342.00	21410	575														
627		14:30:00	342.50	21400	575														

Fast

Job Number: GP96-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: F-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
628	1998/07/20	15:00:00	343.00	Rig up ESD and lubricator.															
629	1998/07/20	18:00:00	346.00	Pressure test flowline.															
630		19:35:00	347.58	Wireline begin to run in hole.															
631		20:10:00	348.17	Latched onto Metz line.															
632		22:20:00	350.33	Start retrieving Metz line out of hole.															
633		22:30:00	350.50	21370	600				82.550										
634		23:00:00	351.00	21370	600														
635		23:30:00	351.50	21370	600														
636	1998/07/21	00:00:00	352.00	21370	550														
637		00:30:00	352.50	21370	550														
638		01:00:00	353.00	21370	550														
639		01:30:00	353.50	21370	550														
640		02:00:00	354.00	21370	550														
641		02:30:00	354.50	21370	550														
642		03:00:00	355.00	21370	550														
643		03:30:00	355.50	21365	550														
644		04:00:00	356.00	21360	550														
645		04:30:00	356.50	21360	550														
646		05:00:00	357.00	21340	550														
647		05:00:00	357.00	Shut in well. Bleed off lubricator and rig out Genco.															
648	1998/07/21	06:00:00	358.00	Put top wellhead flange and cap on.															
649		06:00:00	358.00	Function test ESD. Fuul open to full close and returned to open.															
650		06:30:00	358.50	Pressure test wellhead cap.															
651		07:00:00	359.00	21310	450														
652		07:30:00	359.50	21330	450														
653		08:00:00	360.00	21320	475														
654		08:30:00	360.50	21330	475														
655		09:00:00	361.00	21330	475														
656		09:30:00	361.50	21330	475														
657		10:00:00	362.00	21330	475														
658		10:30:00	362.50	21320	500														
659		11:00:00	363.00	21320	500														
660		11:30:00	363.50	21320	475														
661	1998/07/21	12:00:00	364.00	21320	475														
662		12:30:00	364.50	21310	475														
663		13:00:00	365.00	21310	475														
664		13:00:00	365.00	Rig up Genco															
665		15:00:00	367.00	Run in hole to start gradiant.															
666		15:00:00	367.00	21270	475														
667		15:30:00	367.50	21270	450														
668		16:00:00	368.00	21270	450														
669		16:30:00	368.50	21310	450														
670		17:00:00	369.00	21320	425														
671		17:30:00	369.50	21320	425														
672		18:00:00	370.00	21340	425														
673		18:30:00	370.50	21340	450														
674		19:00:00	371.00	21340	450														
675		19:30:00	371.50	21340	450														
676		20:00:00	372.00	21340	450														
677		20:30:00	372.50	21340	450														
678		21:00:00	373.00	21340	450														
679		21:30:00	373.50	21340	450														
680		21:55:00	373.92	Open wing															
681	1998/07/21	22:00:00	374.00	21340	450			0.000	0.000	0	0.0	0.0	0.00	877.11	0.00	0.00	319.97		
682		22:00:00	374.00	Open choke to flow on a 15.08mm.															
683		22:05:00	374.08	17400	450		20.0												
684		22:07:00	374.12	Meter in service with a 82.55mm orifice plate.															

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
685	1998/07/21	22:10:00	374.17	17300	450		21.0		0.000										
686		22:15:00	374.25	15850	450		22.0	15.080	82.550	1160	56.0	-4.0	387.81	881.15					
687		22:16:00	374.27	Fluid to surface.															
688		22:30:00	374.50	16200	500		24.0	15.080	82.550	1275	61.0	1.0	419.29	885.35					
689		22:45:00	374.75	15300	550		27.0	15.080	82.550										
690		22:51:00	374.85	Decrease choke to 13.50mm.															
691		23:00:00	375.00	17500	600		28.0	13.500	82.550	1050	52.0	3.0	351.35	893.38	7.30	175.20	327.27	6	129000
692		23:02:00	375.03	Decrease choke to 11.90mm.															
693		23:26:00	375.43	Hydrate forming at choke															
694		23:30:00	375.50	17100	600		29.0	15.080	82.550	1500	70.0	-6.0	493.51	902.18					
695		23:36:00	375.60	Hydrate still in choke															
696	1998/07/22	00:00:00	376.00	14700	625		35.0	17.460	82.550	1500	69.0	12.0	472.02	912.24	5.13	123.12	332.40	6	133000
697		00:30:00	376.50	14750	625		40.0	17.460	82.550	1475	69.6	17.0	465.70	922.01					
698		01:00:00	377.00	14750	625		45.0	17.460	82.550	1500	69.3	22.0	464.02	931.69	7.60	182.40	340.00	6	137000
699		01:30:00	377.50	14800	450		48.0	17.460	82.550	1500	68.9	26.0	459.21	941.31					
700		02:00:00	378.00	14870	400		51.0	17.460	82.550	1490	69.5	30.0	456.39	950.85	7.48	179.52	347.48	6	135000
701		02:30:00	378.50	14920	400		54.0	17.460	82.550	1490	69.5	34.0	453.11	960.32					
702		03:00:00	379.00	14970	200		56.0	17.460	82.550	1500	69.5	36.0	452.95	969.76	6.60	158.40	354.08	6	138000
703		03:30:00	379.50	15020	350		60.0	17.460	82.550	1500	69.9	39.0	451.87	979.18					
704		03:39:00	379.65	Decrease choke size to 8.00mm.															
705		03:54:00	379.90	Change over to the adjustable to ensure same gas rate. Choke size 8.33mm															
706		04:00:00	380.00	20450	300		54.0	8.330	82.550	400	19.5	33.0	132.51	985.27	3.83	91.92	357.91	6	133000
707		04:05:00	380.08	Hydr. choke closed to zero															
708		04:06:00	380.10	Switch back to hydr. choke (8.00mm) and check gas rate.															
709		04:15:00	380.25	Difference in gas rate. Switch back to adjustable choke(8.33mm).															
710		04:30:00	380.50	20170	250		54.0	8.330	82.550	550	29.0	27.0	186.99	988.60					
711		04:31:00	380.52	Decrease choke to 7.54mm.															
712		05:00:00	381.00	20790	200		52.0	7.540	82.550	450	24.0	18.0	158.57	992.20	0.45	10.80	358.36	6	135000
713		05:00:00	381.00	H2S by tutweiller = 0.894%															
714		05:30:00	381.50	21050	200		50.0	7.540	82.550	450	17.0	16.0	133.67	995.24					
715		06:00:00	382.00	21100	200		48.0	7.540	82.550	450	17.0	12.0	134.64	998.04	0.25	6.00	358.61	6	133000
716		06:30:00	382.50	21100	200		47.0	7.540	82.550	450	17.0	8.0	135.63	1000.85					
717		07:00:00	383.00	21050	200		46.0	7.540	82.550	450	17.0	6.0	136.14	1003.68	0.05	1.20	358.66	6	133000
718		07:30:00	383.50	21040	450		44.0	7.540	82.550	450	17.0	5.0	136.39	1006.52					
719		08:00:00	384.00	21040	550		44.0	7.540	82.550	450	17.0	4.0	136.65	1009.37	0.10	2.40	358.76	6	131000
720		08:05:00	384.08	Wireline stuck in hole. Shut in well pumping methanol down the tubing.															
721		08:10:00	384.17	21650	600			0.000	0.000	0	0.0	0.0	0.00	1009.37	0.00	0.00	358.76		
722		08:15:00	384.25	21650	800														
723		08:20:00	384.33	21700	850														
724		08:30:00	384.50	21770	900														
725		08:45:00	384.75	21770	925														
726		10:00:00	386.00	21770	600														
727		10:30:00	386.50	21770	625														
728		11:00:00	387.00	21770	650														
729		11:30:00	387.50	21770	700														
730		12:00:00	388.00	21770	700														
731		12:00:00	388.00	Pressure test BOP and lubricator.															
732		14:00:00	390.00	21570	900														
733		16:00:00	392.00	21620	1000														
734		16:30:00	392.50	21580	975														
735		17:30:00	393.50	21570	975														
736	1998/07/22	18:00:00	394.00	21570	975														
737		19:30:00	395.50	21570	800														
738		20:00:00	396.00	21570	800														
739		20:30:00	396.50	21600	800														
740		21:00:00	397.00	21600	800														
741		21:30:00	397.50	21600	800														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
742	1998/07/22	22:00:00	398.00	21600	800				0.000										
743		22:30:00	398.50	21600	800														
744		23:00:00	399.00	21600	800														
745		23:30:00	399.50	Safety meeting held.															
746		23:30:00	399.50	21600	800														
747	1998/07/23	00:00:00	400.00	21570	800														
748		00:30:00	400.50	21570	800														
749		01:00:00	401.00	21570	800														
750		01:30:00	401.50	21570	800														
751		02:00:00	402.00	21570	800														
752		02:30:00	402.50	21530	800														
753		03:00:00	403.00	21530	800														
754		03:30:00	403.50	21530	775														
755		04:00:00	404.00	21530	750														
756		04:30:00	404.50	21530	750														
757		05:00:00	405.00	21530	750														
758		05:30:00	405.50	21500	750														
759	1998/07/23	06:00:00	406.00	21500	750														
760		06:01:00	406.02	Pressure test lubricator.															
761		08:00:00	408.00	21500	700														
762		08:30:00	408.50	21500	700														
763		09:00:00	409.00	21510	700														
764		09:30:00	409.50	21520	700														
765		10:00:00	410.00	21520	700														
766		10:30:00	410.50	21520	700														
767		11:00:00	411.00	21520	700														
768		12:30:00	412.50	Wireline retrieve tool.															
769		15:25:00	415.42	Obtain opening pressure on well.															
770		15:25:00	415.42	21510	800			0.000	0.000	0	0.0	0.0	0.00	1009.37	0.00	0.00	358.76		
771		15:30:00	415.50	Pressure up to choke															
772		15:33:00	415.55	Increase choke to 12.70mm.															
773		15:35:00	415.58	21200	850		24.0	8.730											
774		15:40:00	415.67	15500	850		24.0	8.730											
775		15:41:00	415.68	Increase choke to 17.46mm.															
776		15:45:00	415.75	14450	850		25.0	17.460	82.550										
777		15:45:00	415.75	Open choke to 25.40mm.															
778		15:50:00	415.83	Fluid to surface.															
779		15:53:00	415.88	Meter in service with a 82.55mm orifice plate.															
780		16:00:00	416.00	11600	1250		34.0	25.400	82.550	4400	55.0	21.0	714.72	1026.74	4.40	181.03	363.16	6	140000
781		16:15:00	416.25	11500	1500		38.0	25.400	82.550	4300	55.6	25.0	703.40	1034.12					
782		16:30:00	416.50	11100	1800		42.0	25.400	82.550	4100	55.0	30.0	674.72	1041.30	6.55	314.40	369.71		
783		17:00:00	417.00	10950	2600		53.0	25.400	82.550	4000	53.0	43.0	636.54	1054.96	6.20	297.60	375.91	6	131000
784		17:30:00	417.50	10900	3500		60.0	25.400	82.550	4000	52.0	52.0	619.61	1068.04	7.00	336.00	382.91		
785	1998/07/23	18:00:00	418.00	10710	4200		64.0	25.400	82.550	4000	52.0	58.0	612.75	1080.88	8.65	415.20	391.56	6	127000
786		18:30:00	418.50	10600	5200		69.0	25.400	82.550	4050	51.8	63.0	609.92	1093.62					
787		19:00:00	419.00	10475	1550		68.0	25.400	82.550	3850	51.5	64.0	591.56	1106.13	11.27	270.48	402.83	6	135000
788		19:14:00	419.23	Increase choke to 26.99mm.															
789		19:16:00	419.27	Increase choke to 29.37mm.															
790		19:22:00	419.37	Increase choke to 31.75mm.															
791		19:30:00	419.50	9545	1300		72.0	31.750	82.550	3900	52.5	68.0	597.03	1118.51					
792		20:00:00	420.00	9520	1000		76.0	31.750	82.550	3975	53.5	72.0	604.40	1131.03	14.28	342.72	417.11	6	135000
793		20:30:00	420.50	9515	800		74.0	31.750	82.550	3975	53.5	74.0	602.34	1143.60					
794		21:00:00	421.00	9535	600		79.0	31.750	82.550	4000	54.0	77.0	604.02	1156.17	12.55	301.20	429.66	6	137000
795		21:30:00	421.50	9545	500		78.0	31.750	82.550	4000	54.0	78.0	603.01	1168.74					
796		22:00:00	422.00	9545	450		82.0	31.750	82.550	4025	54.0	84.0	598.96	1181.26	12.21	293.04	441.87	6	144000
797		22:30:00	422.50	9555	350		84.0	31.750	82.550	4025	54.0	82.0	600.92	1193.76					
798		23:00:00	423.00	9570	250		83.0	31.750	82.550	4050	54.5	83.0	604.61	1206.32	10.00	240.00	451.87	6	140000

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
799	1998/07/23	23:30:00	423.50	9580	250		83.0	31.750	82.550	4125	55.0	83.0	613.07	1219.00					
800	1998/07/24	00:00:00	424.00	9585	250		81.0	31.750	82.550	4150	55.0	84.0	613.94	1231.78	10.50	252.00	462.37	6	140000
801		00:30:00	424.50	9590	250		79.0	31.750	82.550	4150	55.2	84.0	615.06	1244.58					
802		01:00:00	425.00	9590	250		80.0	31.750	82.550	4175	55.5	84.0	618.62	1257.43	10.59	254.16	472.96	6	138000
803		01:30:00	425.50	9610	300		82.0	31.750	82.550	4175	55.5	85.0	617.61	1270.31					
804		02:00:00	426.00	9635	300		82.0	31.750	82.550	4175	56.0	86.0	619.38	1283.20	10.91	261.84	483.87	6	152000
805		02:30:00	426.50	9645	375		84.0	31.750	82.550	4200	56.0	87.0	620.25	1296.11					
806		03:00:00	427.00	9645	400		82.0	31.750	82.550	4200	56.0	86.0	621.26	1309.04	10.23	245.52	494.10	6	146000
807		03:30:00	427.50	9640	450		82.0	31.750	82.550	4200	55.8	86.0	620.14	1321.97					
808		03:30:00	427.50	Decrease choke to 15.08mm to try to flow a rate of 280 10^3m3.															
809		03:35:00	427.58	17150	575		82.0	15.080	82.550	1550	39.0	77.0	321.27	1323.61					
810		03:35:00	427.58	Decrease choke to 12.70mm.															
811		03:40:00	427.67	18750	375		81.0	12.700	82.550	1325	34.0	74.0	279.56	1324.65					
812		03:45:00	427.75	19000	200		80.0	12.700	82.550	1500	38.0	71.0	315.06	1325.68					
813		03:46:00	427.77	Decrease choke to 11.11mm.															
814		04:00:00	428.00	20105	200		78.0	11.110	82.550	1200	30.0	64.0	254.43	1328.65	6.55	157.20	500.65	6	129000
815		04:15:00	428.25	20250	175		75.0	11.110	82.550	1175	30.3	56.0	256.43	1331.31					
816		04:30:00	428.50	20300	175		73.0	11.110	82.550	1150	30.2	52.0	255.09	1333.97	0.10	4.80	500.75	6	91000
817		04:45:00	428.75	20250	175		75.0	11.110	82.550	1150	30.0	48.0	255.92	1336.64					
818		05:00:00	429.00	20320	150		70.0	11.110	82.550	1150	30.0	48.0	255.92	1339.30	0.22	10.56	500.97	6	5760
819		05:01:00	429.02	Increase choke to 11.90mm.															
820		05:15:00	429.25	H2S by Gastec = 1.1%															
821		05:15:00	429.25	19900	100		70.0	11.900	82.550	1300	34.2	43.0	292.11	1342.16					
822		05:30:00	429.50	19880	175		70.0	11.900	82.550	1300	34.2	41.0	293.11	1345.20	0.05	2.40	501.02	6	0
823		05:45:00	429.75	19860	250		70.0	11.900	82.550	1325	34.2	39.0	296.80	1348.28					
824	1998/07/24	06:00:00	430.00	19855	250		71.0	11.900	82.550	1325	34.2	38.0	297.32	1351.37	0.20	9.60	501.22	6	0
825		06:03:00	430.05	Decrease choke to 11.51mm.															
826		06:15:00	430.25	20055	250		70.0	11.510	82.550	1225	31.7	37.0	276.18	1354.36					
827		06:30:00	430.50	20055	300		69.0	11.510	82.550	1225	31.7	35.0	277.15	1357.24	0.10	4.80	501.32	6	0
828		06:45:00	430.75	20055	300		68.0	11.510	82.550	1225	31.7	34.0	277.64	1360.13					
829		07:00:00	431.00	20060	400		68.0	11.510	82.550	1225	31.8	33.0	278.57	1363.03	0.15	7.20	501.47	6	0
830		07:15:00	431.25	20060	450		68.0	11.510	82.550	1225	31.8	33.0	278.57	1365.93					
831		07:30:00	431.50	20060	550		67.0	11.510	82.550	1250	31.8	33.0	281.25	1368.84	0.10	4.80	501.57	6	0
832		07:45:00	431.75	20060	600		66.0	11.510	82.550	1275	31.9	32.0	284.86	1371.79					
833		08:00:00	432.00	20050	700		66.0	11.510	82.550	1310	31.8	30.0	289.14	1374.78	0.10	4.80	501.67	6	0
834		08:15:00	432.25	20050	800		66.0	11.510	82.550	1310	31.8	30.0	289.14	1377.79					
835		08:30:00	432.50	20050	800		66.0	11.510	82.550	1310	31.7	30.0	288.68	1380.80	0.10	4.80	501.77	6	0
836		08:45:00	432.75	20050	800		64.0	11.510	82.550	1310	31.7	30.0	288.68	1383.81					
837		09:00:00	433.00	20040	900		65.0	11.510	82.550	1310	31.8	28.0	290.18	1386.83	0.10	4.80	501.87	6	0
838		09:15:00	433.25	20040	950		65.0	11.510	82.550	1310	31.8	28.0	290.18	1389.85					
839		09:30:00	433.50	20040	1000		65.0	11.510	82.550	1310	31.9	28.0	290.64	1392.87	0.10	4.80	501.97	6	0
840		09:31:00	433.52	Decrease choke to 9.525mm.															
841		09:33:00	433.55	Decrease choke to 8.73mm.															
842		09:45:00	433.75	21200	1000		62.0	8.730	82.550	650	15.1	27.0	144.67	1395.14					
843		10:00:00	434.00	21200	1000		62.0	8.730	82.550	590	15.1	26.0	138.88	1396.62	0.10	4.80	502.07	6	0
844		10:15:00	434.25	21200	1000		62.0	8.730	82.550	570	15.1	26.0	136.81	1398.05					
845		10:30:00	434.50	21200	1000		62.0	8.730	82.550	570	15.1	26.0	136.81	1399.48	0.00	0.00	502.07	6	0
846		10:45:00	434.75	21190	1000		62.0	8.730	82.550	570	15.1	25.0	137.05	1400.90					
847		11:00:00	435.00	21190	1000		60.0	8.730	82.550	570	15.1	24.0	137.29	1402.33	0.05	2.40	502.12		
848		11:15:00	435.25	21190	1000		59.0	8.730	82.550	570	15.1	22.0	137.78	1403.77					
849		11:30:00	435.50	21190	1000		59.0	8.730	82.550	570	15.1	21.0	138.02	1405.20	0.05	2.40	502.17		
850		11:45:00	435.75	21190	1000		59.0	8.730	82.550	570	15.1	20.0	138.27	1406.64					
851	1998/07/24	12:00:00	436.00	21170	1000		59.0	8.730	82.550	570	15.1	20.0	138.27	1408.08	0.05	2.40	502.22		
852		12:15:00	436.25	21170	1050		58.0	8.730	82.550	570	15.1	19.0	138.52	1409.52					
853		12:30:00	436.50	21150	1150		60.0	8.730	82.550	570	15.1	18.0	138.76	1410.97	0.05	2.40	502.27		
854		12:45:00	436.75	21140	1200		60.0	8.730	82.550	570	15.1	18.0	138.76	1412.41					
855		13:00:00	437.00	21140	1250		60.0	8.730	82.550	570	15.1	18.0	138.76	1413.86	0.10	4.80	502.37	6	0

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
856	1998/07/24	13:15:00	437.25	21120	1300		60.0	8.730	82.550	570	15.1	18.0	138.76	1415.30					
857		13:30:00	437.50	21120	1350		50.0	8.730	82.550	570	15.1	18.0	138.76	1416.75	0.00	0.00	502.37		
858		13:45:00	437.75	21100	1400		55.0	8.730	82.550	570	15.1	17.0	139.01	1418.20					
859		14:00:00	438.00	21100	1400		54.0	8.730	82.550	570	14.9	17.0	138.08	1419.64	0.10	4.80	502.47	6	0
860		14:15:00	438.25	21070	1450		55.0	8.730	82.550	570	14.9	17.0	138.08	1421.08					
861		14:30:00	438.50	21050	1500		55.0	8.730	82.550	570	14.9	16.0	138.33	1422.52	0.05	2.40	502.52	6	0
862		14:45:00	438.75	21030	1500		53.0	8.730	82.550	570	14.9	16.0	138.33	1423.96					
863		15:00:00	439.00	21030	1550		54.0	8.730	82.550	570	14.9	15.0	138.59	1425.40	0.05	2.40	502.57	6	0
864		15:15:00	439.25	21010	1600		54.0	8.730	82.550	570	14.9	15.0	138.59	1426.84					
865		15:15:00	439.25	Began to bleed casing off.															
866		15:30:00	439.50	21000	800		54.0	8.730	82.550	570	14.9	15.0	138.59	1428.29	0.00	0.00	502.57		
867		15:45:00	439.75	21000	450		54.0	8.730	82.550	570	14.9	14.0	138.84	1429.73					
868		16:00:00	440.00	21000	400		55.0	8.730	82.550	570	14.9	14.0	138.84	1431.18	0.00	0.00	502.57		
869		16:15:00	440.25	21000	375		55.0	8.730	82.550	570	14.9	14.0	138.84	1432.63					
870		16:15:00	440.25	Shut in casing.															
871		16:30:00	440.50	21000	575		54.0	8.730	82.550	560	14.9	14.0	137.77	1434.07	0.00	0.00	502.57		
872		16:45:00	440.75	21000	750		53.0	8.730	82.550	560	14.9	13.0	138.03	1435.50					
873		17:00:00	441.00	21000	800		53.0	8.730	82.550	560	14.9	13.0	138.03	1436.94	0.05	2.40	502.62		
874		17:15:00	441.25	20970	950		53.0	8.730	82.550	560	14.9	12.0	138.28	1438.38					
875		17:30:00	441.50	20970	1000		53.0	8.730	82.550	560	14.9	11.0	138.54	1439.82	0.10	4.80	502.72	6	0
876		17:45:00	441.75	20970	1200		53.0	8.730	82.550	560	14.7	11.0	137.60	1441.26					
877	1998/07/24	18:00:00	442.00	20970	800		54.0	8.730	82.550	560	14.7	10.0	137.85	1442.69	0.10	4.80	502.82	6	0
878		18:15:00	442.25	20970	450		54.0	8.730	82.550	560	14.7	10.0	137.85	1444.13					
879		18:17:00	442.28	Increase choke to 16.67mm.															
880		18:20:00	442.33	Increase choke to 18.25mm.															
881		18:25:00	442.42	Decrease choke to 17.46mm.															
882		18:28:00	442.47	Decrease choke to 16.67mm.															
883		18:30:00	442.50	16400	400		56.0	16.670	82.550	2530	60.0	18.0	563.11	1447.78	0.90	43.20	503.72	6	133000
884		18:34:00	442.57	Increase choke to 17.06mm.															
885		18:40:00	442.67	Increase choke to 18.25mm.															
886		18:45:00	442.75	Increase choke to 19.84mm.															
887		18:45:00	442.75	14800	380		57.0	19.840	82.550	2670	53.0	31.0	529.68	1453.47					
888		18:46:00	442.77	Increase choke to 20.64mm.															
889		19:00:00	443.00	13080	350		59.0	20.640	82.550	2550	62.2	40.0	551.45	1459.10	4.50	216.00	508.22	6	135000
890		19:15:00	443.25	13095	350		62.0	20.640	82.550	2550	62.5	44.0	548.75	1464.83					
891		19:25:00	443.42	Increase choke to 21.43mm.															
892		19:30:00	443.50	12555	350		64.0	21.430	82.550	2650	65.5	49.0	567.64	1470.65	2.20	105.60	510.42	6	135000
893		19:45:00	443.75	12590	375		67.0	21.430	82.550	2650	66.0	53.0	565.79	1476.55					
894		20:00:00	444.00	12605	375		71.0	21.430	82.550	2650	66.0	55.0	563.82	1482.43	4.27	204.96	514.69	6	140000
895		20:15:00	444.25	12620	375		68.0	21.430	82.550	2675	66.5	57.0	566.65	1488.32					
896		20:30:00	444.50	12620	300		71.0	21.430	82.550	2675	67.0	59.0	566.84	1494.23	4.10	196.80	518.79	6	142000
897		20:45:00	444.75	12650	200		71.0	21.430	82.550	2675	66.7	62.0	562.68	1500.11					
898		21:00:00	445.00	12650	200		71.0	21.430	82.550	2675	66.8	62.0	563.10	1505.97	3.80	182.40	522.59	6	144000
899		21:15:00	445.25	12670	200		75.0	21.430	82.550	2675	66.8	64.0	561.21	1511.83					
900		21:30:00	445.50	12670	250		75.0	21.430	82.550	2700	66.8	66.0	561.93	1517.67	4.16	199.68	526.75	6	144000
901		21:45:00	445.75	12670	300		75.0	21.430	82.550	2700	66.9	66.0	562.35	1523.53					
902		22:00:00	446.00	12680	350		75.0	21.430	82.550	2700	66.9	66.0	562.35	1529.39	3.80	182.40	530.55	6	146000
903		22:15:00	446.25	12680	350		76.0	21.430	82.550	2700	66.9	67.0	561.42	1535.24					
904		22:30:00	446.50	12690	400		76.0	21.430	82.550	2700	66.9	68.0	560.49	1541.09	4.00	192.00	534.55	6	146000
905		22:45:00	446.75	12695	400		79.0	21.430	82.550	2700	66.9	69.0	559.56	1546.92					
906		23:00:00	447.00	12690	500		81.0	21.430	82.550	2700	66.9	71.0	557.73	1552.74	3.57	171.36	538.12	6	152000
907		23:15:00	447.25	12705	550		81.0	21.430	82.550	2700	66.9	72.0	556.82	1558.55					
908		23:30:00	447.50	12705	600		80.0	21.430	82.550	2700	67.0	72.0	557.24	1564.35	3.90	187.20	542.02	6	154000
909		23:30:00	447.50	H2S by Gastec = 1.0%															
910		23:45:00	447.75	12705	650		81.0	21.430	82.550	2700	67.0	73.0	556.34	1570.15					
911		23:50:00	447.83	Samples taken - 3 HP Gas #00018191															
912	1998/07/25	00:00:00	448.00	12700	750		83.0	21.430	82.550	2725	67.2	74.0	558.82	1575.96	3.90	187.20	545.92	6	152000

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
913	1998/07/25	00:15:00	448.25	12700	800		83.0	21.430	82.550	2725	67.2	74.0	558.82	1581.78					
914		00:30:00	448.50	12720	850		83.0	21.430	82.550	2725	67.0	74.0	557.98	1587.59	3.82	183.36	549.74	6	152000
915	1998/07/25	00:30:00	448.50	Shut in wing valve and record buildups.															
916		00:35:00	448.58	20760	700				0.000	0	0.0	0.0	0.00	1587.59	0.00	0.00	549.74		
917		00:40:00	448.67	21020	500														
918		00:45:00	448.75	21170	400														
919		01:00:00	449.00	21510	300														
920		01:15:00	449.25	21680	200														
921		01:30:00	449.50	21740	200														
922		02:00:00	450.00	21780	200														
923		02:30:00	450.50	21805	200														
924		03:00:00	451.00	21815	400														
925		03:30:00	451.50	21815	800														
926		04:00:00	452.00	21820	1000														
927		04:30:00	452.50	21890	1200														
928		05:00:00	453.00	21890	1350														
929		05:00:00	453.00	Bleed off casing.															
930		05:30:00	453.50	21890	975														
931	1998/07/25	06:00:00	454.00	21880	850														
932		06:30:00	454.50	21885	800														
933		07:00:00	455.00	21820	800														
934		07:30:00	455.50	Dowell rigging up to wellhead.															
935		14:10:00	462.17	Dowell rigged up and ready to do acid pickle.															
936		14:10:00	462.17	Hold pre-job safety meeting.															
937		14:35:00	462.58	Pressure test surface lines.															
938		15:26:00	463.43	Returns to P.Tank.															
939		15:45:00	463.75	Drop gauge ball and pump it through coil.															
940		16:10:00	464.17	Rig off injector to check for ball															
941		16:25:00	464.42	No ball															
942		16:40:00	464.67	Stop pumping and check for ball															
943		17:35:00	465.58	Stop pumping and check for ball															
944		18:00:00	466.00						0.000	0	0.0	0.0	0.00	1587.59	0.00	0.00	549.74		
945		21:40:00	469.67	Safety meeting held.															
946		22:20:00	470.33	CTU bled down to 24 MPa to open master valve.															
947		22:30:00	470.50	CTU run in hole.															
948		23:00:00	471.00	21625											1.77	8.50	551.51		
949		23:30:00	471.50	21670															
950	1998/07/26	00:00:00	472.00	21680															
951		00:30:00	472.50	21660															
952		01:00:00	473.00	21645															
953		01:30:00	473.50	21630															
954		02:00:00	474.00	19560															
955		02:30:00	474.50	18540															
956		03:00:00	475.00	17180															
957		03:30:00	475.50	19270															
958		04:00:00	476.00	20010															
959		04:30:00	476.50	20935															
960		05:00:00	477.00	21330															
961		05:30:00	477.50	21375															
962	1998/07/26	06:00:00	478.00	21430															
963		06:30:00	478.50	21490															
964		07:00:00	479.00	21540															
965		07:26:00	479.43	Coil on surface.															
966		07:30:00	479.50	21550															
967		07:35:00	479.58	Bleed off injector stack.															
968		08:35:00	480.58	Rig out injector head															
969		08:50:00	480.83	Hold safety meeting.															

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
970	1998/07/26	09:10:00	481.17	Bleed wireline lubricator down after pressure test.															
971		10:12:00	482.20	Run in hole with a guage ring.															
972		10:30:00	482.50	21490	2500				0.000										
973		11:00:00	483.00	21460	2250														
974		11:30:00	483.50	Wireline stuck in the hole.															
975		11:30:00	483.50	21550	2200														
976		12:00:00	484.00	21600	2200														
977		12:30:00	484.50	21610	2200														
978		13:00:00	485.00	21610	2200														
979		13:30:00	485.50	21610	2200														
980	1998/07/26	14:00:00	486.00	21610	2200														
981		14:30:00	486.50	21610	2200														
982		15:00:00	487.00	21610	2200														
983		15:30:00	487.50	21610	2200														
984		16:00:00	488.00	21610	2200														
985		16:30:00	488.50	21610	2200														
986		17:00:00	489.00	21610	2200														
987		17:30:00	489.50	21610	2200														
988	1998/07/26	18:00:00	490.00	21610	2200														
989		18:30:00	490.50	21510	2250														
990		19:00:00	491.00	21590	2250														
991		19:30:00	491.50	21590	2250														
992		20:00:00	492.00	21590	2250														
993		20:15:00	492.25	Safety meeting held.															
994		20:35:00	492.58	21590	2250														
995		20:40:00	492.67	Open well to flow															
996		20:50:00	492.83	Shut choke															
997		21:00:00	493.00	21610	2250				0.000	0	0.0	0.0	0.00	1587.59	0.00	0.00	551.51		
998		21:30:00	493.50	21610	2250														
999		22:00:00	494.00	21610	2250														
1000		22:30:00	494.50	21610	2250														
1001		22:35:00	494.58	Dowell pump down casing 1.3 m3 and pressure up to 14MPa.															
1002		23:00:00	495.00	21610															
1003		23:30:00	495.50	21610															
1004		23:30:00	495.50	Casing bled down.															
1005	1998/07/27	00:00:00	496.00	21610	1500														
1006		00:30:00	496.50	21620	1500														
1007		01:00:00	497.00	21620	1500														
1008		01:30:00	497.50	21620	1500														
1009		02:00:00	498.00	21610	1500														
1010		02:30:00	498.50	21510	1500														
1011		03:00:00	499.00	21610	1500														
1012		03:30:00	499.50	21610	1500														
1013		04:00:00	500.00	21610	1500														
1014		04:30:00	500.50	21610	1500														
1015		05:00:00	501.00	21580	1500														
1016		05:30:00	501.50	21570	1500														
1017	1998/07/27	06:00:00	502.00	21570	1500														
1018		06:30:00	502.50	21570	1500														
1019		07:00:00	503.00	21570	1500														
1020		07:30:00	503.50	21570	1500														
1021		08:00:00	504.00	21570	1500														
1022		08:30:00	504.50	21570	1500														
1023		09:00:00	505.00	21570	1450														
1024		09:30:00	505.50	21570	1400														
1025	1998/07/27	10:00:00	506.00	21570	1400														
1026		10:30:00	506.50	21570	1400														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1027	1998/07/27	11:00:00	507.00	21570	1400				0.000										
1028		11:30:00	507.50	21570	1400														
1029		12:00:00	508.00	21570	1400														
1030		12:11:00	508.18	Open well to flow on a 32/64(12.7mm)															
1031		12:24:00	508.40	Meter in service with a 3.250(82.55mm) orifice plate.															
1032		12:25:00	508.42	0	0	0	0.0	0.000	0.000	0	0.0	0.0	0.00	1587.59	0.00	0.00	551.51		
1033		12:30:00	508.50	20170	2100		32.0	12.700											
1034		13:00:00	509.00	20030	3300		28.0	12.700	0.000						1.60	65.83	553.11		
1035		13:01:00	509.02	Shut in well.															
1036		13:30:00	509.50	21500	3300														
1037	1998/07/27	14:00:00	510.00	21600	2650														
1038		14:10:00	510.17	Pressure up to choke and open to flow on a 32/64(12.7mm)															
1039		14:28:00	510.47	Meter in service with a 3.250(82.55mm) orifice plate.															
1040		14:29:00	510.48	16700					0.000	0	0.0	0.0	0.00	1587.59	0.00	0.00	553.11		
1041		14:30:00	510.50	16700			34.0	12.700											
1042		15:00:00	511.00	17100			36.0	12.700	82.550	1050	70.0	-3.0	413.65	1596.50	2.30	106.84	555.41		
1043		15:30:00	511.50	16640			38.0	12.700	82.550	1125	68.0	-2.0	420.12	1605.18					
1044		15:45:00	511.75	Shut in well.															
1045		16:00:00	512.00	21000				0.000	0.000	0	0.0	0.0	0.00	1605.18					
1046		16:30:00	512.50	21200	13000														
1047		17:00:00	513.00	21400															
1048		17:05:00	513.08	Pressure up to choke and open well to flow on a 40/64(15.875mm).															
1049		17:10:00	513.17	Increase choke to 42/64.															
1050		17:12:00	513.20	Increase choke to 44/64(17.46mm).															
1051		17:12:00	513.20	Meter in service with a 3.250(82.55mm) orifice plate.															
1052		17:29:00	513.48	14350	13500				0.000	0	0.0	0.0	0.00	1605.18	0.00	0.00	555.41		
1053		17:30:00	513.50	14350	13500		40.0	17.460	82.550	1500	70.0	11.0	476.42	1605.51					
1054		17:33:00	513.55	Increase choke to 52/64(20.64mm).															
1055	1998/07/27	18:00:00	514.00	12100	18400		45.0	20.640	82.550	1800	74.0	24.0	522.07	1615.92	5.30	246.19	560.71		
1056		18:30:00	514.50	12100	23100		50.0	20.640	82.550	1900	78.1	28.0	546.75	1627.05					
1057		18:30:00	514.50	Shut in wing.															
1058		19:00:00	515.00	21320	15000			0.000	0.000	0	0.0	0.0	0.00	1627.05					
1059		19:30:00	515.50	21580	9100														
1060		20:00:00	516.00	21720	5500														
1061		20:05:00	516.08	Safety meeting held.															
1062		20:15:00	516.25	Dowell started pumping diesel downhole.															
1063		20:30:00	516.50	21150															
1064		21:00:00	517.00	19320	1500														
1065		21:30:00	517.50	18000	1500														
1066		22:00:00	518.00	18030	1500														
1067		22:30:00	518.50	18325	1250														
1068		23:00:00	519.00	18520	1250														
1069		23:30:00	519.50	18800	1000														
1070	1998/07/28	00:00:00	520.00	19010	1000														
1071		00:15:00	520.25	Computalog start to work line to try and free it.															
1072		00:30:00	520.50	19270															
1073		01:00:00	521.00	19470															
1074		01:30:00	521.50	19620															
1075		02:00:00	522.00	19620															
1076		02:30:00	522.50	19660															
1077		03:00:00	523.00	19720															
1078		03:30:00	523.50	19750															
1079		04:00:00	524.00	19750															
1080		04:30:00	524.50	19760															
1081		05:00:00	525.00	19770															
1082		05:30:00	525.50	19780															
1083	1998/07/28	06:00:00	526.00	19790	1000														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1084	1998/07/28	06:30:00	526.50	19800					0.000										
1085		07:00:00	527.00	19800															
1086		07:30:00	527.50	19820	1200														
1087		08:00:00	528.00	19840	1100														
1088		08:30:00	528.50	19360	1200														
1089		08:30:00	528.50	Hold safety meeting.															
1090		09:00:00	529.00	Dowell rigging up to pump water down tubing.															
1091	1998/07/28	10:00:00	530.00	No tubing readings while Dowell pumping.															
1092		10:00:00	530.00		1200														
1093		10:15:00	530.25		1200														
1094		10:30:00	530.50		1200														
1095		10:45:00	530.75		1200														
1096		11:00:00	531.00		1200														
1097		11:15:00	531.25		1200														
1098		11:30:00	531.50		1200														
1099		11:45:00	531.75	Hold safety meeting.															
1100		12:00:00	532.00	Dowell pressure tests and begins to pump again.															
1101		12:00:00	532.00		1200														
1102		12:15:00	532.25		800														
1103		12:40:00	532.67	Wireline moving and coming out of hole.															
1104		13:00:00	533.00	Wireline out of hole.															
1105		13:15:00	533.25	Rig wireline out of hole and confirm that they pulled out of rope socket.															
1106		13:30:00	533.50	Begin to take pressure readings again.															
1107		13:30:00	533.50	0	700														
1108		14:00:00	534.00	1150	800														
1109		14:30:00	534.50	1500	900														
1110		15:00:00	535.00	1800	1100														
1111		15:30:00	535.50	2100	1200														
1112		16:00:00	536.00	2550	1225														
1113		16:30:00	536.50	3050	1275														
1114		17:00:00	537.00	3520	1300														
1115		17:30:00	537.50	5100	1375														
1116	1998/07/28	13:00:00	538.00	4500	1400														
1117		18:30:00	538.50	4750	1400														
1118		19:00:00	539.00	4990	1400														
1119		19:30:00	539.50	5120	1400														
1120		19:30:00	539.50	Acid tanks checked for leaks.															
1121		20:00:00	540.00	5380	1425														
1122		20:30:00	540.50	5710	1450														
1123		21:00:00	541.00	6000	1450														
1124		21:20:00	541.33	Shut in well.															
1125		22:00:00	542.00	Dowell rig in to try and fish tools from bottom.															
1126		22:00:00	542.00	Acid tanks checked for leaks.															
1127	1998/07/29	00:20:00	544.33	Safety meeting held.															
1128		00:30:00	544.50	Prossure test injector and BOP's															
1129		02:15:00	546.25	Dowell start to run in hole.															
1130		02:30:00	546.50	Acid tanks checked for leaks.															
1131		03:00:00	547.00	8950	1600														
1132		03:30:00	547.50	9600	1600														
1133		04:00:00	548.00	10300	1600														
1134		04:30:00	548.50	10430	1600														
1135		04:30:00	548.50	Acid tanks checked for leaks.															
1136		05:00:00	549.00	10450	1600														
1137		05:30:00	549.50	10410	1550														
1138	1998/07/29	06:00:00	550.00	10390	1550														
1139		06:30:00	550.50	10250	1550														
1140		07:00:00	551.00	10700	1500														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1141	1998/07/29	07:30:00	551.50	11400	1500				0.000										
1142		08:00:00	552.00	12880	1600														
1143		08:30:00	552.50	14320	1600														
1144		09:00:00	553.00	15920	1600														
1145		09:30:00	553.50	16600	1600														
1146	1998/07/29	10:00:00	554.00	Coil to surface.															
1147		10:50:00	554.83	Bleed off.															
1148		13:05:00	557.08	Rig on wireline lubricator.															
1149	1998/07/29	14:25:00	558.42	Pressure up to choke and bleed off lubricator.															
1150		14:30:00	558.50	21460	1700														
1151		15:00:00	559.00	21460	1700														
1152		15:30:00	559.50	21460	1700														
1153		16:00:00	560.00	21460	1750														
1154		16:30:00	560.50	21460	1750														
1155		17:00:00	561.00	21460	1750														
1156		17:30:00	561.50	21460	1750														
1157	1998/07/29	18:00:00	562.00	21460	1750														
1158		18:30:00	562.50	21410	1750														
1159		19:00:00	563.00	21410	1750														
1160		19:30:00	563.50	21410	1750														
1161		19:40:00	563.67	Pressure test Dowell lines and BOP's.															
1162		20:00:00	564.00	Safety meeting held.															
1163		20:20:00	564.33	Dowell begin to run in hole to do tubing wash.															
1164		20:30:00	564.50	21070	1750														
1165		21:00:00	565.00	13120	1700														
1166		21:30:00	565.50	9385	1600														
1167		22:00:00	566.00	9150	1575														
1168		22:30:00	566.50	10600	1500														
1169		23:00:00	567.00	9850	1400														
1170		23:30:00	567.50	2210	950														
1171	1998/07/30	00:00:00	568.00	3210	1000														
1172		00:30:00	568.50	3140	800														
1173		01:00:00	569.00	3020	800														
1174		01:30:00	569.50	2900	900														
1175		02:00:00	570.00	2900	1000														
1176		02:35:00	570.58	Dowell on surface															
1177		03:00:00	571.00	8480	1200														
1178		03:30:00	571.50	9890	1250														
1179		04:00:00	572.00	10960	1400														
1180		04:30:00	572.50	12310	1400														
1181		05:00:00	573.00	13350	1400														
1182		05:30:00	573.50	14560	1400														
1183	1998/07/30	06:00:00	574.00	15560	1450														
1184		06:30:00	574.50	16600	1450														
1185		07:00:00	575.00	17600	1500														
1186		07:30:00	575.50	18500	1500														
1187		08:00:00	576.00	19400	1500														
1188		08:30:00	576.50	20300	1600														
1189		09:00:00	577.00	20670	1600														
1190		09:30:00	577.50	21300	1600														
1191	1998/07/30	10:00:00	578.00	21350	1650														
1192		10:30:00	578.50	21350	1650														
1193		11:00:00	579.00	21370	1700														
1194		11:30:00	579.50	21370	1700														
1195		12:00:00	580.00	21380	1750														
1196		12:30:00	580.50	21380	1800														
1197		13:00:00	581.00	21390	1800														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: PORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1198	1998/07/30	13:30:00	581.50	21390	1800				0.000										
1199	1998/07/30	14:00:00	582.00	21395	1800														
1200		14:30:00	582.50	21420	1800														
1201		15:00:00	583.00	21420	1800														
1202		15:30:00	583.50	21420	1800														
1203		16:00:00	584.00	21420	1875														
1204		16:20:00	584.33	Shut master valve and bleed off and rig in Bonnett's wireline.															
1205		17:30:00	585.50	Dowell pressure test wireline.															
1206	1998/07/30	18:30:00	586.50	Run in with gauge ring.															
1207		20:30:00	588.50	At surface with gauge ring. Depth counter not working.															
1208	1998/07/31	10:30:00	602.50	Wireline depth counter repaired															
1209		12:00:00	604.00	Wireline out of hole with first run.															
1210		12:05:00	604.08	Bleed off lubricator and change guage ring.															
1211		12:48:00	604.80	Pressure test and begin to run in hole.															
1212		13:43:00	605.72	Wireline to surface															
1213		15:20:00	607.33	Pressure test and run in hole with wire grab.															
1214		16:25:00	608.42	Wireline to surface															
1215		17:15:00	609.25	Pressure test lubricator															
1216	1998/07/31	18:11:00	610.18	Wireline on surface.															
1217		19:30:00	611.50	Run in with plug.															
1218		21:15:00	613.25	Run in with with prong.															
1219		22:15:00	614.25	Bleed off tubing. Plug started leaking at 1000psi. Rig up to retrieve prong and plug.															
1220	1998/08/01	05:15:00	621.25	Run in with plug.															
1221		06:00:00	622.00												0.00	0.00	560.71		
1222		07:10:00	623.17	Run in hole with prong.															
1223		07:58:00	623.97	Prong set wireline at surface.															
1224		08:17:00	624.28	Pressure up to choke and bleed off tubing.															
1225		08:17:00	624.28	21000															
1226		08:40:00	624.67	Pressure starting to climb.															
1227		08:43:00	624.72	12500															
1228		08:50:00	624.83	Shut in well plug not holding.															
1229		09:00:00	625.00	Dowell rig out B.O.P.'s and window.															
1230		12:30:00	628.50	Rig up Computalog lubricatorto run in cutting tool.															
1231		13:25:00	629.42	Pressure test lubricator.															
1232	1998/08/01	14:00:00	630.00	Start pumping fluid to fill hole.															
1233		15:00:00	631.00	Start to run in hole while pumping fluid.															
1234		18:18:00	634.30	Computalog on surface bleed off.															
1235		19:00:00	635.00	Rig up and pressure test slickline.															
1236		20:00:00	636.00	1200															
1237		22:00:00	638.00	1200															
1238	1998/08/02	00:00:00	640.00	1400															
1239		02:00:00	642.00	2000															
1240		02:30:00	642.50	Prong at surface.															
1241		04:00:00	644.00	2400															
1242		05:00:00	645.00	Plug at surface.															
1243		05:30:00	645.50	Run in with brush.															
1244	1998/08/02	06:00:00	646.00	5400	300										0.00	0.00	560.71		
1245		06:30:00	646.50	5500	350														
1246		07:00:00	647.00	4300	300														
1247		07:04:00	647.07	Wireline at surface															
1248		07:30:00	647.50	Pressure test															
1249		08:00:00	648.00		300														
1250		08:30:00	648.50		280														
1251		09:00:00	649.00		300														
1252		09:05:00	649.08	Wireline at surface															
1253		09:40:00	649.67	Pressure test															
1254	1998/08/02	10:00:00	650.00		325														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1255	1998/08/02	10:15:00	650.25	Wireline to surface															
1256		10:25:00	650.42	12900					0.000										
1257		10:30:00	650.50	Begin to bleed off tubing slowly.															
1258		11:22:00	651.37	Tubing T.S.T.M.															
1259		11:35:00	651.58	Begin to fill hole with fluid.															
1260		11:55:00	651.92	Stop pumping.															
1261		12:00:00	652.00	Shut in master and wing valves.															
1262		13:05:00	653.08	Pressure test wireline.															
1263		13:35:00	653.58	Wireline run in the hole.															
1264		14:00:00	654.00	8500	400														
1265		14:30:00	654.50	9000	400														
1266		15:00:00	655.00	9350	400														
1267		15:30:00	655.50	9600	400														
1268		16:00:00	656.00	10000	400														
1269		16:30:00	656.50	10075	400														
1270		17:00:00	657.00	10100	400														
1271		17:30:00	657.50	10300	400														
1272		17:35:00	657.58	Wireline at surface.															
1273	1998/08/02	18:00:00	658.00	10330	400														
1274		18:30:00	658.50	10335	400														
1275		19:00:00	659.00	10340	400														
1276		19:20:00	659.33	Bleed off tubing.															
1277		19:50:00	659.83	Tubing at 0, Pressure test lubricator to retrieve plug.															
1278		21:00:00	661.00	8820	450														
1279		21:05:00	661.08	Pull prong.															
1280		21:15:00	661.08	9200	450														
1281		21:25:00	661.42	Prong at surface.Pressure test lubricator.															
1282		21:30:00	661.83	Run in to retrieve plug.															
1283		21:50:00	661.83	9470	450														
1284		22:00:00	662.00	9700	450														
1285		22:30:00	662.50	10210	450														
1286		22:45:00	662.75	Plug at surface.															
1287		22:45:00	662.75	11980	450														
1288	1998/08/03	01:00:00	665.00	Run in with chemical cutter.															
1289		01:00:00	665.00	12480	450														
1290		01:30:00	665.50	15930	400														
1291		02:00:00	666.00	16770	400														
1292		02:15:00	666.25	Pump 2m3 of water into well.															
1293		02:30:00	666.50	15140	400														
1294		03:00:00	667.00	15240	400														
1295		04:00:00	668.00	4300	400														
1296		04:30:00	668.50	3000	300														
1297		04:31:00	668.52	Computalog on surface. Rig up Dowell.															
1298	1998/08/03	06:00:00	670.00		300										0.00	0.00	560.71		
1299		08:15:00	672.25	Dowell rigged up															
1300		08:25:00	672.42	Begin to pressure test Dowell.															
1301		09:00:00	673.00		550														
1302		09:02:00	673.03	Bleed off to fix small leak.															
1303		09:15:00	673.25	Begin pressure test															
1304	1998/08/03	10:00:00	674.00		600														
1305		10:05:00	674.08	Rig injector back on and re-pressure test.															
1306		10:30:00	674.50	Pressure test good start running in hole.															
1307		10:30:00	674.50		600														
1308		11:00:00	675.00		300														
1309		11:30:00	675.50		600														
1310		12:00:00	676.00		600														
1311		13:00:00	677.00		600														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1312	1998/08/03	14:00:00	678.00		600				0.000										
1313		15:00:00	679.00		600														
1314		16:00:00	680.00		600														
1315		17:00:00	681.00		600														
1316		17:12:00	681.20	Coil at surface.															
1317		17:25:00	681.42	Bleed off coil.															
1318	1998/08/03	18:00:00	682.00		600														
1319		18:01:00	682.02	B.O.Ps not holding.Pump water to kill well.															
1320		19:00:00	683.00	1930	550														
1321		19:30:00	683.50	2100	575														
1322		20:00:00	684.00	3430	600														
1323		20:30:00	684.50	Chemical cutter retrieved.															
1324		21:30:00	685.50	Rig on C.T.U. pressure test .															
1325		22:00:00	686.00		800														
1326		22:30:00	686.50	C.T.U. start to run in hole to push piece of tubing to bottom.															
1327		22:30:00	686.50	10730	900														
1328		23:00:00	687.00	8430	900														
1329	1998/08/04	00:00:00	688.00	6750	900														
1330		00:30:00	688.50	5020	850														
1331		01:00:00	689.00	7400	850														
1332		01:30:00	689.50	4450	850														
1333		02:00:00	690.00	2830	850														
1334		02:30:00	690.50	5190	850														
1335		02:35:00	690.58	C.T.U. out of hole.															
1336		04:00:00	692.00	Computalog running in hole with guage ring.															
1337		04:00:00	692.00	9870	900														
1338		04:30:00	692.50	11000	1000														
1339		05:00:00	693.00	11710	1050														
1340		05:30:00	693.50	12900	1150														
1341		05:45:00	693.75	Computatalog at surface.															
1342	1998/08/04	06:00:00	694.00		1150										0.00	0.00	560.71		
1343		06:30:00	694.50		1250														
1344		07:00:00	695.00	Open master and begin to monitor pressure.															
1345		07:00:00	695.00	15700	1250														
1346		07:30:00	695.50	16700	1250														
1347		08:00:00	696.00	17570	1250														
1348		08:30:00	696.50	18400	1250														
1349		09:00:00	697.00	19350	1250														
1350		09:30:00	697.50	20100	1300														
1351	1998/08/04	10:00:00	698.00	20870	1400														
1352		10:30:00	698.50	21400	1400														
1353		10:30:00	698.50	Shut in master valve and bleed off to rig in Dowell.															
1354		10:35:00	698.58	Pump water down well to kill the well.															
1355		11:00:00	699.00		1400														
1356		11:30:00	699.50		1400														
1357		11:30:00	699.50	Begin to bleed off casing.															
1358		12:00:00	700.00		500														
1359		12:30:00	700.50		400														
1360		12:45:00	700.75		350														
1361		12:45:00	700.75	Shut in well to rig injector onto wellhead															
1362		13:00:00	701.00		400														
1363		13:00:00	701.00	Pressure test Dowell.															
1364		13:30:00	701.50		400														
1365		13:55:00	701.92	Coil start in hole.															
1366	1998/08/04	14:00:00	702.00		425														
1367		15:00:00	703.00		600														
1368		16:00:00	704.00		625														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1369	1998/08/04	17:00:00	705.00		800				0.000										
1370	1998/08/04	18:00:00	706.00		1500														
1371		19:00:00	707.00		1800														
1372		20:00:00	708.00		2200														
1373		21:00:00	709.00		2000														
1374		21:15:00	709.25	C.T.U on surface															
1375		22:00:00	710.00		800														
1376		23:00:00	711.00		700														
1377	1998/08/05	00:00:00	712.00		600														
1378		01:00:00	713.00		500														
1379		02:00:00	714.00		400														
1380		03:00:00	715.00		300														
1381		04:00:00	716.00		200														
1382		04:20:00	716.33	Computalog at surface.															
1383		05:00:00	717.00		600														
1384	1998/08/05	06:00:00	718.00		800										0.00	0.00	560.71		
1385		06:30:00	718.50		400														
1386		07:00:00	719.00		400														
1387		07:30:00	719.50		400														
1388		08:00:00	720.00		400														
1389		08:30:00	720.50		400														
1390		09:00:00	721.00	6950	400														
1391		09:30:00	721.50	7000	400														
1392	1998/08/05	10:00:00	722.00	7020	400														
1393		10:30:00	722.50	7100	375														
1394		11:00:00	723.00	7140	380														
1395		11:30:00	723.50	7220	380														
1396		12:00:00	724.00	7280	390														
1397		12:30:00	724.50	7400	400														
1398		13:00:00	725.00	7400	400														
1399		13:30:00	725.50	7490	400														
1400	1998/08/05	14:00:00	726.00	7520	400														
1401		14:30:00	726.50	7580	400														
1402		15:00:00	727.00	7690	425														
1403		15:30:00	727.50	7720	500														
1404		16:00:00	728.00	7790	300														
1405		16:30:00	728.50	7840	300														
1406		17:00:00	729.00	7900	350														
1407		17:10:00	729.17	Shut in master valve and bleed off top of wellhead to rig in Computalog.															
1408		17:25:00	729.42	Pressure test lubricator.															
1409	1998/08/05	18:05:00	730.08	Bleed Dowell off and wireline start in hole.															
1410		18:30:00	730.50	8100	400														
1411		19:00:00	731.00	8300	400														
1412		19:15:00	731.25	Wireline at surface															
1413		19:30:00	731.50		575														
1414		20:00:00	732.00		500														
1415		20:30:00	732.50		400														
1416		21:00:00	733.00		250														
1417		21:30:00	733.50		300														
1418	1998/08/05	22:00:00	734.00		390														
1419		22:10:00	734.17	Hold safety meeting.															
1420		22:25:00	734.42	Begin to pressure test Dowell.															
1421		22:30:00	734.50		400														
1422		23:00:00	735.00		400														
1423	1998/08/06	00:00:00	736.00	5750	450														
1424		00:30:00	736.50	5000	450														
1425		01:00:00	737.00	5050	450														

Fast

Job Number: GP98-114 RANGER01.BAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1426	1998/08/06	01:30:00	737.50	7400	450				0.000										
1427		02:00:00	738.00	7790	400														
1428		02:30:00	738.50	7130	450														
1429		03:00:00	739.00	8610	450														
1430		03:30:00	739.50	9100	450														
1431		04:00:00	740.00	9440	450														
1432		04:30:00	740.50	10070	450														
1433		04:30:00	740.50	Coil running to surface. Unable to move the cut tubing.															
1434		05:00:00	741.00	9550	450														
1435		05:30:00	741.50	8870	450														
1436	1998/08/06	06:00:00	742.00	9010	450														
1437		06:30:00	742.50	9100	450										0.00	0.00	560.71		
1438		07:25:00	743.42	Rig off C.T.U.															
1439		09:30:00	745.50	Pump 14m3 of water into tubing. Rig up Comptalog with jet cutters and pressure test.															
1440		11:10:00	747.17	Run in hole with cutter while pumping water.															
1441	1998/08/06	12:00:00	748.00		450														
1442		16:00:00	752.00	4720	575														
1443		17:00:00	753.00	5010	600														
1444		17:35:00	753.58	Computalog to surface. Cutters didn't activate.															
1445		19:00:00	755.00	6710	600														
1446		19:30:00	755.50	6750	600														
1447		22:20:00	758.33	Safety meeting held.															
1448		22:45:00	758.75	7200	600														
1449		23:00:00	759.00	7310	600														
1450		23:30:00	759.50	8130	700														
1451	1998/08/07	00:00:00	760.00	7080	700														
1452		00:30:00	760.50	6520	700														
1453		01:00:00	761.00	5430	700														
1454		01:30:00	761.50	5820	700														
1455		02:00:00	762.00	6970	600														
1456		02:30:00	762.50	8760	600														
1457		03:00:00	763.00	7200	600														
1458		03:30:00	763.50	7200	600														
1459		04:00:00	764.00	7870	600														
1460		04:30:00	764.50	9770	600														
1461		04:35:00	764.58	CTU outof hole. Rig off wellhead and rig in Computalog.															
1462	1998/08/07	06:00:00	766.00		600										0.00	0.00	560.71		
1463		07:00:00	767.00		600														
1464		08:55:00	768.92	Run in hole with guage ring.															
1465		09:00:00	769.00	19410	600														
1466		09:30:00	769.50	20680	700														
1467		10:00:00	770.00	21520	800														
1468		10:30:00	770.50	21680	850														
1469		11:00:00	771.00	21680	850														
1470		11:30:00	771.50	21700	900														
1471		11:50:00	771.83	Computalog out of hole															
1472	1998/08/07	12:00:00	772.00		850														
1473		12:30:00	772.50		850														
1474		16:00:00	776.00	Start pumping water to kill well.															
1475		16:30:00	776.50	14500	900														
1476		17:00:00	777.00	4660	950														
1477		17:15:00	777.25	Shut master															
1478		17:30:00	777.50		950														
1479		17:30:00	777.50		950														
1480		19:00:00	779.00	4490	800														
1481		19:30:00	779.50	7260	850														
1482		19:43:00	779.72	Rig off Computalog and rig in Dowell.															

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1483	1998/08/07	21:15:00	781.25	Dowell run in with tool string.															
1484		21:30:00	781.50	6250	850				0.000										
1485		22:00:00	782.00	5150	800														
1486		22:30:00	782.50	2670	800														
1487		23:00:00	783.00	4370	800														
1488		23:30:00	783.50	4610	800														
1489	1998/08/08	00:00:00	784.00	4540	800														
1490		00:30:00	784.50	4150	800														
1491		01:00:00	785.00	3700	800														
1492		01:30:00	785.50	3950	800														
1493		01:45:00	735.75	Shut in master and rig dowell off of wellhead.															
1494		04:00:00	788.00	Computalog rig back in.															
1495		04:15:00	788.25	Wireline broke															
1496		05:30:00	789.50	Open master and record buildups.															
1497		05:30:00	789.50	14440	950														
1498	1998/08/08	06:00:00	790.00	15480	1000														
1499		06:30:00	790.50	16710	1000														
1500		07:00:00	791.00	17730	1000														
1501		07:30:00	791.50	18530	975														
1502		08:00:00	792.00	19680	800														
1503		08:30:00	792.50	20350	775														
1504		09:00:00	793.00	20850	750														
1505		09:30:00	793.50	21490	700														
1506		10:00:00	794.00	21710	800														
1507		10:30:00	794.50	21750	800														
1508		11:00:00	795.00	21750	800														
1509		11:30:00	795.50	21770	800														
1510	1998/08/08	12:00:00	796.00	21780	800														
1511		12:30:00	796.50	21780	800														
1512		13:00:00	797.00	21840	800														
1513		13:30:00	797.50	21790	800														
1514		14:00:00	798.00	21790	800														
1515		14:15:00	798.25	Shut master															
1516		15:00:00	799.00	19000	800														
1517		17:00:00	801.00	Tool string is too short. Wait on tool to be flown in.															
1518		17:30:00	801.50	5130	250														
1519	1998/08/08	18:00:00	802.00	6470	200														
1520		18:30:00	802.50	7620	350														
1521		19:00:00	803.00	9140	250														
1522		19:30:00	803.50	10390	250														
1523		20:00:00	804.00	11830	250														
1524		20:30:00	804.50	12860	250														
1525		21:00:00	805.00	14110	250														
1526		21:30:00	805.50	15140	250														
1527		22:00:00	806.00	16230	250														
1528		22:30:00	806.50	17230	250														
1529		23:00:00	807.00	18150	250														
1530		23:30:00	807.50	19160	250														
1531	1998/08/09	00:00:00	808.00	19890	250														
1532		00:30:00	808.50	20640	250														
1533		01:00:00	809.00	21350	250														
1534		01:30:00	809.50	21760	250														
1535		02:00:00	810.00	21770	250														
1536		02:30:00	810.50	21780	250														
1537		03:00:00	811.00	21780	250														
1538		03:30:00	811.50	21780	250														
1539		04:00:00	812.00	21790	250														

Fast+

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1540	1998/08/09	04:30:00	812.50	21790	250				0.000										
1541		05:00:00	813.00	21790	250														
1542		05:30:00	813.50	21780	250														
1543	1998/08/09	06:00:00	814.00	21800	250														
1544		06:30:00	814.50	21800	250														
1545		07:00:00	815.00	21810	250														
1546		07:30:00	815.50	21810	250														
1547		08:00:00	816.00	21820	250														
1548		08:20:00	816.33	Shut master begin pressure testing.															
1549		08:50:00	816.83	Pump water to kill well.															
1550		08:50:00	816.83	21820	250														
1551		09:00:00	817.00	19000	250														
1552		09:30:00	817.50	4700	250														
1553		10:30:00	818.50	3900	200														
1554		11:00:00	819.00	4680	200														
1555		11:20:00	819.33	Start running in hole with C.T.U.															
1556		11:30:00	819.50	5910	200														
1557	1998/08/09	12:00:00	820.00	7290	200														
1558		12:30:00	820.50	8320	200														
1559		13:00:00	821.00	5960	200														
1560		13:30:00	821.50	4700	200														
1561		14:00:00	822.00	4670	200														
1562		14:30:00	822.50	4420	250														
1563		15:00:00	823.00	4810	250														
1564		15:30:00	823.50	5850	375														
1565		16:00:00	824.00	6030	375														
1566		16:30:00	824.50	6450	375														
1567		17:00:00	825.00	6540	400														
1568		17:30:00	825.50	6640	400														
1569	1998/08/09	18:00:00	826.00	6790	400														
1570		19:00:00	827.00	6530	400														
1571		19:30:00	827.50	7710	400														
1572		20:00:00	828.00	9450	400														
1573		20:30:00	828.50	Safety meeting held.															
1574		21:00:00	829.00	12150	650														
1575		21:30:00	829.50	13620	900														
1576		21:55:00	829.92	Dowell started to pump acid.															
1577		22:00:00	830.00	14890	900														
1578		22:30:00	830.50	16010	950														
1579		23:00:00	831.00	17490	950														
1580		23:30:00	831.50	15500	950														
1581	1998/08/10	00:00:00	832.00	1610	950														
1582		00:30:00	832.50	11810	1200														
1583		01:00:00	833.00	12510	1300														
1584		01:30:00	833.50	Safety meeting held.															
1585		02:00:00	834.00	Pressure up to choke.															
1586		02:00:00	834.00	14220	1400			0.000	0.000	0	0.0	0.0	0.00	1627.05	0.00	0.00	560.71		
1587		02:05:00	834.08	Open to flow on a 20/64 (7.94mm) choke.															
1588		02:07:00	834.12	Open choke to 10.32mm.															
1589		02:15:00	834.25	17660	1450														
1590		02:15:00	834.25	Open choke to 12.70mm.															
1591		02:16:00	834.27	Fluid to surface.															
1592		02:17:00	834.28	Meter in service with a 82.55mm orifice plate.															
1593		02:20:00	834.33	14000	1450			12.700	82.550	1600	19.0	5.0	258.03	1630.63					
1594		02:26:00	834.43	Increase choke to 15.08mm.															
1595		02:30:00	834.50	9120	1550			15.080	82.550	1000	16.0	7.0	188.06	1632.18					
1596		02:32:00	834.53	Increase choke to 18.25mm.															

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	D/R	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1597	1998/08/10	02:35:00	834.58	5320	1600			18.250	82.550	350	8.0	11.0	83.28	1632.65				3	
1598		02:45:00	834.75	5490	1800			18.250	82.550	1150	2.0	16.0	69.73	1632.18				3	
1599		02:55:00	834.92															5	56000
1600		03:00:00	835.00	6490	1950		17.0	18.250	82.550	1400	2.0	18.0	76.36	1633.95	12.32	295.68	573.03	4	46000
1601		03:05:00	835.08												0.00	0.00	573.03	4	40000
1602		03:10:00	835.17															5	32000
1603		03:15:00	835.25	7200	2250		20.0	18.250	82.550	2100	3.0	19.0	114.01	1634.94				5	28000
1604		03:16:00	835.27	Decrease backpressure in unit.															
1605		03:30:00	835.50	7540	2550		21.0	18.250	82.550	1100	8.0	20.0	135.57	1636.24				5	30000
1606		03:35:00	835.58					0.000	0.000	0	0.0	0.0	0.00	1636.24	12.76	612.48	585.79	5	30000
1607		03:36:00	835.60	Shut in wing valve. CTU start to come out of hole.															
1608		03:40:00	835.67	13380	2550										0.00	0.00	585.79		
1609		03:45:00	835.75	13800	2800														
1610		04:00:00	836.00	11870	2700														
1611		04:15:00	836.25	8200	2700														
1612		04:30:00	836.50	5630	2700														
1613		05:00:00	837.00	3450	2700														
1614		05:30:00	837.50	5530	2700														
1615		05:45:00	837.75	Safety meeting held.															
1616	1998/08/10	06:00:00	838.00	4630	2700														
1617		06:30:00	838.50	3260	2650														
1618		07:00:00	839.00	4330	2650														
1619		07:30:00	839.50		1950														
1620		08:00:00	840.00	6410	1900														
1621		08:00:00	840.00	Tools at surface. Rig up packer.															
1622		08:30:00	840.50																
1623		09:00:00	841.00		750														
1624		09:30:00	841.50	10010	550														
1625		10:00:00	842.00	11050	550														
1626		10:30:00	842.50	12500	550														
1627		11:00:00	843.00	13170	550														
1628		11:30:00	843.50	14110	550														
1629	1998/08/10	12:00:00	844.00	14850	500														
1630		12:30:00	844.50	15620	450														
1631		13:00:00	845.00	16230	400														
1632		13:01:00	845.02	Shut in master to check for leaking.															
1633		13:30:00	845.50	0	400														
1634		14:00:00	846.00	0	400														
1635		14:30:00	846.50	0	350														
1636		15:00:00	847.00	0	350														
1637		15:30:00	847.50	18000	350														
1638		16:00:00	848.00	18330	300														
1639		16:30:00	848.50	18600	300														
1640		17:00:00	849.00	18810	250														
1641		17:30:00	849.50	19100	300														
1642	1998/08/10	18:00:00	850.00	19380	300														
1643		18:30:00	850.50	19540	300														
1644		19:00:00	851.00	19920	300														
1645		19:30:00	851.50	20150	300														
1646		20:00:00	852.00	20410	300														
1647		20:30:00	852.50	20580	300														
1648		20:30:00	852.50	Function tested ESD.															
1649		21:00:00	853.00	20910	300														
1650		21:30:00	853.50	21220	250														
1651	1998/08/10	22:00:00	854.00	21440	250														
1652		22:30:00	854.50	21530	250														
1653		23:00:00	855.00	21540	250														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD MEDOV SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1654	1998/08/10	23:30:00	855.50	21540	250				0.000										
1655	1998/08/11	00:00:00	856.00	21540	250														
1656		00:30:00	856.50	21540	250														
1657		01:00:00	857.00	21550	250														
1658		01:30:00	857.50	21550	250														
1659		02:00:00	858.00	21550	250														
1660		02:30:00	858.50	21550	250														
1661		03:00:00	859.00	21550	250														
1662		03:30:00	859.50	21560	250														
1663		04:00:00	860.00	21560	250														
1664		04:30:00	860.50	21560	250														
1665		05:00:00	861.00	21560	250														
1666		05:30:00	861.50	21570	250														
1667	1998/08/11	06:00:00	862.00	21570	250														
1668		06:30:00	862.50	21570	250														
1669		07:00:00	863.00		250														
1670		07:10:00	863.17	Bleed off well head to rig up Dowell.															
1671		07:30:00	863.50	Wait for wind to die down.															
1672		07:30:00	863.50		250														
1673		08:00:00	864.00		250														
1674		08:30:00	864.50		250														
1675		09:00:00	865.00		250														
1676		09:30:00	865.50		250														
1677		10:00:00	866.00	21600	250														
1678		10:30:00	866.50	21590	250														
1679		11:00:00	867.00	21590	250														
1680		11:30:00	867.50	21590	250														
1681	1998/08/11	12:00:00	868.00	21590	250														
1682		12:30:00	868.50	Pump water to kill well.															
1683		13:30:00	869.50	Rig up tools and injector.															
1684		15:00:00	871.00	3590	250														
1685		15:30:00	871.50	Run in with coil.															
1686		15:30:00	871.50	4600	250														
1687		16:00:00	872.00	3590	250														
1688		16:30:00	872.50	4450	300														
1689		17:00:00	873.00	4390	300														
1690		17:30:00	873.50	4030	300														
1691	1998/08/11	18:00:00	874.00	3300	300														
1692		18:30:00	874.50	3200	200														
1693		18:30:00	874.50	Shut casing bleed off.															
1694		19:00:00	875.00	3280	200														
1695		19:30:00	875.50	3480	200														
1696		20:00:00	876.00	3710	200														
1697		20:30:00	876.50	4000	250														
1698		21:00:00	877.00	4030	250														
1699		21:30:00	877.50	4050	250														
1700		22:00:00	878.00	4120	300														
1701		22:30:00	878.50	4470	300														
1702		23:00:00	879.00	4500	300														
1703		23:30:00	879.50	3940	400														
1704	1998/08/12	00:00:00	880.00	3450	400														
1705		00:30:00	880.50	3480	400														
1706		01:00:00	881.00	3470	400														
1707		01:30:00	881.50	3470	400														
1708		01:35:00	881.58	Dowell to surface. Prepare to rig on wireline lubricator.															
1709		02:00:00	882.00	4040	400														
1710		02:30:00	882.50	5250	400														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1711	1998/08/12	02:50:00	882.83	Shut in master to valve to take off wireline lubricator.															
1712		03:30:00	883.50	Opened master and continue buildups.															
1713		03:30:00	883.50	6690	400				0.000										
1714		04:00:00	884.00	7770	400														
1715		04:30:00	884.50	8690	400														
1716		05:00:00	885.00	9520	400														
1717		05:30:00	885.50	10450	400														
1718	1998/08/12	06:00:00	886.00	10910	450														
1719		06:30:00	886.50	11710	450														
1720		07:00:00	887.00	12350	450														
1721		07:30:00	887.50	12840	475														
1722		08:00:00	888.00	13470	475														
1723		08:30:00	888.50	14020	450														
1724		09:00:00	889.00	14410	400														
1725		09:30:00	889.50	14850	350														
1726		10:00:00	890.00	15300	250														
1727		10:30:00	890.50	15720	200														
1728		11:00:00	891.00	16150	200														
1729		11:30:00	891.50	16530	200														
1730	1998/08/12	12:00:00	892.00	16920	200														
1731		12:30:00	892.50	17370	200														
1732		13:00:00	893.00	17550	200														
1733		13:30:00	893.50	18050	200														
1734		14:00:00	894.00	18370	200														
1735		14:00:00	894.00	Hold safety meeting. Rams failed pressure test. Take BOPsoff wellhead to rebuild.															
1736		16:00:00	896.00	18610	200														
1737		16:30:00	896.50	19820	200														
1738		17:00:00	897.00	20140	200														
1739		17:30:00	897.50	20340	200														
1740	1998/08/12	18:00:00	898.00	20570	200														
1741		18:30:00	898.50	21020	150														
1742		19:00:00	899.00	21300	200														
1743		19:30:00	899.50	21580	200														
1744		20:00:00	900.00	21640	200														
1745		20:30:00	900.50	21650	200														
1746		21:00:00	901.00	21650	200														
1747		21:30:00	901.50	21660	200														
1748		22:00:00	902.00	21660	200														
1749		22:30:00	902.50	21660	200														
1750		23:00:00	903.00	21660	200														
1751		23:26:00	903.43	Dowell start pumping to kill well.															
1752		23:30:00	903.50	21660	200														
1753	1998/08/13	00:00:00	904.00	10000	200														
1754		00:25:00	904.42	Shut in Master. Rig in wireline to deploy dummy string.															
1755		01:15:00	905.25	Rig in Dowell to run in hole with tools.															
1756		02:05:00	906.08	Dowell start to run in hole.															
1757		02:30:00	906.50	3010	200														
1758		03:00:00	907.00	2020	200														
1759		03:30:00	907.50	2130	200														
1760		04:00:00	908.00	1680	200														
1761		04:30:00	908.50	1550	200														
1762		05:00:00	909.00	1400	200														
1763		05:30:00	909.50	1400	200														
1764	1998/08/13	06:00:00	910.00	1050	200														
1765		06:00:00	910.00	Run coil to surface.															
1766		06:30:00	910.50	400	200														
1767		07:00:00	911.00	650	200														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formatio.: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1768	1998/08/13	07:30:00	911.50	400	150				0.000										
1769		08:00:00	912.00	350	200														
1770		08:00:00	912.00	Coil at surface.															
1771	1998/08/13	10:00:00	914.00	860	300														
1772		10:30:00	914.50	1600	300														
1773		10:45:00	914.75	Rig off Dowell and rig up Bonnett's.															
1774		14:20:00	918.33	Pressure test Bonnett's B.O.P.'s.															
1775		15:00:00	919.00	Bleed off pressure test.															
1776		15:10:00	919.17	9370	250														
1777		15:30:00	919.50	9820	250														
1778		16:00:00	920.00	10500	225														
1779		16:30:00	920.50	11100	225														
1780		17:00:00	921.00	11250	225														
1781		17:30:00	921.50	12300	225														
1782	1998/08/13	18:00:00	922.00	12870	210														
1783		18:30:00	922.50	13470	200														
1784		19:00:00	923.00	13970	200														
1785		19:30:00	923.50	14560	200														
1786		20:00:00	924.00	15200	200														
1787		20:30:00	924.50	Safety meeting held.															
1788		20:45:00	924.75	Pressure test wireline bop's and lubricator.															
1789		21:15:00	925.25	Open Master valve and start to run in with wireline.															
1790		21:30:00	925.50	16490	200														
1791		22:00:00	926.00	16890	200														
1792		22:05:00	926.08	Wireline out of hole.															
1793		22:15:00	926.25	Wireline run in with recorders.															
1794		22:15:00	926.25	17140															
1795		22:30:00	926.50	17320															
1796		23:00:00	927.00	17690															
1797		23:30:00	927.50	18080															
1798		23:30:00	927.50	Rig out wireline. Wait for daylight to begin to flow.															
1799	1998/08/14	01:15:00	929.25	19350	200														
1800		01:30:00	929.50	19470	200														
1801		02:00:00	930.00	19860	200														
1802		02:30:00	930.50	20040	200														
1803		03:00:00	931.00	20260	200														
1804		03:30:00	931.50	20890	200														
1805		04:00:00	932.00	21340	200														
1806		04:30:00	932.50	21380	200														
1807		05:00:00	933.00	21390	200														
1808		05:30:00	933.50	21400	200														
1809	1998/08/14	06:00:00	934.00	21400	200			0.000	0.000	0	0.0	0.0	0.00	1636.24	0.00	0.00	585.79		
1810		06:00:00	934.00	Safety meeting held.															
1811		06:13:00	934.22	Pressure up to choke.															
1812		06:15:00	934.25	Open to flow on a 12.70mm choke.															
1813		06:18:00	934.30	Increase choke to 15.08mm.															
1814		06:22:00	934.37	Increase choke to 20.63mm															
1815		06:25:00	934.42	3200	200		5.0												
1816		06:26:00	934.43	Shut in well. Suspect hydrate.															
1817		06:30:00	934.50	8500	200			0.000	0.000	0	0.0	0.0	0.00	1636.24	0.00	0.00	585.79		
1818		06:33:00	934.55	Open choke on a 9.52mm.															
1819		06:35:00	934.58	9100	200			9.520											
1820		06:36:00	934.60	Fluid to surface.															
1821		06:37:00	934.62	Increase choke to 11.90mm.															
1822		06:40:00	934.67	9390	200		12.0	11.900											
1823		06:45:00	934.75	10860	200		14.0	11.900											
1824		06:55:00	934.92	Meter in service with a 3.250(82.55mm) orifice plate.															

Fast

Job Number: GP[illegible]8-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1825	1998/08/14	07:00:00	935.00	10500	210		18.0	11.900	82.550	800	6.0	12.0	102.73	1638.38	13.14	630.72	598.93		
1826		07:07:00	935.12	Open choke to 42/64(16.67mm).															
1827		07:10:00	935.17	Open choke to 48/64(19.05mm).															
1828		07:15:00	935.25	9700	600		25.0												
1829		07:30:00	935.50	8950	2250		31.0	19.050	82.550	1400	8.0	16.0	153.32	1641.04					
1830		08:00:00	936.00	9000	3000		42.0	19.050	82.550	1000	11.5	20.0	155.48	1644.26	24.26	582.24	623.19		
1831		08:02:00	936.03	Shut in well to check corosion plate.															
1832		08:20:00	936.33	14750															
1833		08:23:00	936.38	Open well to flow on a 32/64(12.7mm).															
1834		08:25:00	936.42	Open well to 40/64(15.875mm).															
1835		08:30:00	936.50	13550	1250			15.875	0.000	0	0.0	0.0	0.00	1644.26					
1836		08:35:00	936.58	11500	1250			15.875											
1837		08:40:00	936.67	11400	1500			15.875											
1838		08:45:00	936.75	11550	1550			15.875	82.550	700	16.2	34.0	153.04	1645.85					
1839		09:00:00	937.00	12780	1600		42.0	15.875	82.550	1000	22.0	37.0	208.94	1647.74	14.01	336.24	637.20		
1840		09:15:00	937.25	12570	1650		45.0	15.875	82.550	950	21.2	40.0	199.25	1649.87					
1841		09:30:00	937.50	12800	1650		48.0	15.875	82.550	900	20.9	41.0	192.64	1651.91					
1842	1998/08/14	10:00:00	938.00	13050	1450		50.0	15.875	82.550	900	22.0	45.0	196.36	1655.96	23.38	561.12	660.58	6	16000
1843		10:24:00	938.40	Open choke to 48/64(19.05mm).															
1844		10:30:00	938.50	11250	1400		53.0	19.050	82.550	1225	29.0	47.0	259.61	1660.71					
1845		10:32:00	938.53	Open choke to 52/64(20.64mm).															
1846		10:44:00	938.73	Open choke to 56/64(22.225mm).															
1847		11:00:00	939.00	9250	1625		62.0	22.225	82.550	1225	27.0	57.0	246.37	1665.98	10.20	244.80	670.78	6	18000
1848		11:30:00	939.50	9450	1425		67.0	22.225	82.550	1350	30.0	63.0	269.40	1671.35					
1849		12:00:00	940.00	9590	1300		70.0	22.225	82.550	1400	31.6	65.0	280.46	1677.08	38.84	932.16	709.62	6	24000
1850		12:30:00	940.50	9700	1150		72.0	22.225	82.500	1500	33.0	67.0	294.90	1683.07					
1851		13:00:00	941.00	9850	975		74.0	22.225	82.550	1650	34.2	70.0	313.24	1689.41	23.38	561.12	733.00	6	34000
1852		13:30:00	941.50	9970	800		76.0	22.225	82.550	1650	35.8	74.0	318.54	1695.99					
1853	1998/08/14	14:00:00	942.00	10150	650		78.0	22.225	82.550	1650	37.0	76.0	322.87	1702.67	23.19	556.56	756.19	6	40000
1854		14:25:00	942.42	Increase choke to 64/64(25.4mm).															
1855		14:30:00	942.50	8750	600		78.0	25.400	82.550	1900	42.0	76.0	368.39	1709.87					
1856		15:00:00	943.00	8500	600		78.0	25.400	82.550	1900	40.2	80.0	358.15	1717.44	21.35	512.40	777.54	6	40000
1857		15:30:00	943.50	8650	500		82.0	25.400	82.550	1850	41.0	82.0	355.99	1724.38					
1858		16:00:00	944.00	8700	450		83.0	25.400	82.550	1950	43.0	83.0	373.47	1732.48	23.04	552.96	800.58	6	40000
1859		16:00:00	944.00	Increase choke to 80/64(31.75mm).															
1860		16:30:00	944.50	7720	425		84.0	31.750	82.550	2050	44.0	86.0	385.35	1740.38					
1861		17:00:00	945.00	7750	425		84.0	31.750	82.550	2100	45.6	86.0	396.97	1748.53	23.86	572.64	824.44	6	42000
1862		17:00:00	945.00	Increase choke to 96/64(38.1mm).															
1863		17:30:00	945.50	7500	400		86.0	38.100	82.550	2200	47.0	87.0	411.68	1756.95					
1864		18:00:00	946.00	7500	400		86.0	38.100	82.550	2200	48.0	88.0	415.43	1765.57	23.11	554.64	847.55	6	44000
1865	1998/08/14	18:00:00	946.00	Increase choke to 112/64(44.45mm).															
1866		18:30:00	946.50	7400	400		88.0	44.450	82.550	2300	48.8	90.0	426.82	1774.34					
1867		19:00:00	947.00	7510	400		88.0	44.450	82.550	2350	49.5	90.0	434.44	1783.31	19.95	478.80	867.50	6	52000
1868		19:30:00	947.50	7450	350		88.0	44.450	82.550	2350	51.0	90.0	441.01	1792.43					
1869		20:00:00	948.00	7400	350		89.0	44.450	82.550	2400	52.5	90.0	452.13	1801.74	25.04	600.96	892.54	6	60000
1870		20:20:00	948.33	Increase choke to 50.80mm.															
1871		20:30:00	948.50	7820	300		90.0	50.800	82.550	2450	54.0	90.0	453.25	1811.27					
1872		21:00:00	949.00	7810	300		90.0	50.800	82.550	2500	54.5	90.0	470.05	1820.99	21.74	521.76	914.28	6	74000
1873		21:30:00	949.50	7850	400		90.0	50.800	82.550	2500	55.0	91.0	471.50	1830.80					
1874		22:00:00	950.00	7910	350		90.0	50.800	82.550	2550	56.0	91.0	480.45	1840.72	21.55	517.20	935.83	6	76000
1875		22:30:00	950.50	7950	300		90.0	50.800	82.550	2600	56.5	91.0	487.24	1850.80					
1876		23:00:00	951.00	7980	300		90.0	50.800	82.550	2650	57.0	91.0	494.02	1861.02	20.41	489.84	956.24	6	72000
1877		23:30:00	951.50	7990	250		90.0	50.800	82.550	2700	57.5	91.0	500.79	1871.38					
1878	1998/08/15	00:00:00	952.00	8000	230		90.0	50.800	82.550	2700	58.0	91.0	502.98	1881.84	19.59	470.16	975.83	6	74000
1879		00:00:00	952.00	H2S by Gastec = 1.2%															
1880		00:30:00	952.50	8080	250		90.0	50.800	82.550	2750	59.0	90.0	512.72	1892.42					
1881		01:00:00	953.00	8080	250		90.0	50.800	82.550	2800	59.0	90.0	517.31	1903.15	15.79	378.96	991.62	6	72000

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1882	1998/08/15	01:30:00	953.50	8140	250		90.0	50.800	82.550	2800	60.0	90.0	521.70	1913.97					
1883		02:00:00	954.00	8180	250		90.0	50.800	82.550	2800	60.5	90.0	523.88	1924.86	20.05	481.20	1011.67	6	92000
1884		02:30:00	954.50	8170	200		91.0	50.800	82.550	2850	61.5	90.0	532.87	1935.87					
1885		03:00:00	955.00	8180	200		91.0	50.800	82.550	2850	61.5	90.0	532.87	1946.97	14.50	348.00	1026.17	6	98000
1886		03:30:00	955.50	8180	250		91.0	50.800	82.550	2850	62.0	90.0	535.04	1958.10					
1887		04:00:00	956.00	8180	250		92.0	50.800	82.550	2875	62.5	90.0	539.54	1969.29	17.95	430.80	1044.12	6	94000
1888		04:30:00	956.50	8180	250		92.0	50.800	82.550	2900	62.5	91.0	541.03	1980.54					
1889		05:00:00	957.00	8200	250		92.0	50.800	82.550	2900	63.0	90.0	544.03	1991.85	14.05	337.20	1058.17	6	100000
1890		05:30:00	957.50	8210	250		91.0	50.800	82.550	2950	63.5	90.0	550.84	2003.25					
1891	1998/08/15	06:00:00	958.00	8210	250		91.0	50.800	82.550	3000	63.5	90.0	555.45	2014.78	15.42	370.08	1073.59	6	108000
1892		06:00:00	958.00	H2S by Gastec = 1.1%															
1893		06:30:00	958.50	8210	250		91.0	50.800	82.550	3000	64.0	90.0	557.65	2026.37					
1894		07:00:00	959.00	8210	225		91.0	50.800	82.550	3000	64.0	90.0	557.65	2037.99	14.90	357.60	1088.49	6	100000
1895		07:30:00	959.50	8210	225		91.0	50.800	82.550	3000	64.0	90.0	557.65	2049.61					
1896		08:00:00	960.00	8210	225		91.0	50.800	82.550	3050	64.5	90.0	564.45	2061.30	15.21	365.04	1103.70	6	100000
1897		08:30:00	960.50	8200	200		89.0	50.800	82.550	3050	65.0	89.0	567.52	2073.09					
1898		09:00:00	961.00	8200	225		89.0	50.800	82.550	3100	65.0	89.0	572.13	2084.96	13.14	315.36	1116.84	6	100000
1899		09:30:00	961.50	8200	225		90.0	50.800	82.550	3100	65.5	89.0	574.34	2096.90					
1900		10:00:00	962.00	8220	225		90.0	50.800	82.550	3100	65.8	88.0	576.55	2108.89	12.38	297.12	1129.22	6	102000
1901	1998/08/15	10:00:00	962.00	Decrease choke to 1.000(25.4mm).															
1902		10:30:00	962.50	9750	225		88.0	25.400	82.550	3000	64.0	86.0	561.12	2120.74					
1903		11:00:00	963.00	9770	225		88.0	25.400	82.550	3000	64.0	86.0	561.12	2132.43	14.13	339.12	1143.35	6	108000
1904		11:30:00	963.50	9770	225		88.0	25.400	82.550	3000	64.0	84.0	562.88	2144.14					
1905		12:00:00	964.00	9770	225		88.0	25.400	82.550	3000	64.0	84.0	562.88	2155.86	9.22	221.28	1152.57	6	108000
1906		12:00:00	964.00	H2S by Gastec shows 1.1%															
1907		12:30:00	964.50	9740	225		87.0	25.400	82.550	3000	63.8	84.0	561.99	2167.58					
1908		13:00:00	965.00	9740	225		87.0	25.400	82.550	3000	63.8	84.0	561.99	2179.29	9.96	239.04	1162.53	6	108000
1909		13:30:00	965.50	9750	225		87.0	25.400	82.550	3000	63.8	84.0	561.99	2191.00					
1910	1998/08/15	14:00:00	966.00	9740	225		87.0	25.400	82.550	3000	63.8	84.0	561.99	2202.71	9.87	236.88	1172.40	6	122000
1911		14:30:00	966.50	9730	225		87.0	25.400	82.550	3000	63.9	84.0	562.43	2214.42					
1912		15:00:00	967.00	Begin first 8 hour rate.															
1913		15:00:00	967.00	9730	225		87.0	25.400	82.550	3000	63.9	84.0	562.43	2226.14	9.45	226.80	1181.85	6	124000
1914		15:30:00	967.50	9730	225		87.0	25.400	82.550	3000	63.9	84.0	562.43	2237.85					
1915		16:00:00	968.00	9730	225		86.0	25.400	82.550	3000	63.9	84.0	562.43	2249.57	9.22	221.28	1191.07	6	136000
1916		16:30:00	968.50	9730	225		86.0	25.400	82.550	3000	63.9	84.0	562.43	2261.29					
1917		17:00:00	969.00	9720	225		86.0	25.400	82.550	3000	64.0	84.0	562.88	2273.01	10.76	258.24	1201.83	6	138000
1918		17:30:00	969.50	9720	225		88.0	25.400	82.550	3000	64.0	84.0	562.88	2284.74					
1919		18:00:00	970.00	9720	225		88.0	25.400	82.550	3000	64.0	84.0	562.88	2296.46	9.54	228.96	1211.37	6	130000
1920	1998/08/15	18:00:00	970.00	H2S by Gastec shows 1.0%															
1921		18:30:00	970.50	9720	225		88.0	25.400	82.550	3000	64.1	84.0	563.32	2308.19					
1922		19:00:00	971.00	9680	250		88.0	25.400	82.550	3000	64.2	84.0	563.76	2319.93	7.51	180.24	1218.88	6	134000
1923		19:30:00	971.50	9680	250		88.0	25.400	82.550	3000	64.2	84.0	563.76	2331.68					
1924		20:00:00	972.00	9670	250		88.0	25.400	82.550	3050	64.3	84.0	568.86	2343.48	9.36	224.64	1228.24	6	134000
1925		20:30:00	972.50	9690	250		88.0	25.400	82.550	3050	64.5	84.0	569.75	2355.34					
1926		21:00:00	973.00	9660	250		88.0	25.400	82.550	3050	64.5	84.0	569.75	2367.21	9.66	231.84	1237.90	6	142000
1927		21:30:00	973.50	9660	250		88.0	25.400	82.550	3050	64.5	84.0	569.75	2379.08					
1928		22:00:00	974.00	9660	225		88.0	25.400	82.550	3050	64.8	84.0	571.08	2390.96	8.22	197.28	1246.12	6	130000
1929		22:30:00	974.50	9660	200		89.0	25.400	82.550	3050	65.0	84.0	571.97	2402.87					
1930		23:00:00	975.00	9650	200		88.0	25.400	82.550	3050	65.0	84.0	571.97	2414.78	8.46	203.04	1254.58	6	134000
1931		23:01:00	975.02	Decrease choke to 18.26mm. Begin second rate.															
1932		23:05:00	975.08	13900	200		88.0												
1933		23:10:00	975.17	15200	200		88.0	18.260	82.550	2400	51.0	80.0	452.46	2418.34					
1934		23:10:00	975.17	Decrease choke to 15.87mm.															
1935		23:15:00	975.25	16300	200		87.0	15.870	82.550	2400	51.0	76.0	455.32	2419.92					
1936		23:16:00	975.27	Decrease choke to 14.29mm.															
1937		23:24:00	975.40	Increase choke to 14.68mm.															
1938		23:30:00	975.50	17400	200		85.0	14.680	82.550	2100	46.0	68.0	410.06	2424.42					

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: . RANGER OIL LIMITED
Wellname: PORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1939	1998/08/15	23:33:00	975.55	Increase choke to 15.08mm.															
1940		23:40:00	975.67	16900	200		85.0	15.080	82.550	2200	46.2	65.0	422.49	2427.32					
1941		23:45:00	975.75	17160	200		85.0	15.080	82.550	2225	47.2	63.0	430.86	2428.80					
1942	1998/08/16	00:00:00	976.00	17160	200		85.0	15.080	82.550	2225	47.2	62.0	431.57	2433.29	2.15	51.60	1256.73	6	132000
1943		00:00:00	976.00	H2S by Gastec = 1.0%															
1944		00:30:00	976.50	17130	200		84.0	15.080	82.550	2225	47.2	58.0	434.47	2442.31					
1945		01:00:00	977.00	17130	200		82.0	15.080	82.550	2200	47.5	56.0	434.90	2451.37	0.47	11.28	1257.20	6	76000
1946		01:30:00	977.50	17080	200		82.0	15.080	82.550	2200	47.5	55.0	435.64	2460.43					
1947		02:00:00	978.00	17040	200		80.0	15.080	82.550	2200	47.3	53.0	436.21	2469.52	0.35	8.40	1257.55	6	72000
1948		02:30:00	978.50	17040	200		80.0	15.080	82.550	2200	47.0	52.0	435.56	2478.60					
1949		03:00:00	979.00	17040	200		80.0	15.080	82.550	2200	47.0	51.0	436.32	2487.68	0.40	9.60	1257.95	6	58000
1950		03:30:00	979.50	17000	200		76.0	15.080	82.550	2175	46.8	50.0	433.68	2496.74					
1951		04:00:00	980.00	17000	200		75.0	15.080	82.550	2175	46.8	49.0	434.44	2505.78	0.35	8.40	1258.30	6	22000
1952		04:30:00	980.50	16980	200		74.0	15.080	82.550	2175	46.8	48.0	435.20	2514.84					
1953		05:00:00	981.00	16980	200		73.0	15.080	82.550	2175	46.5	47.0	434.56	2523.90	0.35	8.40	1258.65	6	16000
1954		05:30:00	981.50	16980	200		73.0	15.080	82.550	2175	46.5	47.0	434.56	2532.96					
1955	1998/08/16	06:00:00	982.00	16970	200		72.0	15.080	82.550	2175	46.5	46.0	435.32	2542.02	0.35	8.40	1259.00	6	0
1956		06:00:00	982.00	H2S by Gastec = 1.2%															
1957		06:30:00	982.50	16960	200		73.0	15.080	82.550	2175	46.4	46.0	434.85	2551.08					
1958		07:00:00	983.00	16950	200		72.0	15.080	82.550	2175	46.0	45.0	433.73	2560.13	0.40	9.60	1259.40	6	0
1959		07:00:00	983.00	Decrease choke to 32/64(12.7mm).															
1960		07:02:00	983.03	Increase choke to 34/64(13.49mm).															
1961		07:04:00	983.07	Decrease choke to 33/64(13.1mm).															
1962		07:30:00	983.50	18430	200		73.0	13.100	82.550	1725	37.3	43.0	349.59	2568.29					
1963		08:00:00	984.00	18440	200		73.0	13.100	82.550	1750	37.2	42.0	352.19	2575.60	0.30	7.20	1259.70	6	10000
1964		08:30:00	984.50	18470	200		73.0	13.100	82.550	1750	37.2	42.0	352.19	2582.94					
1965		09:00:00	985.00	18480	200		72.0	13.100	82.550	1750	37.2	42.0	352.19	2590.27	0.45	10.80	1260.15	6	2000
1966		09:30:00	985.50	18480	200		72.0	13.100	82.550	1750	37.7	40.0	355.82	2597.65					
1967	1998/08/16	10:00:00	986.00	18490	200		72.0	13.100	82.550	1750	37.9	40.0	356.77	2605.07	0.25	6.00	1260.40	6	4000
1968		10:30:00	986.50	18490	200		72.0	13.100	82.550	1750	37.9	40.0	356.77	2612.51					
1969		11:00:00	987.00	18490	200		72.0	13.100	82.550	1750	37.9	40.0	356.77	2619.94	0.40	9.60	1260.80	6	2000
1970		11:30:00	987.50	18490	200		74.0	13.100	82.550	1750	38.0	38.0	358.51	2627.39					
1971		12:00:00	988.00	18490	200		74.0	13.100	82.550	1750	38.0	38.0	358.51	2634.86	0.30	7.20	1261.10	6	6000
1972		12:30:00	988.50	18490	200		73.0	13.100	82.550	1750	38.0	38.0	358.51	2642.33					
1973		13:00:00	989.00	18490	200		73.0	13.100	82.550	1750	38.0	38.0	358.51	2649.80	0.35	8.40	1261.45	6	4000
1974		13:30:00	989.50	18490	200		73.0	13.100	82.550	1750	38.0	38.0	358.51	2657.26					
1975	1998/08/16	14:00:00	990.00	18490	200		73.0	13.100	82.550	1750	37.9	38.0	358.04	2664.73	0.35	8.40	1261.80	6	2000
1976		14:30:00	990.50	18490	225		74.0	13.100	82.550	1750	37.8	38.0	357.56	2672.18					
1977		15:00:00	991.00	18490	225		73.0	13.100	82.550	1750	37.8	38.0	357.56	2679.63	0.30	7.20	1262.10	6	4000
1978		15:01:00	991.02	Increase choke to 51/64(20.24mm).															
1979		15:05:00	991.08	Decrease choke to 42/64(16.67mm).															
1980		15:30:00	991.50	14800	225		74.0	16.670	82.550	2340	51.8	46.0	476.58	2688.32					
1981		15:40:00	991.67	Increase choke to 44/64(17.46mm).															
1982		16:00:00	992.00	14800	225		75.0	17.460	82.550	2425	52.4	54.0	481.12	2698.30	2.00	48.00	1264.10	6	94000
1983		16:30:00	992.50	14770	225		77.0	17.460	82.550	2350	51.2	56.0	466.59	2708.17					
1984		17:00:00	993.00	14720	225		77.0	17.460	82.550	2350	51.8	57.0	468.53	2717.91	3.20	76.80	1267.30	6	112000
1985		17:30:00	993.50	14740	225		79.0	17.460	82.550	2375	51.9	58.0	470.65	2727.69					
1986	1998/08/16	18:00:00	994.00	14770	225		80.0	17.460	82.550	2375	51.9	60.0	469.06	2737.48	3.50	84.00	1270.80	6	108000
1987		18:30:00	994.50	14770	225		81.0	17.460	82.550	2375	51.9	62.0	467.49	2747.24					
1988		19:00:00	995.00	14770	250		80.0	17.460	82.550	2400	51.9	62.0	469.92	2757.00	2.95	70.80	1273.75	6	120000
1989		19:30:00	995.50	14770	250		79.0	17.460	82.550	2350	51.8	62.0	464.60	2766.74					
1990		20:00:00	996.00	14760	250		78.0	17.460	82.550	2350	51.7	62.0	464.15	2776.41	3.35	80.40	1277.10	6	128000
1991		20:30:00	996.50	14770	250		78.0	17.460	82.550	2350	51.7	62.0	464.15	2786.08					
1992		21:00:00	997.00	14760	250		80.0	17.460	82.550	2350	51.5	63.0	462.48	2795.73	3.50	84.00	1280.60	6	132000
1993		21:30:00	997.50	14770	250		81.0	17.460	82.550	2325	51.5	63.0	460.04	2805.34					
1994		22:00:00	998.00	14760	250		81.0	17.460	82.550	2325	51.5	64.0	459.28	2814.92	3.70	88.80	1284.30	6	120000
1995		22:30:00	998.50	14780	250		81.0	17.460	82.550	2300	51.7	63.0	458.49	2824.48					

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: PORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
1996	1998/08/16	23:00:00	999.00	14780	250		81.0	17.460	82.550	2325	51.5	64.0	459.28	2834.04	3.35	80.40	1287.65	6	138000
1997		23:00:00	999.00	Decrease choke to 15.08mm.															
1998		23:05:00	999.08	15900	250			15.080	82.550										
1999		23:10:00	999.17	16700	250			15.080	82.550										
2000		23:15:00	999.25	17050	250		81.0	15.080	82.550										
2001		23:30:00	999.50	17080	250		80.0	15.080	82.550	2150	48.2	58.0	431.73	2843.32					
2002		23:45:00	999.75	17080	250		81.0	15.080	82.550	2175	48.2	55.0	436.40	2847.84					
2003	1998/08/17	00:00:00	1000.00	17060	250		80.0	15.080	82.550	2175	48.0	53.0	436.98	2852.39	1.20	28.80	1288.85	6	64000
2004		00:00:00	1000.00	H2S by Gastec = 1.0%															
2005		00:30:00	1000.50	17030	250		80.0	15.080	82.550	2175	48.0	52.0	437.73	2861.50					
2006		01:00:00	1001.00	17010	250		79.0	15.080	82.550	2175	47.7	51.0	437.10	2870.62	0.40	9.60	1289.25	6	64000
2007		01:30:00	1001.50	17000	250		79.0	15.080	82.550	2175	47.7	51.0	437.10	2879.72					
2008		02:00:00	1002.00	16980	250		78.0	15.080	82.550	2150	47.7	50.0	435.37	2888.81	0.35	8.40	1289.60	6	34000
2009		02:30:00	1002.50	16960	250		78.0	15.080	82.550	2150	47.5	50.0	434.45	2897.87					
2010		03:00:00	1003.00	16900	250		78.0	15.080	82.550	2150	47.3	50.0	433.53	2906.91	0.36	8.64	1289.96	6	28000
2011		03:30:00	1003.50	16770	250		78.0	15.080	82.550	2125	47.0	50.0	429.66	2915.90					
2012		04:00:00	1004.00	16770	250		76.0	15.080	82.550	2125	46.5	48.0	428.84	2924.85	0.45	10.80	1290.41	6	32000
2013		04:30:00	1004.50	16710	250		77.0	15.080	82.550	2125	46.2	48.0	427.45	2933.77					
2014		05:00:00	1005.00	16680	250		77.0	15.080	82.550	2100	45.8	48.0	423.11	2942.63	0.60	14.40	1291.01	6	52000
2015		05:30:00	1005.50	16680	250		75.0	15.080	82.550	2075	45.8	48.0	420.62	2951.42					
2016	1998/08/17	06:00:00	1006.00	16670	250		75.0	15.080	82.550	2075	45.7	49.0	419.43	2960.17	0.60	14.40	1291.61	6	60000
2017		06:00:00	1006.00	H2S by Gastec = 1.0%															
2018		06:30:00	1006.50	16650	250		77.0	15.080	82.550	2050	45.5	48.0	416.74	2968.88					
2019		07:00:00	1007.00	16650	250		74.0	15.080	82.550	2075	45.8	48.0	420.62	2977.60	0.90	21.60	1292.51	6	70000
2020		07:30:00	1007.50	16620	225		73.0	15.080	82.550	2075	45.1	48.0	417.37	2986.33					
2021		08:00:00	1008.00	16670	225		73.0	15.080	82.550	2075	45.1	49.0	416.65	2995.02	1.15	27.60	1293.66	6	78000
2022		08:30:00	1008.50	16570	225		76.0	15.080	82.550	2075	45.1	49.0	416.65	3003.70					
2023		09:00:00	1009.00	16670	225		74.0	15.080	82.550	2075	45.1	50.0	415.93	3012.37	1.05	25.20	1294.71	6	78000
2024		09:30:00	1009.50	16670	225		73.0	15.080	82.550	2075	45.1	49.0	416.65	3021.04					
2025	1998/08/17	10:00:00	1010.00	16670	225		76.0	15.080	82.550	2075	45.0	50.0	415.46	3029.71	1.25	30.00	1295.96	6	70000
2026		10:01:00	1010.02	Cut choke to 36/64(14.29mm)															
2027		10:11:00	1010.18	Cut choke to 35/64(13.89mm).															
2028		10:19:00	1010.32	Cut choke to 34/64(13.49mm.															
2029		10:30:00	1010.50	18250	225		75.0	13.490	82.550	1825	40.2	46.0	371.18	3037.90					
2030		11:00:00	1011.00	18250	225		75.0	13.490	82.550	1825	40.2	44.0	372.47	3045.65	0.65	15.60	1296.61	6	32000
2031		11:30:00	1011.50	18250	225		74.0	13.490	82.550	1800	40.0	42.0	370.35	3053.39					
2032		12:00:00	1012.00	18250	225		73.0	13.490	82.550	1800	40.0	42.0	370.35	3061.10	0.25	6.00	1296.86	6	14000
2033		12:01:00	1012.02	H2S by Gastec shows 1.0%															
2034		12:30:00	1012.50	18250	225		73.0	13.490	82.550	1800	40.0	42.0	370.35	3068.82					
2035		13:00:00	1013.00	18220	225		73.0	13.490	82.550	1800	40.0	42.0	370.35	3076.53	0.45	10.80	1297.31	6	4000
2036		13:30:00	1013.50	18220	225		73.0	13.490	82.550	1800	40.0	42.0	370.35	3084.25					
2037	1998/08/17	14:00:00	1014.00	18220	225		73.0	13.490	82.550	1800	40.0	42.0	370.35	3091.97	0.50	12.00	1297.81	6	4000
2038		14:30:00	1014.50	18220	225		73.0	13.490	82.550	1800	39.9	42.0	369.88	3099.68					
2039		15:00:00	1015.00	18220	225		73.0	13.490	82.550	1800	39.9	42.0	369.88	3107.38	0.20	4.80	1298.01	6	0
2040		15:30:00	1015.50	18220	225		73.0	13.490	82.550	1800	39.9	42.0	369.88	3115.09					
2041		16:00:00	1016.00	18220	225		73.0	13.490	82.550	1800	40.0	42.0	370.35	3122.80	0.30	7.20	1298.31	6	2000
2042		16:30:00	1016.50	18220	225		73.0	13.490	82.550	1800	40.0	42.0	370.35	3130.51					
2043		17:00:00	1017.00	18220	225		73.0	13.490	82.550	1800	40.0	41.0	371.00	3138.24	0.45	10.80	1298.76	6	0
2044		17:30:00	1017.50	18230	225		73.0	13.490	82.550	1800	40.0	41.0	371.00	3145.97					
2045	1998/08/17	18:00:00	1018.00	18230	225		73.0	13.490	82.550	1800	40.0	41.0	371.00	3153.69	0.30	7.20	1299.06	6	0
2046		18:01:00	1018.02	H2S by Gastec shows 1.0%															
2047		18:30:00	1018.50	18230	225		72.0	13.490	82.550	1800	39.8	40.0	370.72	3161.42					
2048		19:00:00	1019.00	18200	225		72.0	13.490	82.550	1800	39.8	40.0	370.72	3169.14	0.35	8.40	1299.41	6	0
2049		19:30:00	1019.50	18200	225		72.0	13.490	82.550	1800	39.8	40.0	370.72	3176.87					
2050		20:00:00	1020.00	18200	225		72.0	13.490	82.550	1800	39.8	40.0	370.72	3184.59	0.30	7.20	1299.71	6	2000
2051		20:30:00	1020.50	18200	225		72.0	13.490	82.550	1825	39.8	40.0	373.23	3192.34					
2052		21:00:00	1021.00	18200	225		72.0	13.490	82.550	1825	39.8	40.0	373.23	3200.12	0.40	9.60	1300.11	6	2000

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: PORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2053	1998/08/17	21:30:00	1021.50	18200	225		74.0	13.490	82.550	1825	39.8	40.0	373.23	3207.89					
2054		22:00:00	1022.00	18200	225		72.0	13.490	82.550	1825	39.8	40.0	373.23	3215.67	0.30	7.20	1300.41	6	6000
2055		22:30:00	1022.50	18200	225		73.0	13.490	82.550	1825	39.8	40.0	373.23	3223.44					
2056		23:00:00	1023.00	18050	225		72.0	13.490	82.550	1825	39.8	40.0	373.23	3231.22	0.30	7.20	1300.71	6	4000
2057		23:30:00	1023.50	18000	225		73.0	13.490	82.550	1825	39.5	40.0	371.81	3238.98					
2058	1998/08/18	00:00:00	1024.00	18000	225		72.0	13.490	82.550	1825	39.5	40.0	371.81	3246.72	0.60	14.40	1301.31	6	14000
2059		00:30:00	1024.50	18000	225		73.0	13.490	82.550	1800	39.2	40.0	367.90	3254.43					
2060		01:00:00	1025.00	17990	225		71.0	13.490	82.550	1800	39.0	40.0	366.95	3262.08	0.50	12.00	1301.81	6	26000
2061		01:30:00	1025.50	17940	225		71.0	13.490	82.550	1800	39.0	40.0	366.95	3269.73					
2062		02:00:00	1026.00	17900	200		71.0	13.490	82.550	1800	38.8	40.0	366.00	3277.36	0.60	14.40	1302.41	6	28000
2063		02:30:00	1026.50	17900	200		69.0	13.490	82.550	1775	38.8	40.0	363.51	3284.96					
2064		03:00:00	1027.00	17900	200		69.0	13.490	82.550	1775	38.5	40.0	362.10	3292.52	0.50	12.00	1302.91	6	42000
2065		03:30:00	1027.50	17900	200		69.0	13.490	82.550	1775	38.5	41.0	361.46	3300.06					
2066		04:00:00	1028.00	17900	200		67.0	13.490	82.550	1750	38.5	40.0	359.60	3307.57	0.80	19.20	1303.71	6	52000
2067		04:30:00	1028.50	17860	200		67.0	13.490	82.550	1750	38.0	40.0	357.24	3315.04					
2068		05:00:00	1029.00	17860	200		66.0	13.490	82.550	1750	38.0	40.0	357.24	3322.48	0.70	16.80	1304.41	6	58000
2069		05:30:00	1029.50	17860	200		67.0	13.490	82.550	1750	38.0	40.0	357.24	3329.92					
2070	1998/08/18	06:00:00	1030.00	17860	200		68.0	13.490	82.550	1750	38.0	40.0	357.24	3337.36	0.77	18.48	1305.18	6	54000
2071		06:00:00	1030.00	H2S by Gastec = 1.1%															
2072		06:30:00	1030.50	17860	200		70.0	13.490	82.550	1750	38.0	41.0	356.61	3344.80					
2073		07:00:00	1031.00	17900	200		70.0	13.490	82.550	1750	38.0	41.0	356.61	3352.23	0.95	22.80	1306.13	6	56000
2074		07:30:00	1031.50	17900	200		68.0	13.490	82.550	1750	38.0	41.0	356.61	3359.66					
2075		08:00:00	1032.00	17900	200		71.0	13.490	82.550	1750	38.0	42.0	355.98	3367.08	0.85	20.40	1306.98	6	58000
2076		08:30:00	1032.50	17900	200		72.0	13.490	82.550	1750	38.0	42.0	355.98	3374.50					
2077		09:00:00	1033.00	17900	200		72.0	13.490	82.550	1750	38.0	42.0	355.98	3381.91	0.85	20.40	1307.83	6	58000
2078		09:30:00	1033.50	17870	200		73.0	13.490	82.550	1750	38.0	42.0	355.98	3389.33					
2079	1998/08/18	10:00:00	1034.00	17870	200		73.0	13.490	82.550	1750	38.0	42.0	355.98	3396.75	1.10	26.40	1308.93	6	64000
2080		10:30:00	1034.50	17870	200		73.0	13.490	82.550	1750	38.0	42.0	355.98	3404.16					
2081		11:00:00	1035.00	17870	200		83.0	13.490	82.550	1750	38.0	43.0	355.36	3411.57	1.00	24.00	1309.93	6	70000
2082		11:30:00	1035.50	17860	200		73.0	13.490	82.550	1750	38.0	43.0	355.36	3418.98					
2083		12:00:00	1036.00	17860	200		73.0	13.490	82.550	1750	38.0	43.0	355.36	3426.38	1.00	24.00	1310.93	6	72000
2084		12:30:00	1036.50	17880	200		73.0	13.490	82.550	1750	38.0	43.0	355.36	3433.78					
2085		13:00:00	1037.00	17880	200		73.0	13.490	82.550	1750	38.0	43.0	355.36	3441.19	1.10	26.40	1312.03	6	76000
2086		13:30:00	1037.50	17860	200		72.0	13.490	82.550	1750	38.0	43.0	355.36	3448.59					
2087	1998/08/18	14:00:00	1038.00	17860	200		72.0	13.490	82.550	1750	38.0	44.0	354.74	3455.99	1.17	28.08	1313.20	6	7800
2088		14:30:00	1038.50	17860	200		72.0	13.490	82.550	1750	37.9	43.0	354.89	3463.38					
2089		15:00:00	1039.00	17860	200		72.0	13.490	82.550	1725	37.9	43.0	352.41	3470.75	1.05	25.20	1314.25	6	82000
2090		15:30:00	1039.50	17860	200		72.0	13.490	82.550	1725	37.9	43.0	352.41	3478.09					
2091		16:00:00	1040.00	17860	200		72.0	13.490	82.550	1725	37.9	43.0	352.41	3485.43	1.15	27.60	1315.40	6	82000
2092		16:30:00	1040.50	17810	200		73.0	13.490	82.550	1725	37.9	43.0	352.41	3492.77					
2093		17:00:00	1041.00	17810	200		73.0	13.490	82.550	1725	37.8	44.0	351.33	3500.10	1.30	31.20	1316.70	6	86000
2094		17:30:00	1041.50	17810	200		73.0	13.490	82.550	1725	37.9	44.0	351.80	3507.43					
2095	1998/08/18	18:00:00	1042.00	17810	200		74.0	13.490	82.550	1700	37.9	44.0	349.31	3514.73	1.20	28.80	1317.90	6	90000
2096		18:01:00	1042.02	H2S by Gastec shows 1.3%															
2097		18:30:00	1042.50	17810	200		74.0	13.490	82.550	1700	37.9	42.0	350.53	3522.02					
2098		19:00:00	1043.00	17810	200		71.0	13.490	82.550	1700	37.6	42.0	349.13	3529.31	1.00	24.00	1318.90	6	86000
2099		19:30:00	1043.50	17820	200		73.0	13.490	82.550	1700	37.6	44.0	347.92	3536.57					
2100		20:00:00	1044.00	17810	200		71.0	13.490	82.550	1700	37.6	44.0	347.92	3543.82	1.40	33.60	1320.30	6	88000
2101		20:30:00	1044.50	17810	200		72.0	13.490	82.550	1700	37.6	44.0	347.92	3551.07					
2102		21:00:00	1045.00	17800	200		73.0	13.490	82.550	1700	37.6	44.0	347.92	3558.32	1.30	31.20	1321.60	6	90000
2103		21:30:00	1045.50	17800	200		74.0	13.490	82.550	1700	37.6	44.0	347.92	3565.56					
2104		22:00:00	1046.00	17800	200		72.0	13.490	82.550	1700	37.6	44.0	347.92	3572.81	1.15	27.60	1322.75	6	100000
2105		22:30:00	1046.50	17800	200		73.0	13.490	82.550	1700	37.5	44.0	347.45	3580.06					
2106		23:00:00	1047.00	17800	200		73.0	13.490	82.550	1700	37.5	44.0	347.45	3587.29	1.55	37.20	1324.30	6	88000
2107		23:30:00	1047.50	17800	200		69.0	13.490	82.550	1700	37.6	44.0	347.92	3594.54					
2108	1998/08/19	00:00:00	1048.00	17780	200		73.0	13.490	82.550	1700	37.6	44.0	347.92	3601.79	1.20	28.80	1325.50	6	92000
2109		00:00:00	1048.00	H2S by Gastec = 1.2%															

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2110	1998/08/19	00:30:00	1048.50	17800	200		72.0	13.490	82.550	1700	37.6	44.0	347.92	3609.03					
2111		01:00:00	1049.00	17780	200		71.0	13.490	82.550	1700	37.6	44.0	347.92	3616.28	1.40	33.60	1326.90	6	94000
2112		01:30:00	1049.50	17780	200		73.0	13.490	82.550	1700	37.6	44.0	347.92	3623.53					
2113	1998/08/19	02:00:00	1050.00	17780	200		73.0	13.490	82.550	1700	37.5	44.0	347.45	3630.77	1.30	31.20	1328.20	6	108000
2114		02:30:00	1050.50	16900	200		73.0	13.490	82.550	1700	37.5	44.0	347.45	3638.01					
2115		02:30:00	1050.50	Tubing pressure drop due to minor plug in deadweight line.															
2116		02:35:00	1050.58	Deadweight line unplugged. Tubing pressure recorded at 17800 kPa.															
2117		03:00:00	1051.00	17800	200		73.0	13.490	82.550	1700	37.5	45.0	346.85	3645.24	1.30	31.20	1329.50	6	104000
2118		03:30:00	1051.50	17800	200		73.0	13.490	82.550	1700	37.5	45.0	346.85	3652.47					
2119		04:00:00	1052.00	17800	200		73.0	13.490	82.550	1700	37.4	45.0	346.38	3659.69	1.50	36.00	1331.00	6	108000
2120		04:30:00	1052.50	17800	200		74.0	13.490	82.550	1700	37.3	46.0	345.32	3666.90					
2121		05:00:00	1053.00	17800	200		74.0	13.490	82.550	1700	37.1	46.0	344.39	3674.08	1.58	37.92	1332.58	6	108000
2122		05:30:00	1053.50	17800	200		74.0	13.490	82.550	1700	37.0	46.0	343.92	3681.25					
2123		06:00:00	1054.00	17800	200		74.0	13.490	82.550	1700	37.0	46.0	343.92	3688.42	1.30	31.20	1333.88	6	106000
2124	1998/08/19	06:00:00	1054.00	H2S by Gastec = 1.2%															
2125		06:30:00	1054.50	17800	200		73.0	13.490	82.550	1700	37.2	46.0	344.86	3695.59					
2126		07:00:00	1055.00	17820	200		73.0	13.490	82.550	1700	37.2	46.0	344.86	3702.78	1.60	38.40	1335.48	6	110000
2127		07:30:00	1055.50	17820	200		73.0	13.490	82.550	1700	37.2	46.0	344.86	3709.96					
2128		08:00:00	1056.00	17820	200		73.0	13.490	82.550	1700	37.2	44.0	346.05	3717.16	1.45	34.80	1336.93	6	108000
2129		08:30:00	1056.50	17820	200		73.0	13.490	82.550	1700	37.2	44.0	346.05	3724.37					
2130		09:00:00	1057.00	17820	200		73.0	13.490	82.550	1700	37.0	45.0	344.52	3731.56	1.60	38.40	1338.53	6	108000
2131		09:30:00	1057.50	17820	200		72.0	13.490	82.550	1700	37.0	45.0	344.52	3738.74					
2132	1998/08/19	10:00:00	1058.00	17820	200		72.0	13.490	82.550	1700	37.0	45.0	344.52	3745.92	1.73	41.52	1340.26	6	106000
2133		10:30:00	1058.50	17820	200		72.0	13.490	82.550	1690	36.9	45.0	343.06	3753.08					
2134		11:00:00	1059.00	17820	200		73.0	13.490	82.550	1680	36.7	46.0	340.55	3760.20	1.50	36.00	1341.76	6	105000
2135		11:30:00	1059.50	17800	200		74.0	13.490	82.550	1680	36.7	46.0	340.55	3767.29					
2136		12:00:00	1060.00	17800	200		74.0	13.490	82.550	1680	36.9	46.0	341.49	3774.40	1.45	34.80	1343.21	6	98000
2137		12:00:00	1060.00	H2S by Gastec shows 1.2%															
2138		12:30:00	1060.50	17800	200		74.0	13.490	82.550	1680	36.9	46.0	341.49	3781.51					
2139		13:00:00	1061.00	17820	200		73.0	13.490	82.550	1680	36.7	46.0	340.55	3788.62	1.70	40.80	1344.91	6	108000
2140		13:30:00	1061.50	17820	200		73.0	13.490	82.550	1680	36.7	46.0	340.55	3795.71					
2141	1998/08/19	14:00:00	1062.00	17820	200		73.0	13.490	82.550	1680	36.7	46.0	340.55	3802.81	1.55	37.20	1346.46	6	102000
2142		14:30:00	1062.50	17820	200		74.0	13.490	82.550	1680	36.7	46.0	340.55	3809.90					
2143		15:00:00	1063.00	17820	200		74.0	13.490	82.550	1680	36.7	46.0	340.55	3817.00	1.50	36.00	1347.96	6	104000
2144		15:30:00	1063.50	17820	200		74.0	13.490	82.550	1680	36.7	46.0	340.55	3824.09					
2145		16:00:00	1064.00	17820	200		74.0	13.490	82.550	1680	36.7	46.0	340.55	3831.19	1.60	38.40	1349.56	6	106000
2146		16:30:00	1064.50	17820	200		72.0	13.490	82.550	1680	36.7	47.0	339.97	3838.28					
2147		17:00:00	1065.00	17820	200		75.0	13.490	82.550	1680	36.7	47.0	339.97	3845.36	1.60	38.40	1351.16	6	102000
2148		17:30:00	1065.50	17820	200		74.0	13.490	82.550	1680	36.7	47.0	339.97	3852.44					
2149	1998/08/19	18:00:00	1066.00	17820	200		72.0	13.490	82.550	1680	36.7	47.0	339.97	3859.52	1.55	37.20	1352.71	6	102000
2150		18:01:00	1066.02	H2S by Gastec shows 1.1%															
2151		18:30:00	1066.50	17820	200		73.0	13.490	82.550	1650	36.6	47.0	336.55	3866.57					
2152		19:00:00	1067.00	17800	200		73.0	13.490	82.550	1675	36.7	47.0	339.48	3873.61	1.78	42.72	1354.49	6	112000
2153		19:30:00	1067.50	17800	200		75.0	13.490	82.550	1675	36.5	47.0	338.55	3880.68					
2154		20:00:00	1068.00	17790	200		75.0	13.490	82.550	1675	36.5	48.0	337.97	3887.72	1.60	38.40	1356.09	6	114000
2155		20:30:00	1068.50	17790	200		75.0	13.490	82.550	1675	36.5	48.0	337.97	3894.76					
2156		21:00:00	1069.00	17790	200		75.0	13.490	82.550	1675	36.5	48.0	337.97	3901.80	1.80	43.20	1357.89	6	114000
2157		21:30:00	1069.50	17790	200		75.0	13.490	82.550	1675	36.5	48.0	337.97	3908.85					
2158	1998/08/19	22:00:00	1070.00	17790	200		75.0	13.490	82.550	1675	36.5	48.0	337.97	3915.89	1.40	33.60	1359.29	6	120000
2159		22:30:00	1070.50	17780	200		75.0	13.490	82.550	1675	36.7	48.0	338.90	3922.94					
2160		23:00:00	1071.00	17780	200		75.0	13.490	82.550	1675	36.5	48.0	337.97	3929.99	1.80	43.20	1361.09	6	118000
2161		23:30:00	1071.50	17780	200		75.0	13.490	82.550	1675	36.7	48.0	338.90	3937.04					
2162	1998/08/20	00:00:00	1072.00	17780	200		75.0	13.490	82.550	1675	36.6	48.0	338.43	3944.09	1.49	35.76	1362.58	6	120000
2163		00:00:00	1072.00	H2S by Gastec = 1.1%															
2164		00:30:00	1072.50	17780	200		74.0	13.490	82.550	1675	36.5	48.0	337.97	3951.14					
2165		01:00:00	1073.00	17780	200		74.0	13.490	82.550	1675	36.5	48.0	337.97	3958.18	1.75	42.00	1364.33	6	118000
2166		01:30:00	1073.50	17770	200		75.0	13.490	82.550	1675	36.8	48.0	339.36	3965.24					

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
*Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2167	1998/08/20	02:00:00	1074.00	17770	200		75.0	13.490	82.550	1675	36.8	48.0	339.36	3972.31	1.70	40.80	1366.03	6	118000
2168		02:30:00	1074.50	17770	200		75.0	13.490	82.550	1675	36.7	48.0	338.90	3979.37					
2169		03:00:00	1075.00	17790	200		75.0	13.490	82.550	1675	36.8	48.0	339.36	3986.44	1.70	40.80	1367.73	6	116000
2170		03:30:00	1075.50	17790	200		75.0	13.490	82.550	1675	36.7	48.0	338.90	3993.50					
2171		04:00:00	1076.00	17790	200		75.0	13.490	82.550	1675	36.7	48.0	338.90	4000.56	1.80	43.20	1369.53	6	110000
2172		04:30:00	1076.50	17790	200		75.0	13.490	82.550	1675	36.7	48.0	338.90	4007.62					
2173		05:00:00	1077.00	17790	200		75.0	13.490	82.550	1675	36.5	48.0	337.97	4014.67	1.60	38.40	1371.13	6	114000
2174		05:30:00	1077.50	17790	200		75.0	13.490	82.550	1675	36.6	48.0	338.43	4021.72					
2175	1998/08/20	06:00:00	1078.00	17790	200		74.0	13.490	82.550	1675	36.4	48.0	337.50	4028.76	1.40	33.60	1372.53	6	118000
2176		06:00:00	1078.00	H2S by Gastec = 1.1%															
2177		06:30:00	1078.50	17790	200		74.0	13.490	82.550	1680	36.5	48.0	338.46	4035.80					
2178		07:00:00	1079.00	17800	200		75.0	13.490	82.550	1680	36.8	48.0	339.85	4042.87	2.10	50.40	1374.63	6	112000
2179		07:30:00	1079.50	17800	200		75.0	13.490	82.550	1680	36.7	48.0	339.39	4049.94					
2180		08:00:00	1080.00	17820	200		74.0	13.490	82.550	1680	36.7	48.0	339.39	4057.01	1.70	40.80	1376.33	6	104000
2181		08:30:00	1080.50	17820	200		75.0	13.490	82.550	1680	36.8	48.0	339.85	4064.09					
2182		09:00:00	1081.00	17810	200		74.0	13.490	82.550	1680	36.8	48.0	339.85	4071.17	1.80	43.20	1378.13	6	108000
2183		09:30:00	1081.50	17800	200		75.0	13.490	82.550	1680	36.8	49.0	339.28	4078.24					
2184	1998/08/20	10:00:00	1082.00	17810	200		76.0	13.490	82.550	1680	36.8	49.0	339.28	4085.31	1.60	38.40	1379.73	6	112000
2185		10:30:00	1082.50	17800	200		76.0	13.490	82.550	1680	36.8	49.0	339.28	4092.38					
2186		11:00:00	1083.00	17790	200		76.0	13.490	82.550	1680	36.7	48.0	339.39	4099.45	1.85	44.40	1381.58	6	114000
2187		11:30:00	1083.50	17790	200		75.0	13.490	82.550	1680	36.7	48.0	339.39	4106.52					
2188		12:00:00	1084.00	17790	200		74.0	13.490	82.550	1675	36.6	48.0	338.43	4113.58	1.65	39.60	1383.23	6	112000
2189		12:30:00	1084.50	17790	200		74.0	13.490	82.550	1675	36.7	48.0	338.90	4120.64					
2190		13:00:00	1085.00	17790	200		74.0	13.490	82.550	1675	36.5	48.0	337.97	4127.69	1.89	45.36	1385.12	6	116000
2191		13:30:00	1085.50	17790	200		74.0	13.490	82.550	1675	36.5	48.0	337.97	4134.73					
2192	1998/08/20	14:00:00	1086.00	17810	200		74.0	13.490	82.550	1675	36.5	48.0	337.97	4141.77	1.85	44.40	1386.97	6	118000
2193		14:30:00	1086.50	17800	200		74.0	13.490	82.550	1675	36.5	48.0	337.97	4148.81					
2194		15:00:00	1087.00	17790	200		74.0	13.490	82.550	1650	36.4	48.0	335.05	4155.82	1.70	40.80	1388.67	6	120000
2195		15:30:00	1087.50	17780	200		74.0	13.490	82.550	1650	36.4	48.0	335.05	4162.80					
2196		16:00:00	1088.00	17800	225		73.0	13.490	82.550	1650	36.4	48.0	335.05	4169.78	1.85	44.40	1390.52	6	120000
2197		16:01:00	1088.02	H2S by tutweiller shows 0.88%															
2198		16:30:00	1088.50	17800	225		73.0	13.490	82.550	1650	36.4	48.0	335.05	4176.76					
2199		17:00:00	1089.00	17800	225		73.0	13.490	82.550	1650	36.4	48.0	335.05	4183.74	1.65	39.60	1392.17	6	116000
2200		17:30:00	1089.50	17790	225		73.0	13.490	82.550	1650	36.4	48.0	335.05	4190.72					
2201	1998/08/20	18:00:00	1090.00	17780	225		73.0	13.490	82.550	1650	36.2	48.0	334.13	4197.69	1.75	42.00	1393.92	6	124000
2202		18:30:00	1090.50	17820	225		76.0	13.490	82.550	1650	36.2	49.0	333.56	4204.65					
2203		19:00:00	1091.00	17790	250		77.0	13.490	82.550	1650	36.5	50.0	334.38	4211.61	1.70	40.80	1395.62	6	118000
2204		19:30:00	1091.50	17810	250		78.0	13.490	82.550	1650	36.5	50.0	334.38	4218.57					
2205		20:00:00	1092.00	17810	250		76.0	13.490	82.550	1650	26.5	50.0	284.67	4225.02	1.75	42.00	1397.37	6	118000
2206		20:30:00	1092.50	17800	250		77.0	13.490	82.550	1650	36.6	50.0	334.84	4231.47					
2207		21:00:00	1093.00	17800	250		77.0	13.490	82.550	1670	36.5	50.0	336.34	4238.47	1.75	42.00	1399.12	6	118000
2208		21:30:00	1093.50	17800	250		77.0	13.490	82.550	1670	36.6	50.0	336.80	4245.48					
2209		21:45:00	1093.75	Check calibration of flowline thermometer															
2210		22:00:00	1094.00	17810	250		81.0	13.490	82.550	1670	36.8	50.0	337.72	4252.50	1.75	42.00	1400.87	6	118000
2211		22:30:00	1094.50	17800	250		81.0	13.490	82.550	1670	36.8	50.0	337.72	4259.54					
2212		23:00:00	1095.00	17800	250		80.0	13.490	82.550	1670	36.8	50.0	337.72	4266.58	1.70	40.80	1402.57	6	118000
2213		23:30:00	1095.50	17800	250		80.0	13.490	82.550	1680	36.8	50.0	338.70	4273.62					
2214	1998/08/21	00:00:00	1096.00	17800	250		81.0	13.490	82.550	1680	36.8	50.0	338.70	4280.68	1.75	42.00	1404.32	6	120000
2215		00:30:00	1096.50	17800	250		81.0	13.490	82.550	1680	36.8	50.0	338.70	4287.73					
2216		01:00:00	1097.00	17800	250		82.0	13.490	82.550	1680	36.8	50.0	338.70	4294.79	1.42	34.08	1405.74	6	120000
2217		01:30:00	1097.50	17800	250		82.0	13.490	82.550	1680	36.8	50.0	338.70	4301.85					
2218		02:00:00	1098.00	17800	250		82.0	13.490	82.550	1680	36.8	50.0	338.70	4308.90	1.70	40.80	1407.44	6	122000
2219		02:30:00	1098.50	17800	250		81.0	13.490	82.550	1680	36.8	50.0	338.70	4315.96					
2220		03:00:00	1099.00	17800	225		81.0	13.490	82.550	1680	36.8	50.0	338.70	4323.02	1.75	42.00	1409.19	6	120000
2221		03:30:00	1099.50	17800	225		81.0	13.490	82.550	1680	36.8	50.0	338.70	4330.07					
2222		04:00:00	1100.00	17800	200		81.0	13.490	82.550	1680	36.8	50.0	338.70	4337.13	1.80	43.20	1410.99	6	120000
2223		04:30:00	1100.50	17800	200		81.0	13.490	82.550	1680	36.7	50.0	338.24	4344.18					

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: PORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2224	1998/08/21	05:00:00	1101.00	17790	200		79.0	13.490	82.550	1680	36.7	49.0	338.81	4351.23	1.75	42.00	1412.74	6	120000
2225		05:30:00	1101.50	17790	200		79.0	13.490	82.550	1680	36.7	49.0	338.81	4358.29					
2226	1998/08/21	06:00:00	1102.00	17790	200		80.0	13.490	82.550	1680	36.8	49.0	339.28	4365.35	1.85	44.40	1414.59	6	120000
2227		06:00:00	1102.00	H2S by Gastec=1.3%															
2228		06:30:00	1102.50	17790	200		81.0	13.490	82.550	1680	36.8	49.0	339.28	4372.42					
2229		07:00:00	1103.00	17800	200		80.0	13.490	82.550	1680	36.8	49.0	339.28	4379.49	1.96	47.04	1416.55	6	128000
2230		07:30:00	1103.50	17800	200		80.0	13.490	82.550	1680	36.8	49.0	339.28	4386.56					
2231		08:00:00	1104.00	17810	200		81.0	13.490	82.550	1680	36.8	50.0	338.70	4393.62	1.80	43.20	1418.35	6	126000
2232		08:30:00	1104.50	17810	200		81.0	13.490	82.550	1680	36.6	50.0	337.77	4400.67					
2233		09:00:00	1105.00	17810	200		81.0	13.490	82.550	1680	36.6	50.0	337.77	4407.70	1.80	43.20	1420.15	6	118000
2234		09:30:00	1105.50	17780	200		80.0	13.490	82.550	1680	36.6	50.0	337.77	4414.74					
2235	1998/08/21	10:00:00	1106.00	17800	200		80.0	13.490	82.550	1680	36.6	50.0	337.77	4421.78	1.65	39.60	1421.80	6	120000
2236		10:30:00	1106.50	17800	200		80.0	13.490	82.550	1680	36.5	50.0	337.31	4428.81					
2237		11:00:00	1107.00	17800	200		80.0	13.490	82.550	1680	36.5	50.0	337.31	4435.84	1.85	44.40	1423.65	6	124000
2238		11:30:00	1107.50	17800	200		80.0	13.490	82.550	1680	36.5	50.0	337.31	4442.86					
2239		12:00:00	1108.00	17800	200		78.0	13.490	82.550	1680	36.5	50.0	337.31	4449.89	2.18	52.32	1425.83	6	126000
2240		12:30:00	1108.50	17800	200		78.0	13.490	82.550	1680	36.5	50.0	337.31	4456.92					
2241		13:00:00	1109.00	17800	200		78.0	13.490	82.550	1680	36.5	49.0	337.88	4463.95	1.85	44.40	1427.68	6	128000
2242		13:01:00	1109.02	H2S by Gastec shows 1.25%															
2243		13:30:00	1109.50	17800	200		78.0	13.490	82.550	1680	36.5	49.0	337.88	4470.99					
2244	1998/08/21	14:00:00	1110.00	17820	200		80.0	13.490	82.550	1680	36.5	50.0	337.31	4478.02	1.85	44.40	1429.53	6	124000
2245		14:30:00	1110.50	17820	200		80.0	13.490	82.550	1680	36.5	50.0	337.31	4485.05					
2246		15:00:00	1111.00	17800	200		81.0	13.490	82.550	1680	36.5	51.0	336.74	4492.07	1.80	43.20	1431.33	6	124000
2247		15:30:00	1111.50	17820	200		81.0	13.490	82.550	1680	36.5	51.0	336.74	4499.09					
2248		16:00:00	1112.00	17820	200		81.0	13.490	82.550	1680	36.5	50.0	337.31	4506.11	1.70	40.80	1433.03	6	122000
2249		16:30:00	1112.50	17820	200		81.0	13.490	82.550	1680	36.5	50.0	337.31	4513.14					
2250		17:00:00	1113.00	17830	200		81.0	13.490	82.550	1680	36.5	50.0	337.31	4520.16	1.80	43.20	1434.83	6	122000
2251		17:30:00	1113.50	17830	200		81.0	13.490	82.550	1680	36.5	50.0	337.31	4527.19					
2252	1998/08/21	18:00:00	1114.00	17830	200		80.0	13.490	82.550	1680	36.5	50.0	337.31	4534.22	1.95	46.80	1436.78	6	124000
2253		18:01:00	1114.02	H2S by Gastec shows 1.2%															
2254		18:30:00	1114.50	17820	200		79.0	13.490	82.550	1680	36.5	50.0	337.31	4541.25					
2255		19:00:00	1115.00	17800	225		80.0	13.490	82.550	1680	36.5	50.0	337.31	4548.27	1.75	42.00	1438.53	6	122000
2256		19:30:00	1115.50	17800	225		80.0	13.490	82.550	1680	36.7	50.0	338.24	4555.31					
2257		20:00:00	1116.00	17790	200		79.0	13.490	82.550	1680	36.7	50.0	338.24	4562.36	1.80	43.20	1440.33	6	118000
2258		20:30:00	1116.50	17790	200		79.0	13.490	82.550	1680	36.7	49.0	338.81	4569.41					
2259		21:00:00	1117.00	17780	200		79.0	13.490	82.550	1680	36.7	49.0	338.81	4576.47	1.80	43.20	1442.13	6	120000
2260		21:30:00	1117.50	17780	200		79.0	13.490	82.550	1680	36.6	49.0	338.35	4583.52					
2261		22:00:00	1118.00	17780	200		79.0	13.490	82.550	1680	36.6	49.0	338.35	4590.57	1.75	42.00	1443.88	6	120000
2262		22:01:00	1118.02	Increase choke to 44/64 (17.46mm).															
2263		22:30:00	1118.50	14300	225		82.0	17.460	82.550	1900	41.0	65.0	370.34	4597.95					
2264		23:00:00	1119.00	14420	200		83.0	17.460	82.550	1900	42.0	68.0	373.06	4605.70	8.55	205.20	1452.43	6	136000
2265		23:23:00	1119.38	Increase choke to 48/64 (19.05mm).															
2266		23:30:00	1119.50	13000	200		84.0	19.050	82.550	1900	42.0	70.0	371.87	4613.46					
2267	1998/08/22	00:00:00	1120.00	13150	225		86.0	19.050	82.550	2100	45.0	76.0	400.43	4621.50	10.94	262.56	1463.37	6	146000
2268		00:00:00	1120.00	H2S by Gastec=1.5%															
2269		00:30:00	1120.50	13200	275		86.0	19.050	82.550	2100	46.0	76.0	404.89	4629.89					
2270		01:00:00	1121.00	13200	250		87.0	19.050	82.550	2150	46.0	77.0	408.93	4638.37	10.38	249.12	1473.75	6	142000
2271		01:30:00	1121.50	13350	225		88.0	19.050	82.550	2150	46.5	77.0	411.16	4646.91					
2272		02:00:00	1122.00	13380	225		88.0	19.050	82.550	2250	46.4	77.0	419.96	4655.57	10.19	244.56	1483.94	6	144000
2273		02:01:00	1122.02	Increase choke to 64/64 (25.4mm). Core Lab Rep Tutwieler=1.077% H2S.															
2274		02:30:00	1122.50	9350	325		90.0	25.400	82.550	2500	51.5	86.0	459.63	4664.73					
2275		02:31:00	1122.52	Increase choke to 80/64 (31.75mm).															
2276		02:45:00	1122.75	Increase choke to 96/64 (38.1mm).															
2277		03:00:00	1123.00	7950	300		92.0	38.100	82.550	2550	54.0	90.0	472.45	4674.44	16.61	398.64	1500.55	6	148000
2278		03:30:00	1123.50	7990	250		93.0	38.100	82.550	2600	55.0	92.0	479.96	4684.36					
2279		04:00:00	1124.00	7970	250		95.0	38.100	82.550	2650	57.0	92.0	493.27	4694.50	16.56	397.44	1517.11	6	172000
2280		04:00:00	1124.00	Core Lab Rep takes gas samples															

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2281	1998/08/22	04:30:00	1124.50	8100	250		95.0	38.100	82.550	2700	58.0	93.0	501.46	4704.86					
2282		04:30:00	1124.50	Core Lab Rep takes water samples															
2283		05:00:00	1125.00	8150	250		94.0	38.100	82.550	2750	59.0	92.0	511.17	4715.41	15.97	383.28	1533.08	6	138000
2284		05:30:00	1125.50	8100	225		95.0	38.100	82.550	2800	59.0	93.0	514.96	4726.10					
2285	1998/08/22	06:00:00	1126.00	8200	225		96.0	38.100	82.550	2850	60.0	94.0	523.10	4736.91	16.34	392.16	1549.42	6	168000
2286		06:30:00	1126.50	8270	225		96.0	38.100	82.550	2850	61.0	94.0	527.47	4747.85					
2287		07:00:00	1127.00	8270	225		96.0	38.100	82.550	2850	61.0	94.0	527.47	4758.84	14.25	342.00	1563.67	6	146000
2288		07:30:00	1127.50	8270	225		94.0	38.100	82.550	2875	62.0	93.0	534.91	4769.91					
2289		08:00:00	1128.00	8290	225		92.0	38.100	82.550	2900	62.0	94.0	536.40	4781.07	15.91	381.84	1579.58	6	146000
2290		08:13:00	1128.22	Cut choke to 34/64(13.49mm)															
2291		08:25:00	1128.42	Cut choke to 32/64(12.7mm).															
2292		08:30:00	1128.50	19800	200		90.0	12.700	82.550	1500	33.5	82.0	290.77	4789.68					
2293		08:31:00	1128.52	Cut choke to 30/64(11.9mm).															
2294		08:48:00	1128.80	Cut choke to 29/6411.51mm)															
2295		09:00:00	1129.00	19880	200		87.0	11.510	82.550	1380	30.0	68.0	270.09	4795.53	3.33	79.92	1582.91	6	146000
2296		09:30:00	1129.50	19880	200		87.0	11.510	82.550	1380	30.0	68.0	270.09	4801.15					
2297	1998/08/22	10:00:00	1130.00	19880	200		86.0	11.510	82.550	1375	30.0	54.0	275.73	4806.84	0.20	4.80	1583.11	6	22000
2298		10:30:00	1130.50	19880	200		86.0	11.510	82.550	1375	30.0	51.0	277.10	4812.60					
2299		11:00:00	1131.00	19900	200		85.0	11.510	82.550	1325	30.0	48.0	273.62	4818.34	0.10	2.40	1583.21	6	2000
2300		11:30:00	1131.50	19890	200		84.0	11.510	82.550	1325	29.8	46.0	273.62	4824.04					
2301		12:00:00	1132.00	19890	200		84.0	11.510	82.550	1325	29.8	44.0	274.55	4829.75	0.20	4.80	1583.41	6	16000
2302		12:30:00	1132.50	19890	200		83.0	11.510	82.550	1325	29.8	43.0	275.02	4835.47					
2303		13:00:00	1133.00	19890	200		82.0	11.510	82.550	1325	29.8	43.0	275.02	4841.20	0.25	6.00	1583.66	6	4000
2304		13:30:00	1133.50	19880	200		82.0	11.510	82.550	1325	29.8	43.0	275.02	4846.93					
2305	1998/08/22	14:00:00	1134.00	19880	200		81.0	11.510	82.550	1325	29.8	42.0	275.49	4852.66	0.20	4.80	1583.86	6	0
2306		14:01:00	1134.02	Casing on a vacum.															
2307		14:30:00	1134.50	19880	0		81.0	11.510	82.550	1300	29.7	40.0	273.48	4858.38					
2308		15:00:00	1135.00	19880	0		80.0	11.510	82.550	1300	29.7	40.0	273.48	4864.08	0.20	4.80	1584.06	6	0
2309		15:30:00	1135.50	19870	0		82.0	11.510	82.550	1300	29.7	40.0	273.48	4869.78					
2310		16:00:00	1136.00	19870	0		81.0	11.510	82.550	1290	29.7	40.0	272.48	4875.47	0.20	4.80	1584.26	6	0
2311		16:30:00	1136.50	19870	0		80.0	11.510	82.550	1290	29.7	40.0	272.48	4881.14					
2312		17:00:00	1137.00	19860	0		80.0	11.510	82.550	1290	29.7	39.0	272.95	4886.82	0.25	6.00	1584.51	6	0
2313		17:30:00	1137.50	19860	0		80.0	11.510	82.550	1290	29.7	38.0	273.43	4892.51					
2314	1998/08/22	18:00:00	1138.00	19860	0		79.0	11.510	82.550	1290	29.7	38.0	273.43	4898.21	0.25	6.00	1584.76	6	0
2315		18:01:00	1138.02	H2S by Gastec shows 1.15%															
2316		18:30:00	1138.50	19860	0		78.0	11.510	82.550	1290	29.7	37.0	273.90	4903.91					
2317		19:00:00	1139.00	19820	0		78.0	11.510	82.550	1290	29.4	37.0	272.51	4909.60	0.20	4.80	1584.96	6	2000
2318		19:30:00	1139.50	19820	0		78.0	11.510	82.550	1290	29.4	37.0	272.51	4915.28					
2319		20:00:00	1140.00	19810	0		78.0	11.510	82.550	1290	29.2	36.0	272.05	4920.95	0.25	6.00	1585.21	6	2000
2320		20:30:00	1140.50	19810	0		78.0	11.510	82.550	1290	29.2	36.0	272.05	4926.62					
2321		21:00:00	1141.00	19810	0		78.0	11.510	82.550	1290	29.2	36.0	272.05	4932.29	0.20	4.80	1585.41	6	4000
2322		21:30:00	1141.50	19810	0		76.0	11.510	82.550	1290	29.2	35.0	272.53	4937.96					
2323		22:00:00	1142.00	19810	0		76.0	11.510	82.550	1300	29.2	34.0	274.01	4943.66	0.25	6.00	1585.66	6	4000
2324		22:30:00	1142.50	19800	0		75.0	11.510	82.550	1300	29.2	34.0	274.01	4949.36					
2325		23:00:00	1143.00	19800	0		75.0	11.510	82.550	1320	29.2	33.0	276.51	4955.10	0.25	6.00	1585.91	6	4000
2326		23:30:00	1143.50	19800	0		75.0	11.510	82.550	1320	29.2	33.0	276.51	4960.86					
2327	1998/08/23	00:00:00	1144.00	19800	0		74.0	11.510	82.550	1320	29.2	33.0	276.51	4966.62	0.20	4.80	1586.11	6	4000
2328		00:00:00	1144.00	H2S by Gastec=1.4%															
2329		00:30:00	1144.50	19790	0		74.0	11.510	82.550	1320	29.2	33.0	276.51	4972.38					
2330		01:00:00	1145.00	19790	0		74.0	11.510	82.550	1320	29.0	32.0	276.04	4978.14	0.40	9.60	1586.51	6	4000
2331		01:30:00	1145.50	19790	0		74.0	11.510	82.550	1320	29.0	32.0	276.04	4983.89					
2332		02:00:00	1146.00	19790	0		74.0	11.510	82.550	1320	29.0	32.0	276.04	4989.64	0.30	7.20	1586.81	6	4000
2333		02:30:00	1146.50	19790	0		73.0	11.510	82.550	1320	28.7	32.0	274.60	4995.37					
2334		03:00:00	1147.00	19790	0		73.0	11.510	82.550	1320	28.7	31.0	275.09	5001.10	0.30	7.20	1587.11	6	4000
2335		03:30:00	1147.50	19790	0		73.0	11.510	82.550	1320	28.7	31.0	275.09	5006.83					
2336		04:00:00	1148.00	19790	0		73.0	11.510	82.550	1320	28.7	31.0	275.09	5012.56	0.30	7.20	1587.41	6	4000
2337		04:30:00	1148.50	19790	0		73.0	11.510	82.550	1320	28.7	31.0	275.09	5018.29					

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2338	1998/08/23	05:00:00	1149.00	19790	0		73.0	11.510	82.550	1320	28.7	31.0	275.09	5024.02	0.30	7.20	1587.71	6	4000
2339		05:30:00	1149.50	19790	0		73.0	11.510	82.550	1320	28.7	31.0	275.09	5029.76					
2340	1998/08/23	06:00:00	1150.00	19790	0		73.0	11.510	82.550	1320	28.7	31.0	275.09	5035.49	0.30	7.20	1588.01	6	4000
2341		06:00:00	1150.00	H2S by Gastec=1.4%															
2342		06:30:00	1150.50	19790	0		75.0	11.510	82.550	1320	28.8	32.0	275.08	5041.22					
2343		07:00:00	1151.00	19800	0		75.0	11.510	82.550	1320	28.8	32.0	275.08	5046.95	0.30	7.20	1588.31	6	4000
2344		07:30:00	1151.50	19800	0		74.0	11.510	82.550	1320	28.7	32.0	274.60	5052.67					
2345		08:00:00	1152.00	19800	0		76.0	11.510	82.550	1320	28.7	32.0	274.60	5058.39	0.25	6.00	1588.56	6	2000
2346		08:30:00	1152.50	19800	0		76.0	11.510	82.550	1310	28.7	32.0	273.61	5064.11					
2347		09:00:00	1153.00	19800	0		76.0	11.510	82.550	1310	28.6	32.0	273.13	5069.80	0.25	6.00	1588.31	6	4000
2348		09:30:00	1153.50	19800	0		76.0	11.510	82.550	1310	28.6	32.0	273.13	5075.49					
2349	1998/08/23	10:00:00	1154.00	19800	0		76.0	11.510	82.550	1310	28.6	32.0	273.13	5081.18	0.30	7.20	1589.11	6	2000
2350		10:01:00	1154.02	Casing still on vacum.															
2351		10:30:00	1154.50	19800	0		76.0	11.510	82.550	1310	28.6	32.0	273.13	5086.87					
2352		11:00:00	1155.00	19800	0		76.0	11.510	82.550	1300	28.7	32.0	272.61	5092.56	0.20	4.80	1589.31	6	2000
2353		11:30:00	1155.50	19800	0		76.0	11.510	82.550	1300	28.7	32.0	272.61	5098.24					
2354		12:00:00	1156.00	19800	0		76.0	11.510	82.550	1300	28.7	32.0	272.61	5103.91	0.20	4.80	1589.51	6	2000
2355		12:01:00	1156.02	H2S by Gastec shows 1.3%															
2356		12:30:00	1156.50	19800	0		76.0	11.510	82.550	1300	28.7	32.0	272.61	5109.59					
2357		13:00:00	1157.00	19800	0		76.0	11.510	82.550	1300	28.7	32.0	272.61	5115.27	0.25	6.00	1589.76	6	2000
2358		13:30:00	1157.50	19800	0		76.0	11.510	82.550	1300	28.7	32.0	272.61	5120.95					
2359	1998/08/23	14:00:00	1158.00	19800	0		76.0	11.510	82.550	1300	28.7	32.0	272.61	5126.63	0.30	7.20	1590.06	6	4000
2360		14:01:00	1158.02	Casing still on vacum.															
2361		14:30:00	1158.50	19800	0		76.0	11.510	82.550	1300	28.7	32.0	272.61	5132.31					
2362		15:00:00	1159.00	19800	0		76.0	11.510	82.550	1300	28.7	32.0	272.61	5137.99	0.25	6.00	1590.31	6	2000
2363		15:30:00	1159.50	19800	0		76.0	11.510	82.550	1300	28.7	32.0	272.61	5143.67					
2364		16:00:00	1160.00	19800	0		76.0	11.510	82.550	1300	28.6	32.0	272.13	5149.34	0.25	6.00	1590.56	5	2000
2365		16:30:00	1160.50	19800	0		76.0	11.510	82.550	1300	28.6	30.0	273.11	5155.02					
2366		17:00:00	1161.00	19800	0		76.0	11.510	82.550	1300	28.7	31.0	273.10	5160.71	0.30	7.20	1590.86	6	0
2367		17:30:00	1161.50	19800	0		76.0	11.510	82.550	1300	28.6	31.0	272.62	5166.40					
2368	1998/08/23	18:00:00	1162.00	19800	0		76.0	11.510	82.550	1300	28.5	30.0	272.63	5172.08	0.20	4.80	1591.06	6	2000
2369		18:00:00	1162.00	H2S by Gastec shows 1.2%															
2370		18:30:00	1162.50	19790	0		76.0	11.510	82.550	1300	28.6	31.0	272.62	5177.76					
2371		19:00:00	1163.00	19790	0		75.0	11.510	82.550	1300	28.5	31.0	272.14	5183.43	0.30	7.20	1591.36	6	0
2372		19:30:00	1163.50	19790	0		74.0	11.510	82.550	1300	28.6	31.0	272.62	5189.11					
2373		20:00:00	1164.00	19780	0		75.0	11.510	82.550	1300	28.6	31.0	272.62	5194.79	0.25	6.00	1591.61	6	4000
2374		20:30:00	1164.50	19780	0		75.0	11.510	82.550	1300	28.5	31.0	272.14	5200.46					
2375		21:00:00	1165.00	19780	0		75.0	11.510	82.550	1300	28.5	31.0	272.14	5206.13	0.25	6.00	1591.86	6	4000
2376		21:30:00	1165.50	19770	10		75.0	11.510	82.550	1300	28.5	30.0	272.63	5211.80					
2377	1998/08/23	22:00:00	1166.00	19770	30		74.0	11.510	82.550	1300	28.5	30.0	272.63	5217.48	0.30	7.20	1592.16	6	2000
2378		22:30:00	1166.50	19770	60		73.0	11.510	82.550	1300	28.5	30.0	272.63	5223.16					
2379		23:00:00	1167.00	19770	90		73.0	11.510	82.550	1300	28.4	29.0	272.63	5228.84	0.30	7.20	1592.46	6	2000
2380		23:30:00	1167.50	19770	120		74.0	11.510	82.550	1300	28.4	29.0	272.63	5234.52					
2381	1998/08/24	00:00:00	1168.00	19770	150		74.0	11.510	82.550	1300	28.4	29.0	272.63	5240.20	0.25	6.00	1592.71	6	2000
2382		00:00:00	1168.00	H2S by Gastec=1.1%															
2383		00:30:00	1168.50	19770	170		74.0	11.510	82.550	1300	28.3	29.0	272.15	5245.88					
2384		01:00:00	1169.00	19770	190		74.0	11.510	82.550	1300	28.3	29.0	272.15	5251.55	0.30	7.20	1593.01	6	4000
2385		01:30:00	1169.50	19770	210		74.0	11.510	82.550	1300	28.3	29.0	272.15	5257.22					
2386	1998/08/24	02:00:00	1170.00	19770	225		74.0	11.510	82.550	1300	28.2	29.0	271.67	5262.88	0.25	6.00	1593.26	6	4000
2387		02:30:00	1170.50	19770	240		75.0	11.510	82.550	1300	28.2	29.0	271.67	5268.54					
2388		03:00:00	1171.00	19770	250		75.0	11.510	82.550	1300	28.2	29.0	271.67	5274.20	0.30	7.20	1593.56	6	4000
2389		03:30:00	1171.50	19770	265		75.0	11.510	82.550	1300	28.2	29.0	271.67	5279.86					
2390		04:00:00	1172.00	19770	280		75.0	11.510	82.550	1300	28.2	29.0	271.67	5285.52	0.25	6.00	1593.81	6	4000
2391		04:30:00	1172.50	19770	290		75.0	11.510	82.550	1300	28.2	29.0	271.67	5291.18					
2392		05:00:00	1173.00	19770	305		75.0	11.510	82.550	1300	28.2	29.0	271.67	5296.84	0.25	6.00	1594.06	6	4000
2393		05:30:00	1173.50	19770	315		75.0	11.510	82.550	1300	28.2	29.0	271.67	5302.50					
2394	1998/08/24	06:00:00	1174.00	19770	320		75.0	11.510	82.550	1300	28.2	29.0	271.67	5308.16	0.20	4.80	1594.26	6	4000

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: * RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2395	1998/08/24	06:00:00	1174.00	H2S by Gastec=1.2%															
2396		06:30:00	1174.50	19770	340		74.0	11.510	82.550	1300	28.3	29.0	272.15	5313.83					
2397		07:00:00	1175.00	19770	340		74.0	11.510	82.550	1300	28.3	29.0	272.15	5319.50	0.40	9.60	1594.66	6	4000
2398		07:30:00	1175.50	19790	350		74.0	11.510	82.550	1300	28.3	29.0	272.15	5325.17					
2399		08:00:00	1176.00	19780	360		75.0	11.510	82.550	1300	28.3	29.0	272.15	5330.84	0.25	6.00	1594.91	6	4000
2400		08:30:00	1176.50	19780	365		75.0	11.510	82.550	1300	28.3	29.0	272.15	5336.50					
2401		09:00:00	1177.00	19780	365		75.0	11.510	82.550	1300	28.3	29.0	272.15	5342.17	0.30	7.20	1595.21	6	4000
2402		09:30:00	1177.50	19760	370		75.0	11.510	82.550	1300	28.2	29.0	271.67	5347.84					
2403	1998/08/24	10:00:00	1178.00	19780	385		76.0	11.510	82.550	1300	28.2	29.0	271.67	5353.50	0.20	4.80	1595.41	6	0
2404		10:30:00	1178.50	19780	390		76.0	11.510	82.550	1300	28.2	30.0	271.18	5359.15					
2405		11:00:00	1179.00	19760	395		76.0	11.510	82.550	1300	28.2	30.0	271.18	5364.80	0.30	7.20	1595.71	6	0
2406		11:30:00	1179.50	19790	400		76.0	11.510	82.550	1300	28.2	30.0	271.18	5370.45					
2407		12:00:00	1180.00	19790	405		76.0	11.510	82.550	1300	28.2	30.0	271.18	5376.10	0.35	8.40	1596.06	6	0
2408		12:01:00	1180.02	H2S by Gastec shows 1.2%															
2409		12:30:00	1180.50	19790	405		75.0	11.510	82.550	1300	28.2	30.0	271.18	5381.75					
2410		13:00:00	1181.00	19790	410		75.0	11.510	82.550	1300	28.2	30.0	271.18	5387.40	0.20	4.80	1596.26	6	0
2411		13:30:00	1181.50	19790	410		75.0	11.510	82.550	1300	28.2	31.0	270.69	5393.05					
2412	1998/08/24	14:00:00	1182.00	19790	410		75.0	11.510	82.550	1300	28.2	31.0	270.69	5398.69	0.25	6.00	1596.51	6	0
2413		14:30:00	1182.50	19790	410		75.0	11.510	82.550	1300	28.2	30.0	271.18	5404.33					
2414		15:00:00	1183.00	19790	410		75.0	11.510	82.550	1300	28.2	30.0	271.18	5409.98	0.30	7.20	1596.81	6	0
2415		15:30:00	1183.50	19790	410		76.0	11.510	82.550	1300	28.2	30.0	271.18	5415.63					
2416		16:00:00	1184.00	19790	410		76.0	11.510	82.550	1300	28.2	30.0	271.18	5421.28	0.15	3.60	1596.96	6	0
2417		16:30:00	1184.50	19790	410		76.0	11.510	82.550	1300	28.2	31.0	270.69	5426.92					
2418		17:00:00	1185.00	19800	410		76.0	11.510	82.550	1300	28.2	31.0	270.69	5432.56	0.35	8.40	1597.31	6	0
2419		17:30:00	1185.50	19800	410		76.0	11.510	82.550	1300	28.2	30.0	271.18	5438.21					
2420	1998/08/24	18:00:00	1186.00	19800	410		76.0	11.510	82.550	1300	28.2	30.0	271.18	5443.86	0.25	6.00	1597.56	6	0
2421		18:01:00	1186.02	H2S by Gastec shows 1.0%															
2422		18:30:00	1186.50	19800	410		76.0	11.510	82.550	1300	28.3	30.0	271.66	5449.51					
2423		19:00:00	1187.00	19790	415		76.0	11.510	82.550	1300	28.5	31.0	272.14	5455.18	0.30	7.20	1597.86	6	0
2424		19:30:00	1187.50	19790	415		76.0	11.510	82.550	1300	28.5	31.0	272.14	5460.85					
2425		20:00:00	1188.00	19790	415		76.0	11.510	82.550	1320	28.5	31.0	274.13	5466.54	0.30	7.20	1598.16	6	0
2426		20:30:00	1188.50	19790	415		76.0	11.510	82.550	1320	28.5	31.0	274.13	5472.25					
2427		21:00:00	1189.00	19790	415		74.0	11.510	82.550	1320	28.5	30.0	274.62	5477.96	0.25	6.00	1598.41	6	0
2428		21:30:00	1189.50	19790	415		74.0	11.510	82.550	1320	28.5	30.0	274.62	5483.68					
2429		22:00:00	1190.00	19790	415		73.0	11.510	82.550	1320	28.5	30.0	274.62	5489.41	0.25	6.00	1598.66	6	0
2430		22:30:00	1190.50	19780	415		73.0	11.510	82.550	1320	28.5	30.0	274.62	5495.13					
2431		23:00:00	1191.00	19780	415		74.0	11.510	82.550	1320	28.5	30.0	274.62	5500.85	0.25	6.00	1598.91	6	0
2432		23:30:00	1191.50	19780	415		73.0	11.510	82.550	1320	28.5	30.0	274.62	5506.57					
2433	1998/08/25	00:00:00	1192.00	19780	415		73.0	11.510	82.550	1320	28.5	30.0	274.62	5512.29	0.30	7.20	1599.21	6	0
2434		00:00:00	1192.00	H2S by Gastec=1.1%															
2435		00:30:00	1192.50	19780	415		74.0	11.510	82.550	1320	28.5	30.0	274.62	5518.01					
2436		01:00:00	1193.00	19780	415		73.0	11.510	82.550	1320	28.5	30.0	274.62	5523.73	0.30	7.20	1599.51	6	0
2437		01:30:00	1193.50	19780	415		74.0	11.510	82.550	1320	28.5	30.0	274.62	5529.45					
2438		02:00:00	1194.00	19780	415		74.0	11.510	82.550	1320	28.5	30.0	274.62	5535.18	0.30	7.20	1599.81	6	0
2439		02:30:00	1194.50	19780	420		74.0	11.510	82.550	1320	28.5	30.0	274.62	5540.90					
2440		03:00:00	1195.00	19780	420		73.0	11.510	82.550	1320	28.5	30.0	274.62	5546.62	0.30	7.20	1600.11	6	0
2441		03:30:00	1195.50	19780	420		73.0	11.510	82.550	1320	28.5	30.0	274.62	5552.34					
2442		04:00:00	1196.00	19780	420		74.0	11.510	82.550	1320	28.5	30.0	274.62	5558.06	0.25	6.00	1600.36	6	0
2443		04:30:00	1196.50	19780	420		74.0	11.510	82.550	1320	28.5	29.0	275.12	5563.79					
2444		05:00:00	1197.00	19780	420		74.0	11.510	82.550	1320	28.5	29.0	275.12	5569.52	0.30	7.20	1600.66	6	0
2445		05:30:00	1197.50	19780	420		74.0	11.510	82.550	1320	28.5	29.0	275.12	5575.25					
2446	1998/08/25	06:00:00	1198.00	19780	420		74.0	11.510	82.550	1320	28.5	30.0	274.62	5580.98	0.30	7.20	1600.96	6	0
2447		06:00:00	1198.00	H2S by Gastec=1.0%															
2448		06:30:00	1198.50	19780	420		74.0	11.510	82.550	1320	28.5	30.0	274.62	5586.70					
2449		07:00:00	1199.00	19780	420		75.0	11.510	82.550	1320	28.5	29.0	275.12	5592.42	0.15	3.60	1601.11	6	0
2450		07:30:00	1199.50	19780	420		75.0	11.510	82.550	1320	28.5	30.0	274.62	5598.15					
2451		08:00:00	1200.00	19780	420		75.0	11.510	82.550	1320	28.5	30.0	274.62	5603.87	0.30	7.20	1601.41	6	2000

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: • RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2452	1998/08/25	08:30:00	1200.50	19780	420		75.0	11.510	82.550	1320	28.5	30.0	274.62	5609.59					
2453		09:00:00	1201.00	19780	420		75.0	11.510	82.550	1320	28.5	30.0	221.02	5614.76	0.25	6.00	1601.66	6	2000
2454		09:30:00	1201.50	19780	420		76.0	11.510	82.550	1320	28.5	30.0	274.62	5619.92					
2455	1998/08/25	10:00:00	1202.00	19780	240		76.0	11.510	82.550	1320	28.5	30.0	274.62	5625.64	0.30	7.20	1601.96	6	2000
2456		10:30:00	1202.50	19780	420		76.0	11.510	82.550	1310	28.5	30.0	273.62	5631.35					
2457		11:00:00	1203.00	19780	420		76.0	11.510	82.550	1310	28.5	30.0	273.62	5637.05	0.25	6.00	1602.21	6	0
2458		11:30:00	1203.50	19780	420		76.0	11.510	82.550	1310	28.5	30.0	273.62	5642.75					
2459		12:00:00	1204.00	19780	420		76.0	11.510	82.550	1310	28.5	30.0	273.62	5648.45	0.25	6.00	1602.46	6	0
2460		12:01:00	1204.02	H2S by Gastec shows 1.2%															
2461		12:30:00	1204.50	19780	420		76.0	11.510	82.550	1310	28.5	30.0	273.62	5654.15					
2462		13:00:00	1205.00	19780	410		75.0	11.510	82.550	1310	28.4	30.0	273.14	5659.85	0.30	7.20	1602.76	6	0
2463		13:30:00	1205.50	19780	410		75.0	11.510	82.550	1310	28.4	30.0	273.14	5665.54					
2464	1998/08/25	14:00:00	1206.00	19780	410		75.0	11.510	82.550	1300	28.4	30.0	272.14	5671.22	0.25	6.00	1603.01	6	0
2465		14:30:00	1206.50	19780	410		75.0	11.510	82.550	1300	28.4	30.0	272.14	5676.89					
2466		15:00:00	1207.00	19780	410		75.0	11.510	82.550	1300	28.4	30.0	272.14	5682.56	0.30	7.20	1603.31	6	0
2467		15:30:00	1207.50	19780	410		75.0	11.510	82.550	1300	28.4	30.0	272.14	5688.23					
2468		16:00:00	1208.00	19780	410		75.0	11.510	82.550	1300	28.4	30.0	272.14	5693.90	0.25	6.00	1603.56	6	0
2469		16:30:00	1208.50	19780	410		75.0	11.510	82.550	1300	28.4	30.0	272.14	5699.57					
2470		17:00:00	1209.00	19780	410		75.0	11.510	82.550	1300	28.4	30.0	272.14	5705.24	0.30	7.20	1603.86	6	0
2471		17:01:00	1209.02	Samples taken 3L stock water															
2472		17:30:00	1209.50	19780	410		75.0	11.510	82.550	1300	28.4	30.0	272.14	5710.91					
2473	1998/08/25	18:00:00	1210.00	19780	410		75.0	11.510	82.550	1300	28.4	30.0	272.14	5716.58	0.25	6.00	1604.11	6	0
2474		18:00:00	1210.00	H2S by Gastec shows 1.1%															
2475		18:00:00	1210.00	Shut in well and begin to monitor buildups.															
2476		18:05:00	1210.08	21450	400			0.000	0.000	0	0.0	0.0	0.00	5716.58	0.00	0.00	1604.11		
2477		18:10:00	1210.17	21480	390														
2478		18:15:00	1210.25	21510	380														
2479		18:30:00	1210.50	21560	350														
2480		18:45:00	1210.75	21580	325														
2481		19:00:00	1211.00	21590	310														
2482		19:30:00	1211.50	21590	285														
2483		20:00:00	1212.00	21590	270														
2484		20:30:00	1212.50	21610	270														
2485		21:00:00	1213.00	21610	415														
2486		21:30:00	1213.50	21600	540														
2487	1998/08/25	22:00:00	1214.00	21600	650														
2488		22:30:00	1214.50	21590	670														
2489		23:00:00	1215.00	21590	680														
2490		23:30:00	1215.50	21580	720														
2491	1998/08/26	00:00:00	1216.00	21580	760														
2492		00:30:00	1216.50	21580	800														
2493		01:00:00	1217.00	21580	840														
2494		01:30:00	1217.50	21570	880														
2495	1998/08/26	02:00:00	1218.00	21570	920														
2496		02:30:00	1218.50	21570	980														
2497		03:00:00	1219.00	21570	990														
2498		03:30:00	1219.50	21570	1020														
2499		04:00:00	1220.00	21570	1040														
2500		04:30:00	1220.50	21560	1070														
2501		05:00:00	1221.00	21560	1100														
2502		05:30:00	1221.50	21550	1120														
2503	1998/08/26	06:00:00	1222.00	21550	1140														
2504		06:30:00	1222.50	21550	1170														
2505		07:00:00	1223.00	21570	1190														
2506		07:30:00	1223.50	21570	1215														
2507		08:00:00	1224.00	21570	1230														
2508		08:30:00	1224.50	21570	1260														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2509	1998/08/26	09:00:00	1225.00	21570	1280				0.000										
2510		09:30:00	1225.50	21550	1300														
2511	1998/08/26	10:00:00	1226.00	21550	1320														
2512		10:30:00	1226.50	21550	1340														
2513		11:00:00	1227.00	21540	1400														
2514		11:30:00	1227.50	21540	1425														
2515		12:00:00	1228.00	21540	1425														
2516		12:30:00	1228.50	21540	1425														
2517		13:00:00	1229.00	21540	1425														
2518		13:30:00	1229.50	21540	1425														
2519	1998/08/26	14:00:00	1230.00	21540	1425														
2520		14:30:00	1230.50	21540	1425														
2521		15:00:00	1231.00	21530	1500														
2522		15:30:00	1231.50	21530	1500														
2523		16:00:00	1232.00	21530	1580														
2524		16:30:00	1232.50	21530	1600														
2525		17:00:00	1233.00	21530	1600														
2526		17:30:00	1233.50	21530	1600														
2527	1998/08/26	18:00:00	1234.00	21530	1600														
2528		18:30:00	1234.50	21530	1600														
2529		19:00:00	1235.00	21530	1600														
2530		19:30:00	1235.50	21520	1600														
2531		20:00:00	1236.00	21520	1600														
2532		20:30:00	1236.50	21520	1600														
2533		21:00:00	1237.00	21520	1625														
2534		21:30:00	1237.50	21520	1625														
2535		22:00:00	1238.00	21520	1625														
2536		22:30:00	1238.50	21520	1700														
2537		23:00:00	1239.00	21520	1700														
2538		23:30:00	1239.50	21520	1700														
2539	1998/08/27	00:00:00	1240.00	21520	1700														
2540		00:30:00	1240.50	21520	1700														
2541		01:00:00	1241.00	21500	1750														
2542		01:30:00	1241.50	21500	1750														
2543		02:00:00	1242.00	21500	1750														
2544		02:30:00	1242.50	21500	1775														
2545		03:00:00	1243.00	21500	1775														
2546		03:30:00	1243.50	21500	1775														
2547		04:00:00	1244.00	21490	1775														
2548		04:30:00	1244.50	21490	1775														
2549		05:00:00	1245.00	21490	1775														
2550		05:30:00	1245.50	21490	1775														
2551	1998/08/27	06:00:00	1246.00	21490	1775														
2552		06:30:00	1246.50	21490	1775														
2553		07:00:00	1247.00	21480	1775														
2554		07:30:00	1247.50	21470	1790														
2555		08:00:00	1248.00	21470	1790														
2556		08:30:00	1248.50	21470	1790														
2557		09:00:00	1249.00	21470	1790														
2558		09:30:00	1249.50	21470	1790														
2559		10:00:00	1250.00	21470	1790														
2560		10:30:00	1250.50	21470	1790														
2561		11:00:00	1251.00	21470	1800														
2562		11:30:00	1251.50	21470	1800														
2563	1998/08/27	12:00:00	1252.00	21470	1800														
2564		12:30:00	1252.50	21470	1800														
2565		13:00:00	1253.00	21470	1800														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: • RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2566	1998/08/27	13:30:00	1253.50	21470	1800				0.000										
2567		14:00:00	1254.00	21470	1800														
2568		14:30:00	1254.50	21470	1800														
2569		15:00:00	1255.00	21470	1800														
2570		15:30:00	1255.50	21470	1800														
2571		16:00:00	1256.00	21470	1800														
2572		16:30:00	1256.50	21470	1800														
2573		17:00:00	1257.00	21470	1800														
2574		17:30:00	1257.50	21470	1800														
2575	1998/08/27	18:00:00	1258.00	21470	1800														
2576		18:00:00	1258.00	Begin blowing down coil unit.															
2577		18:30:00	1258.50	21470	1800														
2578		18:45:00	1258.75	Finished blowing down coil															
2579		19:00:00	1259.00	21470	1800														
2580		19:30:00	1259.50	21470	1750										1.45	0.71	1605.56		
2581		19:35:00	1259.58	Bleed off casing.															
2582		20:00:00	1260.00	21470	1200														
2583		20:30:00	1260.50	21470	1200														
2584		21:00:00	1261.00	21470	1250														
2585		21:30:00	1261.50	21470	1350														
2586	1998/08/27	22:00:00	1262.00	21470	1400														
2587		22:30:00	1262.50	21470	1400														
2588		23:00:00	1263.00	21470	1400														
2589		23:30:00	1263.50	21470	1450														
2590	1998/08/28	00:00:00	1264.00	21470	1550														
2591		00:00:00	1264.00	Checked 400 bbls for acid leakage.															
2592		00:30:00	1264.50	21470	1550														
2593		01:00:00	1265.00	21470	1550														
2594		01:30:00	1265.50	21470	1600														
2595	1998/08/28	02:00:00	1266.00	21470	1600														
2596		02:30:00	1266.50	21470	1650														
2597		03:00:00	1267.00	21470	1700														
2598		03:30:00	1267.50	21470	1700														
2599		04:00:00	1268.00	21470	1750														
2600		04:30:00	1268.50	21470	1800														
2601		05:00:00	1269.00	21470	1800														
2602		05:30:00	1269.50	21470	1850														
2603	1998/08/28	06:00:00	1270.00	21470	1900														
2604		06:00:00	1270.00	Checked 400 bbls for acid leakage.															
2605		06:30:00	1270.50	21470	1850														
2606		07:00:00	1271.00	21470	1850														
2607		07:30:00	1271.50	21470	1825														
2608		08:00:00	1272.00	21470	1825														
2609		08:30:00	1272.50	21470	1825														
2610		09:00:00	1273.00	21470	1800														
2611		09:30:00	1273.50	21460	1800														
2612		10:00:00	1274.00	21460	1800														
2613		10:30:00	1274.50	21450	1800														
2614		11:00:00	1275.00	21450	1800														
2615		11:30:00	1275.50	21450	1800														
2616	1998/08/28	12:00:00	1276.00	21450	1800														
2617		12:30:00	1276.50	21450	1800														
2618		13:00:00	1277.00	21450	1800														
2619		13:30:00	1277.50	21450	1800														
2620		14:00:00	1278.00	21450	1800														
2621		14:30:00	1278.50	21450	1800														
2622		15:00:00	1279.00	21450	1800														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2623	1998/08/28	15:30:00	1279.50	21440	1800				0.000										
2624		16:00:00	1280.00	21440	1800														
2625		16:30:00	1280.50	21440	1800														
2626		17:00:00	1281.00	21440	1800														
2627		17:30:00	1281.50	21440	1800														
2628	1998/08/28	18:00:00	1282.00	21440	1800														
2629		18:00:00	1282.00	Checked 400 bbl tanks for acid leakage. Casing checked for sour.															
2630		18:30:00	1282.50	21440	1850														
2631		19:00:00	1283.00	21440	1850														
2632		19:30:00	1283.50	21440	1850														
2633		20:00:00	1284.00	21440	1850														
2634		20:30:00	1284.50	21440	1850														
2635		21:00:00	1285.00	21440	1850														
2636		21:30:00	1285.50	21440	1850														
2637		22:00:00	1286.00	21440	1850														
2638		22:30:00	1286.50	21440	1850														
2639		23:00:00	1287.00	21440	1850														
2640		23:30:00	1287.50	21440	1850														
2641	1998/08/29	00:00:00	1288.00	21440	1850														
2642		00:00:00	1288.00	Checked 400 bbls for acid leakage.															
2643		00:30:00	1288.50	21440	1850														
2644		01:00:00	1289.00	21440	1850														
2645		01:30:00	1289.50	21440	1850														
2646		02:00:00	1290.00	21440	1850														
2647		02:30:00	1290.50	21440	1850														
2648		03:00:00	1291.00	21440	1850														
2649		03:30:00	1291.50	21440	1850														
2650		04:00:00	1292.00	21440	1850														
2651		04:30:00	1292.50	21440	1850														
2652		05:00:00	1293.00	21440	1850														
2653		05:30:00	1293.50	21440	1850														
2654	1998/08/29	06:00:00	1294.00	21440	1850														
2655		06:00:00	1294.00	Checked 400 bbls for leakage. Checked casing for sour															
2656		06:30:00	1294.50	21440	1850														
2657		07:00:00	1295.00	21440	1850														
2658		07:30:00	1295.50	21440	1850														
2659		08:00:00	1296.00	21440	1850														
2660		08:30:00	1296.50	21440	1850														
2661		09:00:00	1297.00	21440	1850														
2662		09:30:00	1297.50	21440	1850														
2663		10:00:00	1298.00	21440	1850														
2664		10:30:00	1298.50	21440	1850														
2665		11:00:00	1299.00	21440	1850														
2666		11:30:00	1299.50	21440	1850														
2667		12:00:00	1300.00	21440	1850														
2668		12:30:00	1300.50	21440	1850														
2669		13:00:00	1301.00	21440	1850														
2670		13:30:00	1301.50	21440	1850														
2671		14:00:00	1302.00	21440	1850														
2672		14:30:00	1302.50	21440	1850														
2673		15:00:00	1303.00	21440	1850														
2674		15:30:00	1303.50	21440	1850														
2675		15:30:00	1303.50	Shut in master valve															
2676		17:40:00	1305.67	Pressure test complete.															
2677	1998/08/29	18:00:00	1306.00	Hold safety meeting															
2678		19:00:00	1307.00	Wireline pulling out of hole															
2679		20:30:00	1308.50	Open master valve and record buildups.															

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: * RANGER OIL LIMITED
Wellname: PORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2680	1998/08/29	20:30:00	1308.50	21440	1850				0.000										
2681		21:00:00	1309.00	21440	1850														
2682		21:30:00	1309.50	21440	1850														
2683		22:00:00	1310.00	21440	1850														
2684		22:10:00	1310.17	Shut in master valve															
2685		22:25:00	1310.42	Open master valve															
2686		22:30:00	1310.50	21440	1850														
2687		23:00:00	1311.00	21440	1850														
2688		23:30:00	1311.50	21440	1850														
2689	1998/08/30	00:00:00	1312.00	21440	1850														
2690		00:00:00	1312.00	Checked 400 bbls for acid leakage.															
2691		00:30:00	1312.50	21440	1850														
2692		01:00:00	1313.00	21440	1850														
2693		01:30:00	1313.50	21440	1850														
2694		02:00:00	1314.00	21430	1850														
2695		02:30:00	1314.50	21430	1850														
2696		03:00:00	1315.00	21430	1850														
2697		03:30:00	1315.50	21430	1850														
2698		04:00:00	1316.00	21430	1850														
2699		04:30:00	1316.50	21430	1850														
2700		05:00:00	1317.00	21430	1850														
2701		05:30:00	1317.50	21430	1850														
2702	1998/08/30	06:00:00	1318.00	21430	1850														
2703		06:00:00	1318.00	Checked 400 bbls for acid leakage. Checked casing for sour															
2704		06:30:00	1318.50	21430	1850														
2705		07:00:00	1319.00	21430	1900														
2706		07:30:00	1319.50	21430	1900														
2707		08:00:00	1320.00	21430	1900														
2708		08:30:00	1320.50	21430	1900														
2709		09:00:00	1321.00	21430	1900														
2710		09:30:00	1321.50	21430	1900														
2711		10:00:00	1322.00	21430	1900														
2712		10:30:00	1322.50	21430	1900														
2713		11:00:00	1323.00	21430	1900														
2714		11:30:00	1323.50	21430	1900														
2715	1998/08/30	12:00:00	1324.00	21430	1900														
2716		12:30:00	1324.50	21430	1900														
2717		12:40:00	1324.67	New wireline truck on location															
2718		15:30:00	1327.50	Pressure test complete.															
2719		16:07:00	1328.12	Wireline run in hole with tubing swedge.															
2720		16:30:00	1328.50	Wireline out of hole.															
2721		16:35:00	1328.58	Wireline run in hole with wire grab.															
2722		17:00:00	1329.00	Wireline out of hole															
2723		18:45:00	1330.75	Pressure test complete															
2724		19:45:00	1331.75	Wireline out of hole															
2725		20:20:00	1332.33	Wireline run in hole with wire grab.															
2726		21:00:00	1333.00	Wireline out of hole															
2727		21:10:00	1333.17	Wireline run in hole with wire grab.															
2728		21:25:00	1333.42	Wireline out of hole															
2729		21:55:00	1333.92	Wireline run in hole with RB tool.															
2730		22:45:00	1334.75	Wireline out of hole.															
2731		23:05:00	1335.08	Wireline run in hole with RB tool.															
2732		23:45:00	1335.75	Wireline out of hole.															
2733		23:55:00	1335.92	Wireline run in hole with wire grab.															
2734	1998/08/31	00:30:00	1336.50	Wireline out of hole with wire grab															
2735		00:45:00	1336.75	Shut inlet valve on 400 bbl production tank															
2736		00:50:00	1336.83	Begin pumping produced fluid down hole at a rate of 0.2 m3 per minute to cool well.															

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2737	1998/08/31	02:30:00	1338.50		1600				0.000										
2738		02:35:00	1338.58	Finished pumping fluid down hole.															
2739		02:40:00	1338.67	Wireline run in hole with wire grab.															
2740		03:00:00	1339.00	2450	1600														
2741		03:25:00	1339.42	Wireline out of hole with wire grab.															
2742		03:45:00	1339.75	Wireline run in hole with wire grab.															
2743		04:00:00	1340.00	3650	1700														
2744		04:10:00	1340.17	Wireline out of hole with minimal wire recovered.															
2745		04:25:00	1340.42	Wireline run in hole with wire grab.															
2746		04:30:00	1340.50	4500	1700														
2747		05:00:00	1341.00	Wireline out of hole.															
2748		05:08:00	1341.13	Wireline run in hole with RB tool.															
2749		05:10:00	1341.17	5970	1800														
2750		05:30:00	1341.50	6550	1800														
2751	1998/08/31	06:00:00	1342.00	7420	1800														
2752		07:00:00	1343.00	9990	1800														
2753		07:00:00	1343.00	Note. 1.1m3 of water was returned to the pressure tank in the last 24 hours due to pressure testing and bleeding off.															
2754		07:01:00	1343.02	Wireline out of hole															
2755		07:25:00	1343.42	Wireline run in hole with pulling tool.															
2756		07:30:00	1343.50	9970	1800														
2757		08:00:00	1344.00	10870	1800														
2758		08:15:00	1344.25	Wireline out of hole.															
2759		08:27:00	1344.45	Wireline run in hole with pulling tool.															
2760		08:30:00	1344.50	11470	1800														
2761		08:55:00	1344.92	Wireline out of hole.															
2762		09:15:00	1345.25	12380	1900														
2763	1998/08/31	09:15:00	1345.25	Wireline run in hole with pulling tool.															
2764		09:30:00	1345.50	12560	1900														
2765		09:30:00	1345.50	Wireline out of hole with wire grab and 1m of wire.															
2766		09:45:00	1345.75	Begin pumping 12m3 of water down hole at .2m3/min.															
2767		10:55:00	1346.92	Finished pumping.															
2768		10:55:00	1346.92	4200	1775														
2769		11:00:00	1347.00	4370	1775														
2770		11:00:00	1347.00	Wireline run in hole with wire grab.															
2771		11:30:00	1347.50	5450	1700														
2772		11:45:00	1347.75	Wireline out of hole															
2773		11:50:00	1347.83	Wireline run in hole with pulling tool.															
2774	1998/08/31	12:30:00	1348.50	7450	1750														
2775		12:31:00	1348.52	Wireline out of hole.															
2776		12:40:00	1348.67	7920	1750														
2777		12:41:00	1348.68	Wireline run in hole with pulling tool.															
2778		13:00:00	1349.00	8460	1800														
2779		13:30:00	1349.50	9260	1850														
2780		14:00:00	1350.00	10060	1850														
2781		14:07:00	1350.12	Wireline out of hole.															
2782		14:30:00	1350.50	10900	1850														
2783		14:30:00	1350.50	Wireline run in hole with pulling tool.															
2784		14:51:00	1350.85	Wireline out of hole.															
2785	1998/08/31	15:00:00	1351.00	12570	1850														
2786		15:00:00	1351.00	Wireline run in hole with pulling tool.															
2787		15:15:00	1351.25	Wireline out of hole.															
2788		15:20:00	1351.33	Wireline run in hole with pulling tool.															
2789		15:30:00	1351.50	12440	1850														
2790		15:55:00	1351.92	Wireline out of hole.															
2791		16:00:00	1352.00	13320	1900														
2792		16:00:00	1352.00	Wireline run in hole with pulling tool.															
2793		16:30:00	1352.50	13900	1900														

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2794	1998/08/31	16:33:00	1352.55	Wireline out of hole with wire grab and 2m of wire.															
2795		16:45:00	1352.75	Begin pumping 25m3 of water down hole at .3m3/min.															
2796	1998/08/31	18:15:00	1354.25	Finished pumping fluid															
2797		18:15:00	1354.25	650	1600				0.000										
2798		18:30:00	1354.50	1020	1650														
2799		18:45:00	1354.75	Wireline out of hole															
2800		18:55:00	1354.92	Wireline run in hole with wire grab.															
2801		19:00:00	1355.00	1550	1650														
2802		19:30:00	1355.50	Wireline out of hole															
2803		20:10:00	1356.17	Wireline run in hole with wire grab.															
2804		20:15:00	1356.25	3780	1650														
2805		21:20:00	1357.33	Wireline out of hole															
2806		21:30:00	1357.50	6280	1800														
2807		21:45:00	1357.75	Wireline run in hole with wire grab.															
2808		21:50:00	1357.83	6885	1800														
2809		22:20:00	1358.33	Wireline out of hole															
2810		22:25:00	1358.42	Wireline run in hole with wire grab.															
2811		22:30:00	1358.50	7960	1800														
2812		23:05:00	1359.08	Wireline out of hole															
2813		23:20:00	1359.33	Wireline run in hole with spear.															
2814		23:30:00	1359.50	9550	1800														
2815		23:45:00	1359.75	Wireline out of hole															
2816	1998/09/01	00:05:00	1360.08	Wireline run in hole with wire grab.															
2817		00:10:00	1360.17	10760	1900														
2818		00:30:00	1360.50	11565	1900														
2819		01:00:00	1361.00	12200	1900														
2820		01:15:00	1361.25	Wireline out of hole															
2821		01:35:00	1361.58	Wireline run in hole with RB tool to retrieve tool string.															
2822		01:40:00	1361.67	13430	1900														
2823		01:55:00	1361.92	Wireline out of hole with tool string.															
2824		02:15:00	1362.25	13750	1900														
2825		02:25:00	1362.42	Begin pumping fluid down hole at a rate of 0.2m3/min to cool well.															
2826		04:35:00	1364.58	Finished pumping 25 m3 of fluid down hole.															
2827		04:35:00	1364.58	500	1650														
2828		04:35:00	1364.58	Wireline run in hole with wire grab.															
2829		05:05:00	1365.08	Wireline out of hole															
2830		05:15:00	1365.25	Wireline run in hole with RB tool to retrieve tool string.															
2831		05:15:00	1365.25	1510	1750														
2832		05:30:00	1365.50	Wireline out of hole															
2833		05:35:00	1365.58	Wireline run in hole with RB tool to retrieve tool string.															
2834		05:35:00	1365.58	2250	1800														
2835		05:45:00	1365.75	Wireline out of hole															
2836		05:55:00	1365.92	Wireline run in hole with RB tool to retrieve tool string.															
2837		05:55:00	1365.92	2845	1800														
2838		06:10:00	1366.17	Wireline out of hole with tool string.															
2839		06:20:00	1366.33	Wireline run in hole with wire grab.															
2840	1998/09/01	06:20:00	1366.33	3670	1800														
2841		06:45:00	1366.75	Wireline out of hole															
2842		06:55:00	1366.92	4860	1800														
2843		06:57:00	1366.95	Wireline run in hole with wire grab.															
2844		07:25:00	1367.42	Wireline out of hole with wire grab															
2845		07:30:00	1367.50	6100	1800														
2846		07:52:00	1367.87	Wireline run in hole with wire grab.															
2847		08:00:00	1368.00	6900	1800														
2848		08:30:00	1368.50	7880	1800														
2849		09:00:00	1369.00	8750	1800														
2850		09:05:00	1369.08	Wireline out of hole															

Fast

Job Number: GP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2851	1998/09/01	10:20:00	1370.33	11080	1850				0.000										
2852		10:20:00	1370.33	Wireline run in hole with pulling tool.															
2853		10:30:00	1370.50	11340	1850														
2854		10:52:00	1370.87	Wireline out of hole with wire grab															
2855		11:00:00	1371.00	12010	1900														
2856		11:00:00	1371.00	Wireline run in hole with wire grab.															
2857		11:23:00	1371.38	Wireline out of hole															
2858		11:30:00	1371.50	12820	1900														
2859		11:30:00	1371.50	Wireline run in hole with pulling tool.															
2860		12:00:00	1372.00	13220	1900														
2861		12:15:00	1372.25	Wireline out of hole with wire.															
2862	1998/09/01	12:30:00	1372.50	13800	1900														
2863		13:00:00	1373.00	14380	1900														
2864		13:30:00	1373.50	14940	1900														
2865		14:00:00	1374.00	15390	1950														
2866		14:30:00	1374.50	15850	1950														
2867		15:00:00	1375.00	16350	1950														
2868		15:30:00	1375.50	16700	1950														
2869		16:00:00	1376.00	17050	1950														
2870		16:22:00	1376.37	Wireline out of hole.															
2871		16:30:00	1376.50	Begin pumping 25m3 of filtered produced water down tubing.															
2872	1998/09/01	18:05:00	1378.08	Finished pumping															
2873		18:30:00	1378.50	300	1750														
2874		19:45:00	1379.75	Wireline out of hole with recorders.															
2875		20:10:00	1380.17	Wireline run in hole to retrieve dart.															
2876		20:15:00	1380.25	3520	1850														
2877		21:20:00	1381.33	Wireline out of hole with dart.															
2878		21:30:00	1381.50	5760	1850														
2879		21:35:00	1381.58	Begin pumping filtered produced water down hole.															
2880		22:00:00	1382.00		1800														
2881		22:30:00	1382.50		1700														
2882		23:00:00	1383.00		1600														
2883		23:30:00	1383.50		1400														
2884	1998/09/02	00:00:00	1384.00		1400														
2885		00:30:00	1384.50		1400														
2886		01:00:00	1385.00		1400														
2887		01:30:00	1385.50		1400														
2888		02:00:00	1386.00		1400														
2889		02:30:00	1386.50		1400														
2890		03:00:00	1387.00		1400														
2891		03:30:00	1387.50		1400														
2892		04:00:00	1388.00		1400														
2893		04:30:00	1388.50		1400														
2894		05:00:00	1389.00		1400														
2895		05:30:00	1389.50		1400														
2896	1998/09/02	06:00:00	1390.00		1400														
2897		06:30:00	1390.50		1350														
2898		07:00:00	1391.00	300	1350														
2899		13:20:00	1397.33	Finished pumping filtered produced water down hole.															
2900		13:25:00	1397.42	Rig on wireline and pressure test.															
2901		14:10:00	1398.17	Pressure test complete.															
2902		14:10:00	1398.17		1900														
2903		15:20:00	1399.33	Wireline out of hole.															
2904		15:30:00	1399.50	Wireline run in hole with plug.															
2905		15:30:00	1399.50		2000														
2906		17:20:00	1401.33	Wireline out of hole.															
2907		17:30:00	1401.50	Wireline run in hole with prong.															

Fast

Job Number: JP98-114 RANGER01.FAS
Customer: RANGER OIL LIMITED
Wellname: FORT LIARD
Well Location: P-66-A
Formation: TIGHT HOLE

FieldNotes

NORWARD ENERGY SERVICES

Row	Date	Clk Tim	C Time	Pt	Pc	RTR	WHT	Choke	Orif	Static	Diff	Temp	Gas Rate	Cum Gas	H2O/hr	H2O Rate	Cum H2O	pH	SALINITY
	yy/mm/dd	clock	hr	kPag	kPag	kPa	C	mm	mm	kPag	kPa	C	10^3m3/d	10^3m3	m3	m3/d	m3		ppm
2908	1998/09/02	17:30:00	1401.50		2200				0.000										
2909		18:15:00	1402.25	Wireline out of hole.															
2910		18:30:00	1402.50	Pressure test tubing and plug to 28MPa.															
2911		18:45:00	1402.75	Pressure test complete															
2912		20:15:00	1404.25	Pressure test packer.															
2913		20:50:00	1404.83	Set back pressure valve.															
2914		21:00:00	1405.00	Purge and begin to rig out testing equipment.															
2915		21:00:00	1405.00					0.000	0.000	0	0.0	0.0	0.00	5716.58					
2916		21:00:00	1405.00	END OF TEST.															

Fast

AGAT® Laboratories

GAS ANALYSIS

CONTAINER IDENTIFICATION: AGAT 21667

LABORATORY NUMBER: GP28775A

OPERATOR NAME: RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER:

WELL NAME:

ELEVATIONS KB m: GRD m:

FIELD OR AREA: LIARD

POOL OR ZONE:

NAME OF SAMPLER: JH

COMPANY: AGAT

TEST TYPE:

NO:

TEST RECOVERY: p-066-A/

TEST INTERVAL OR PERFS:

SAMPLING POINT: INLET

	SEPARATOR	TREATER	REBOILER	SOURCE	SAMPLED	RECEIVED
GAUGE PRESSURE kPa				1250	1250	1240
TEMPERATURE °C				56	56	21

DATE SAMPLED (Y-M-D): 98-07-11

DATE RECEIVED (Y-M-D): 98-07-18

DATE REPORTED (Y-M-D): 98-08-11

ANALYST: VH NCO

OTHER INFORMATION: SAMPLED @ 6:00PM

COMP.	MOLE FRACTION AIR FREE AS RECEIVED	AIR FREE ACID GAS FREE	PETROLEUM LIQUID CONTENT IPL = m³/10³ m³
N_2	0.0006	0.0008	
He	0.0011	0.0013	
H_2	0.0497	0.0595	
CO_2	0.1564	0.0000	
H_2S	0.0085	0.0000	
C_1	0.7827	0.9372	
C_2	0.0010	0.0012	
C_3	0.0000	0.0000	0.0
iC_4	0.0000	0.0000	0.0
nC_4	0.0000	0.0000	0.0
iC_5	0.0000	0.0000	0.0
nC_5	0.0000	0.0000	0.0
C_6	0.0000	0.0000	0.0
C_7	0.0000	0.0000	0.0
C_8	0.0000	0.0000	0.0
C_9	0.0000	0.0000	0.0
C_{10+}	0.0000	0.0000	0.0
TOTAL	1.0000	1.0000	0.0

GROSS HEATING VALUE MJ/m³ (15° C AND 101.325 kPa)

MOISTURE AND ACID GAS FREE: 35.49

AIR FREE AS RECEIVED: 29.86

VAPOUR PRESSURE PENTANES PLUS: 0.0 kPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED — MEASURED: | CALCULATED: 0.731

MOISTURE AND ACID GAS FREE — MEASURED: | CALCULATED: 0.578

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED — pPc (SI): 5010 kPa | pTc: 206.5 K

ACID GAS FREE — pPc (SI): 4525 kPa | pTc: 186.5 K

RELATIVE MOLECULAR MASS

TOTAL GAS: 21.1 | C_{7+}: 0.0

H_2S gm/m³: 12.26

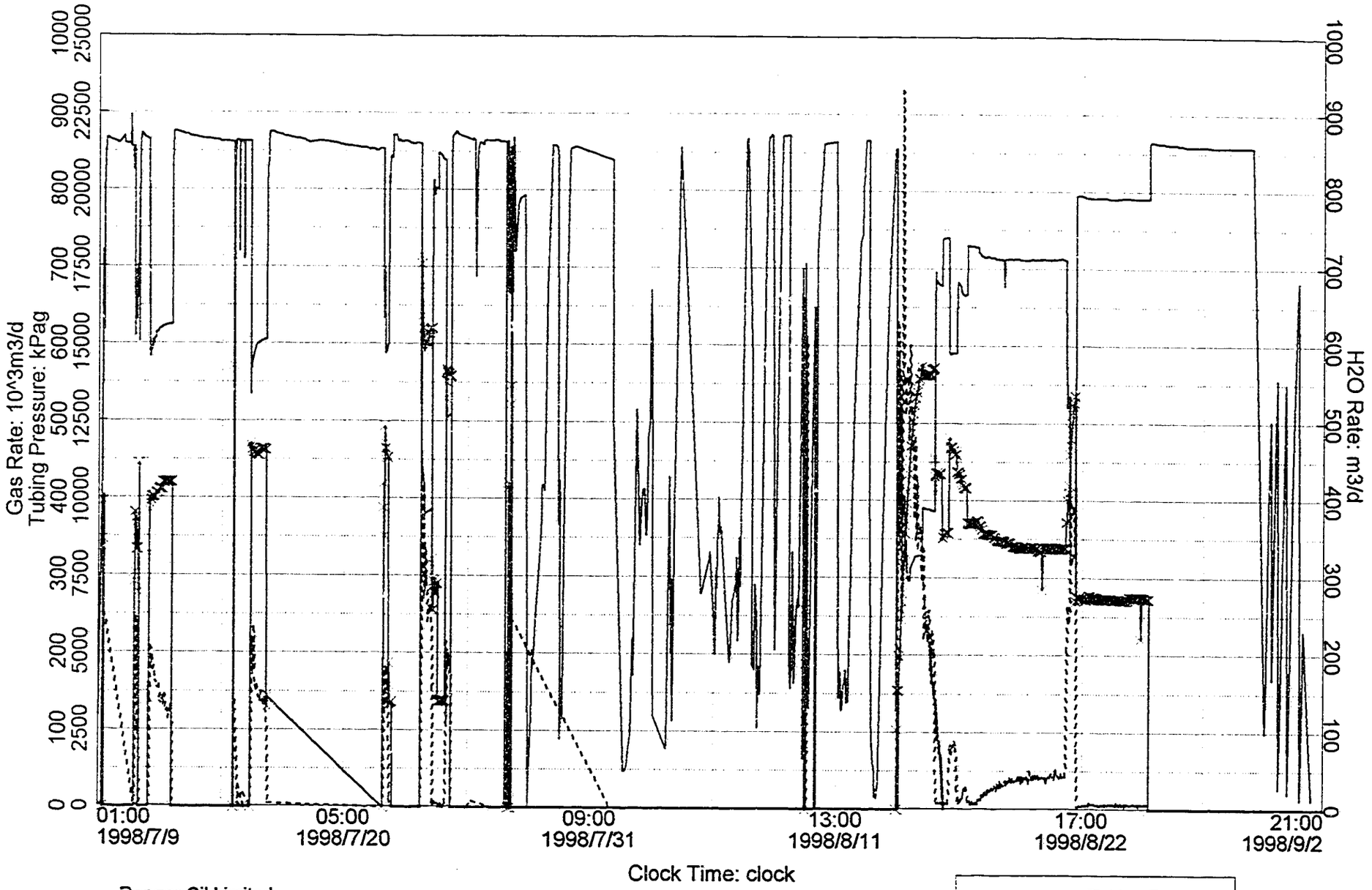
REMARKS:

EXCEED NORMAL LIMITS : CO2
FIELD H2S = 0.85%

FORM # 24-001

Ranger Fort Liard P-66-A

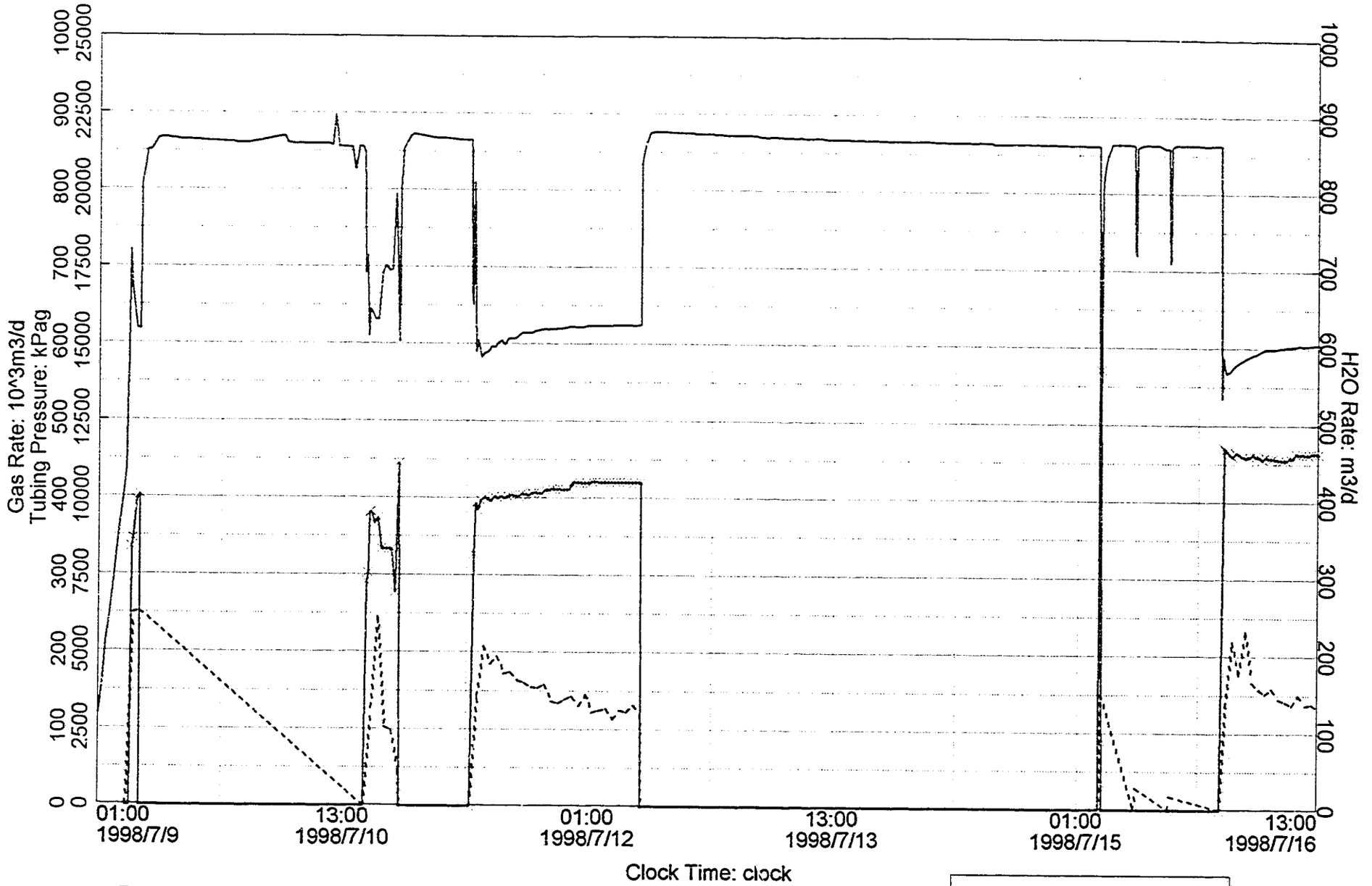
NORWARD



Ranger Oil Limited
TIGHT HOLE
July 9 - September 2, 1998

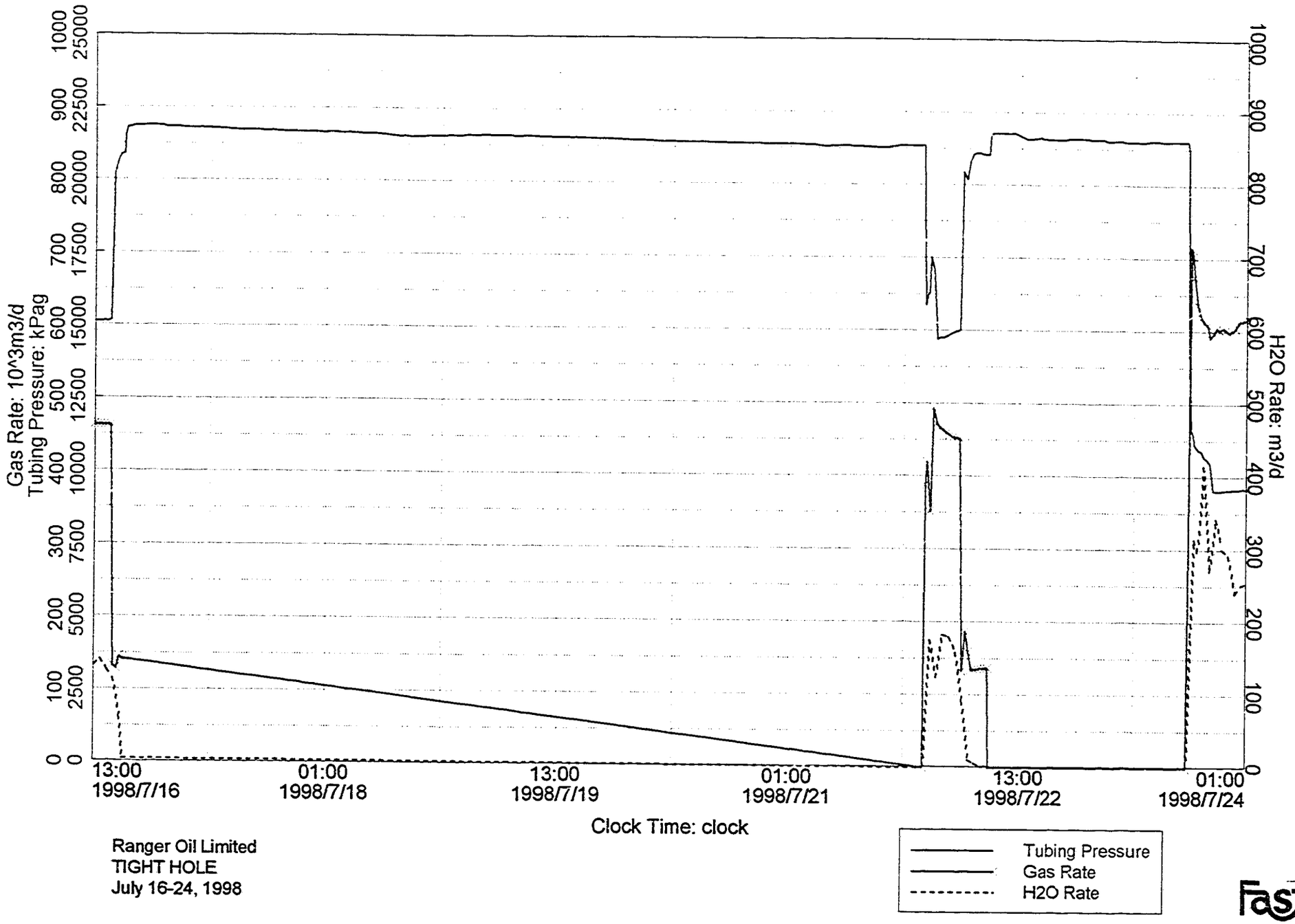
fast

Ranger Fort Liard P-66-A



Ranger Oil Limited
TIGHT HOLE
July 9-16, 1998

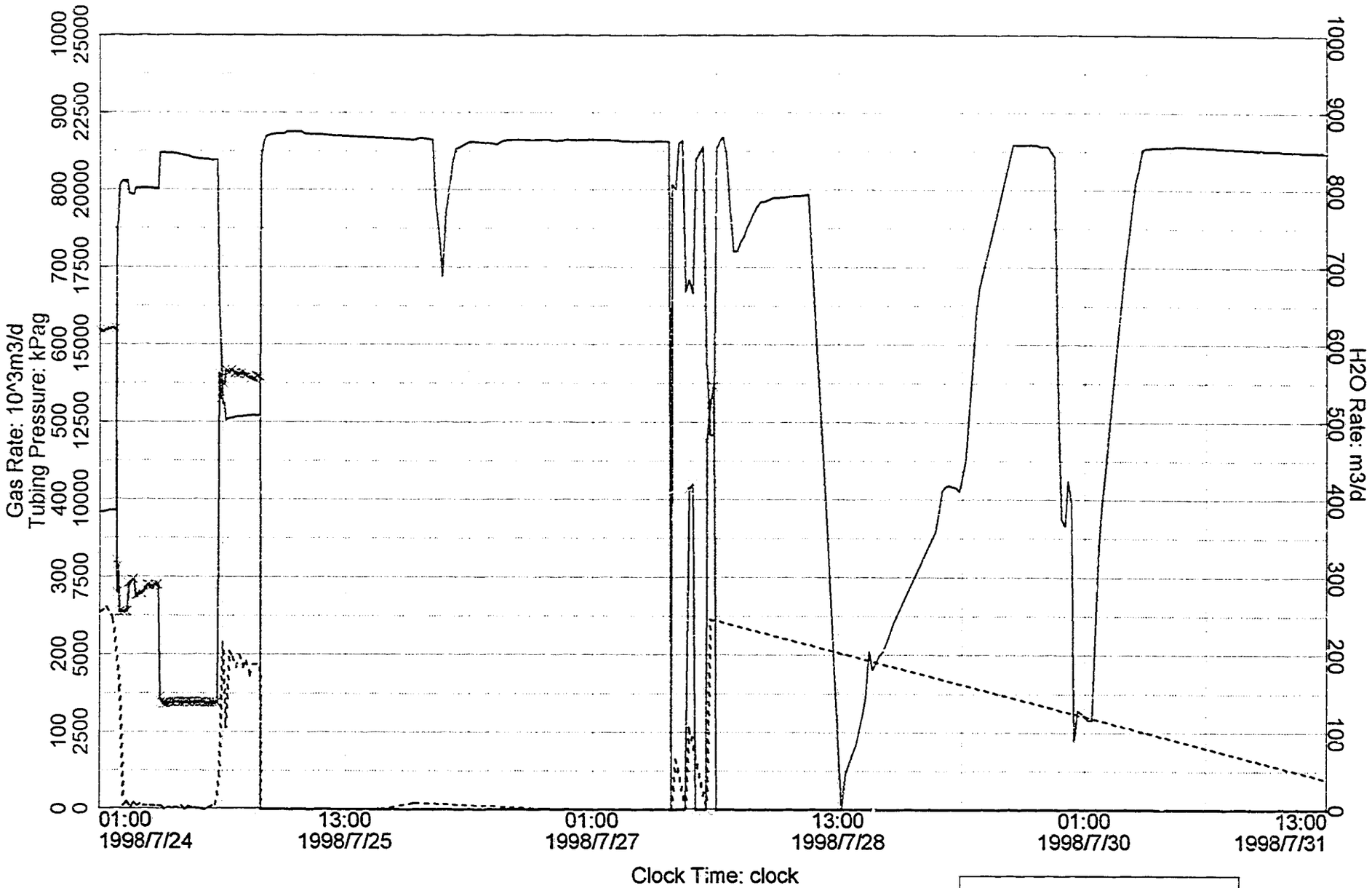
Ranger Fort Liard P-66-A



Ranger Oil Limited
TIGHT HOLE
July 16-24, 1998

Ranger Fort Liard P-66-A

NORWARD

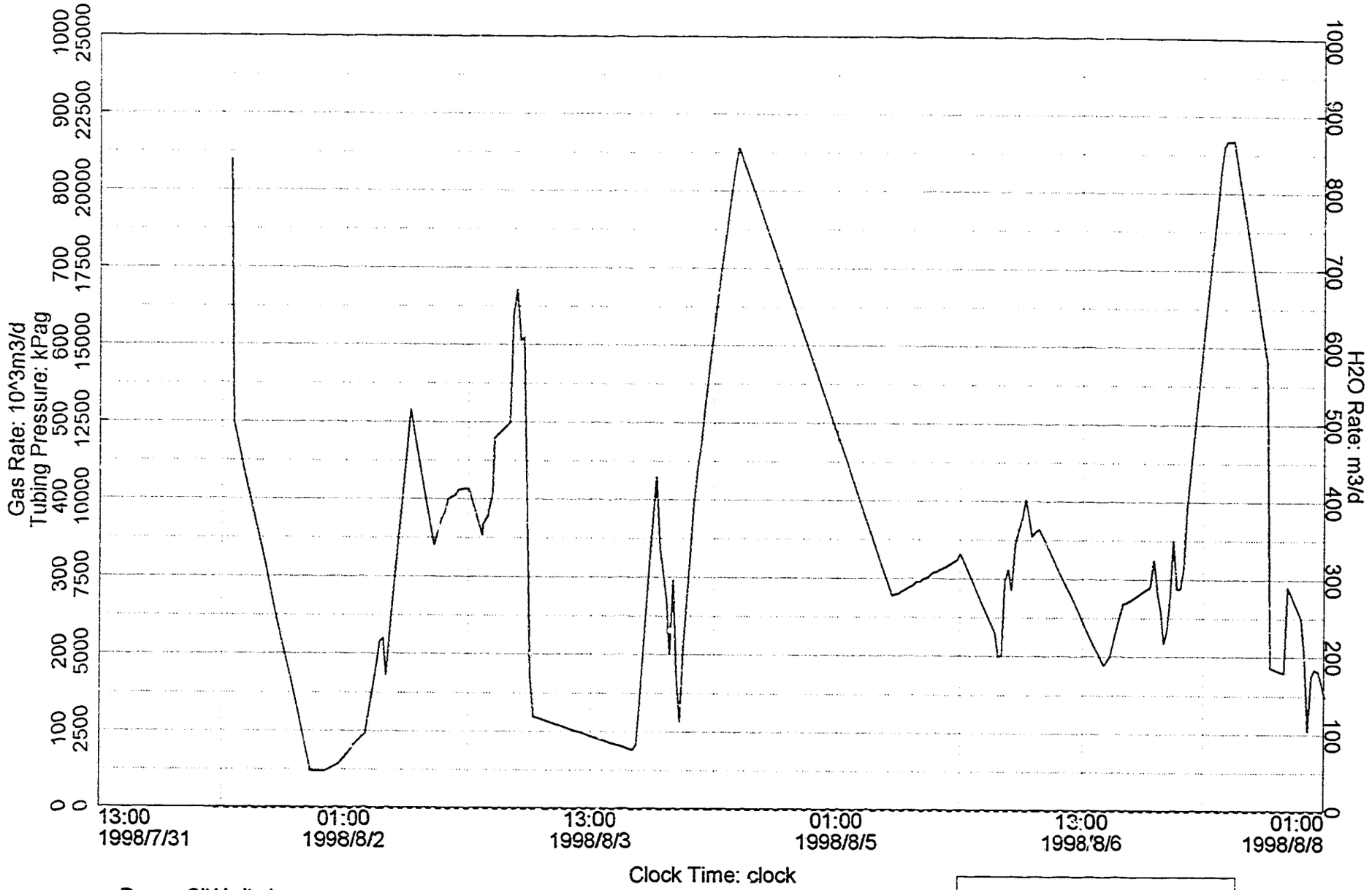


Ranger Oil Limited
TIGHT HOLE
July 24-31, 1998

Fast

Ranger Fort Liard P-66-A

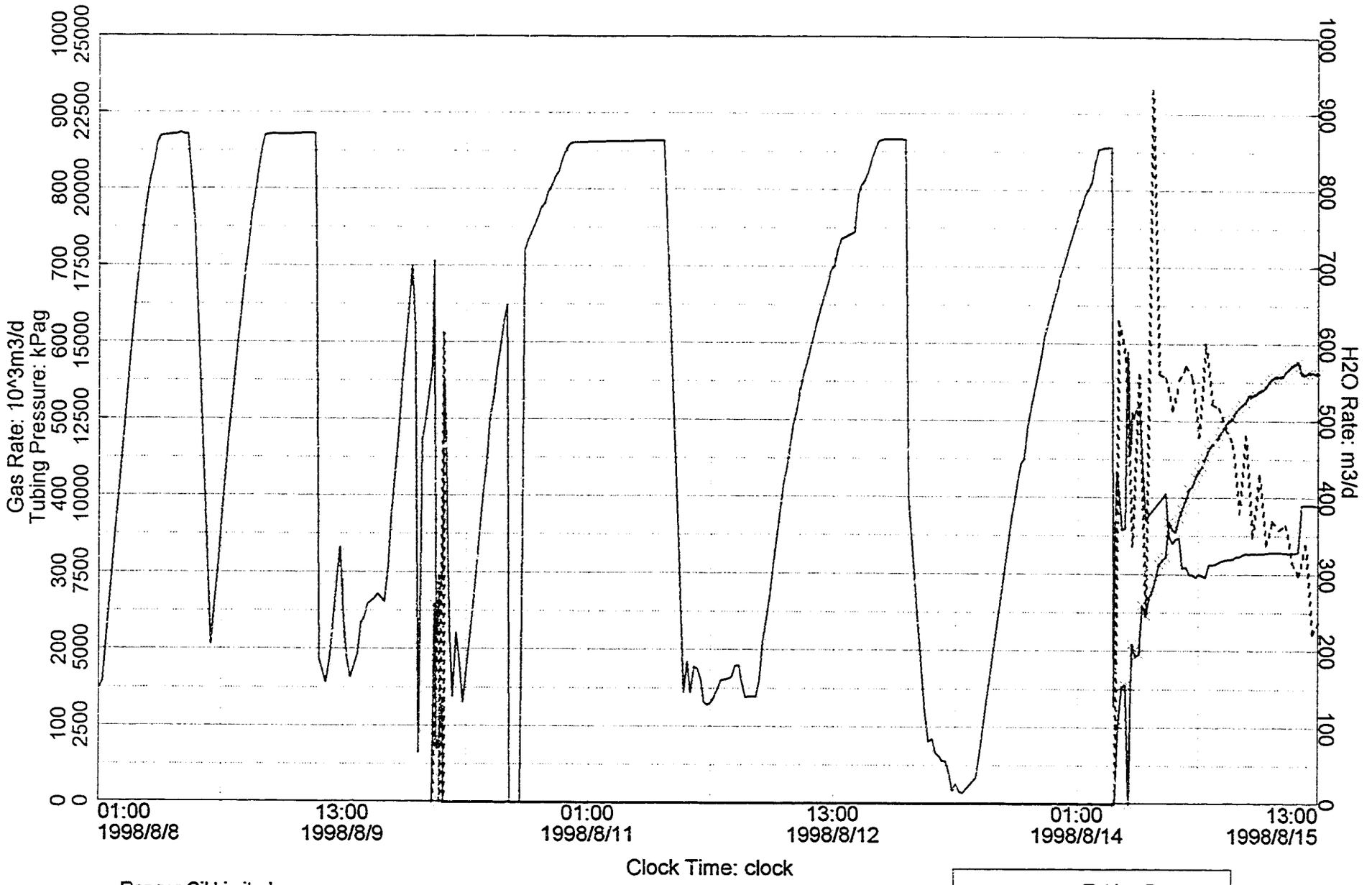
NORWARD



Ranger Oil Limited
TIGHT HOLE
July 31 - August 8, 1998

Fast

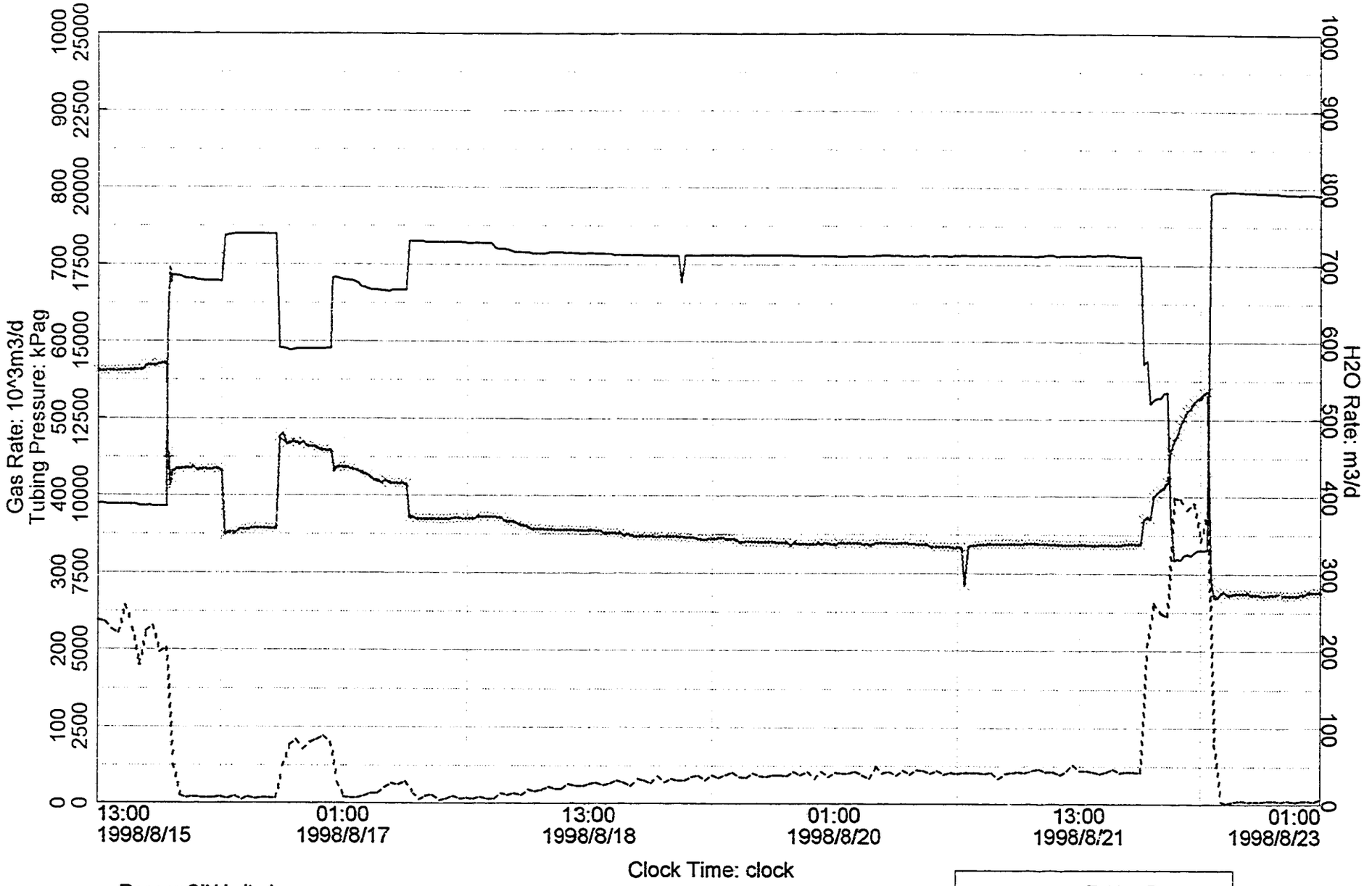
Ranger Fort Liard P-66-A



Ranger Oil Limited
TIGHT HOLE
August 8-15, 1998

Ranger Fort Liard P-66-A

NORWARD

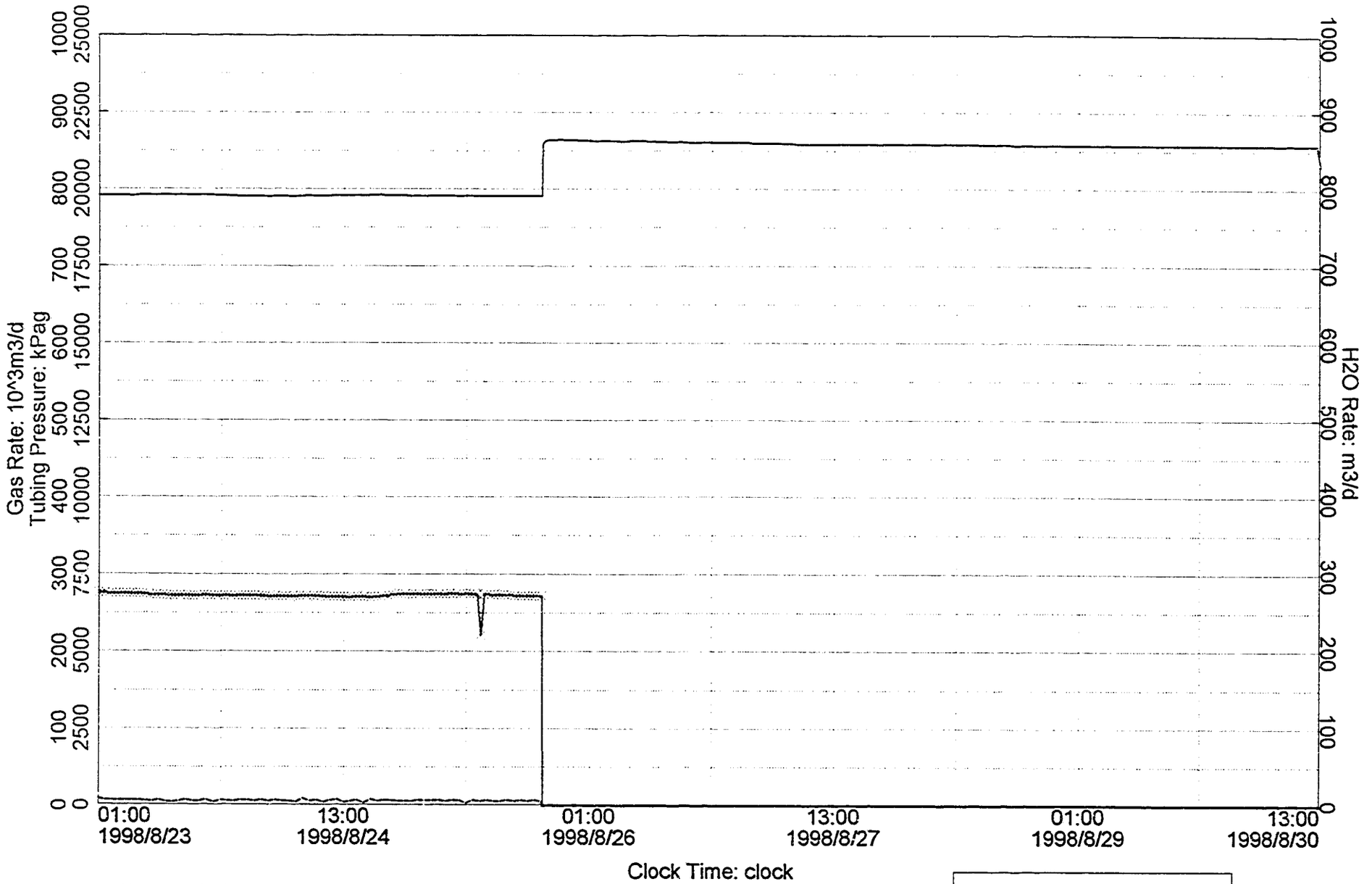


Ranger Oil Limited
TIGHT HOLE
August 15-23, 1998

Fast

Ranger Fort Liard P-66-A

NORWARD

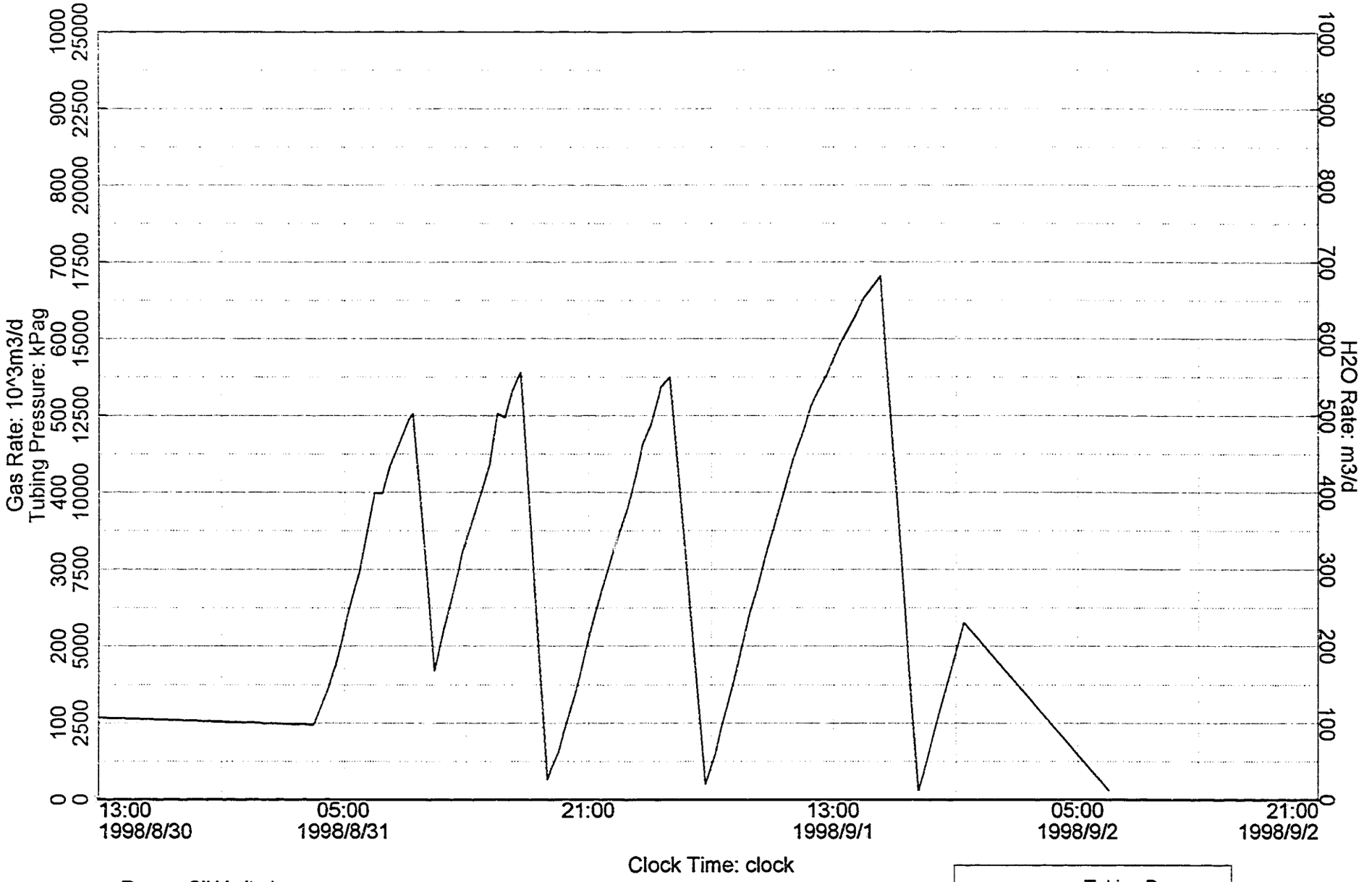


Ranger Oil Limited
TIGHT HOLE
August 23-30, 1998

Fast

Ranger Fort Liard P-66-A

NORWARD



Ranger Oil Limited
TIGHT HOLE
August 30 - September 2, 1998

Fast

CPT FIELD NOTES

FieldNotes

N.E.B. COPY

CPT
CENTRAL PRODUCTION TESTING LTD.

Job Number: 2720
Customer: Ranger Oil Limited
Wellname: Fort Liard
Well Location: P - 66 - A
Formation: Nahanni

Supervisors L. Kropf / C. Marshall
Customer Rep: Wayne Casler
Start Date: February 26, 1998
Start Time: 20:00
Test Unit: T.U. 10 ; P.S. 10 & 11 & 1010
Operation: Completion

Remarks:

A gas analysis may not have been available to us at the time of printing.
Should you wish us to recalculate the gas rates with information you have or you require more copies please call Ann at 571-5171.
Please give enviornmental considerations when ordering more copies.

Thank you for your valued business.

CENTRAL PRODUCTION TESTING LTD.

NATIONAL ENERGY BOARD
ENGINEERING BRANCH
MAY - 4 1998

Fast

Job Number: 2720
Customer: Ranger Oil Limited
Wellname: Fort Liard
Well Location: P - 66 - A
Formation: Nahanni

FieldNotes

CPT
CENTRAL PRODUCTION TESTING LTD.

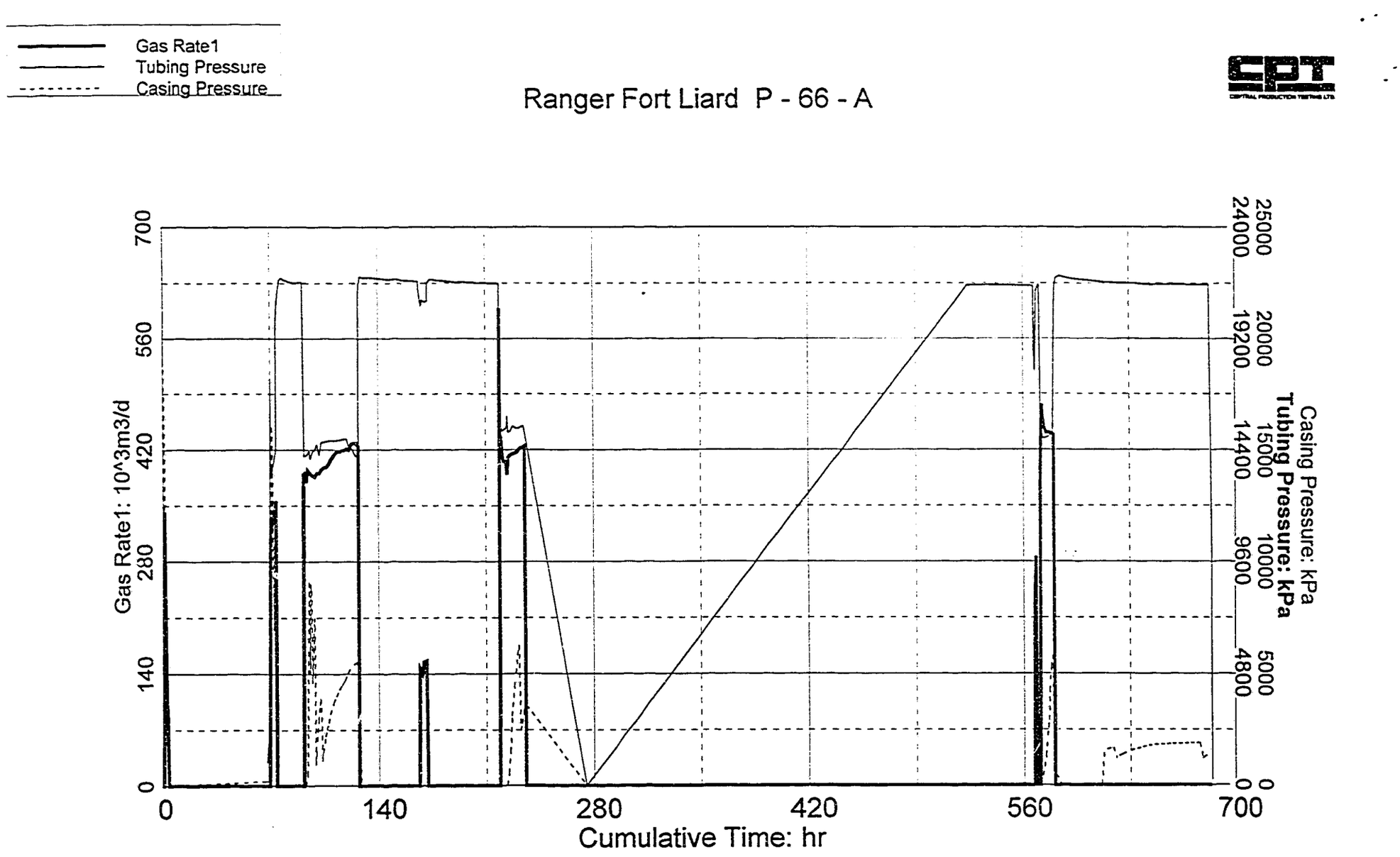
Gas Meter 1

Meter Type:	Orifice	
Meter Run Size:	154.0510	mm
Previous Gas Production:	0.000	10^3m3
Tap Type:	Flange	
Tap Location:	Downstream	
Gauge to Absolute Adjustment:	90.0	
Gas Gravity:	0.77	decimal
CO2:	19.40	%
H2S:	1.50	%
N2:	4.97	%
Critical Temperature:	211.9	K
Critical Pressure:	5145.0	kPa
Condensate:	No	

Oil Meter 1

Meter Type:	Produced Volume	
Measurement Type:	Cumulative	
Previous Oil Production:	0.000	m3
Previous Water Production:	0.000	m3

Fast


Gas Rate1
Tubing Pressure
Casing Pressure
Ranger Fort Liard P - 66 - A
Gas Rate1: 10^3m3/d
0
140
280
420
560
700
Cumulative Time: hr
Casing Pressure: kPa
Tubing Pressure: kPa
0
4800
9600
14400
19200
24000
5000
10000
15000
20000
25000

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FieldNotes

CPT
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Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
1	1998/02/26	20:00:00			19000		0	0.00	0	88.900	0.000	0.000	1.56		0.00	0.00	0.000	0.00					
2		20:30:00			19020		0	0.00	0	88.900	0.000	0.000	1.56		0.00	0.00	0.000	0.00	0.00				
3		20:30:00	Packer set. Pressure test to choke and open well through separator to bleed off.																				
4		20:45:00			15000	9.53																	
5		21:00:00			12400	13.49	3725	10.95	8	88.900	342.252	7.130	1.56		0.00	0.00	0.000	0.00	0.00	0.0			
6		21:15:00			8800	14.29																	
7		21:15:00	Light mist of water present. H2S to surface.																				
8		21:30:00			6950	14.29	2205	5.97	19		202.685	12.807	1.56		0.00	0.00	0.000	0.00	0.00	1.0			
9		21:45:00			5000	16.67																	
10		22:00:00			3850	19.05	1105	3.98	30	88.900	107.034	16.033	1.56		0.00	0.00	0.000	0.00	0.00	1.2			
11		22:00:00	No significant fluid recovered. Still a light mist. CO2 = 16.0 %, H2S = 1.2 %.																				
12		22:15:00			2800	19.05																	
13		22:30:00			1200	25.40	400	6.97	38		88.991	18.075	1.56		0.00	0.00	0.000	0.00	0.00				
14		23:00:00			300	25.40	140	1.49	36	88.900	28.278	19.296	1.56		0.00	0.00	0.000	0.00	0.00				
15		23:30:00			20	25.40	0	0.00	0		0.000	19.296	1.56		0.00	0.00	0.000	0.00	0.00				
16		23:35:00	Begin pumping water in hole to pressure test packer. Cut choke to 4.76 mm to bleed off any displaced gas left in hole.																				
17	1998/02/27	00:00:00			0	4.76	0	0.00	0	88.900	0.000	19.296	1.56		0.00	0.00	0.000	0.00	0.00	0.0			
18		01:00:00			0	4.76	0	0.00	0		0.000	19.296	1.56		0.00	0.00	0.000	0.00	0.00	0.0			
19		01:00:00	Prepare to run tubing in hole.																				
20	1998/02/27	07:00:00																					
21	1998/03/01	15:30:00	1000		200								1.56		0.00	0.00	0.000	0.00	0.00				
22		15:30:00	Retrieve prong.																				
23		16:00:00	1650		200								1.56		0.00	0.00	0.000	0.00	0.00				
24		16:30:00	1750																				
25		17:00:00	2450		200		0	0.00	0		0.000	19.296	1.56		0.00	0.00	0.000	0.00	0.00				
26		17:10:00	Wireline at surface with plug. Pressure test to choke.																				
27		17:25:00	4000		200		0	0.00	0		0.000	19.296	1.56		0.00	0.00	0.000	0.00	0.00				
28		17:25:00	Open well through separator to flare on gradually increasing choke sizes. Water at surface.																				
29		17:30:00	4500			6.35																	
30		17:45:00	9500			7.94																	
31		18:00:00	17450	32	5000	11.91	3105	11.20	32	88.900	298.203	26.544	14.66	100.0	0.00	13.10	0.000	13.10	538.97			70000	7.0
32		18:15:00	14200	32		13.49																	
33		18:30:00	13500	38	10050	15.08	2345	18.91	32		335.966	33.150											
34		18:45:00	13300	41		15.08																	
35		19:00:00	13200	44	16000	15.08	2310	18.17	35		324.919	40.035	24.40	100.0	0.00	9.74	0.000	22.84	233.76				
36		19:15:00	Bleed off casing to 3000 kPa.																				
37		19:30:00	13600	50		15.08	2345	18.66	39		329.377	46.850											
38		20:00:00	13800	53	6950	15.08	2415	18.91	44	88.900	333.431	53.754	34.22	100.0	0.00	9.82	0.000	32.66	235.58	0.7	18.0	74000	7.0
39		20:30:00	14000	58	10800	15.08	2480	19.41	48		339.871	60.768											
40		21:00:00	14250	60	2400	15.08	2550	19.66	50		345.624	67.909	45.03	100.0	0.00	10.81	0.000	43.47	259.54				
41		21:15:00	Samples taken in Agat bomb #'s 18151 (not purged) & 19267 (purged)																				
42			Also 4 litre of stock water.																				
43		21:30:00	14400	64	5200	15.08	2620	19.91	45	88.900	355.779	75.215	50.44	100.0	0.00	5.41	0.000	48.88	259.68	0.7		72000	7.0
44		21:30:00	Shut in well and record build ups.																				
45		21:30:01	14400	64	5200	0.00	0	0.00	45		0.000	75.215	50.44	100.0	0.00	0.00	0.000	48.88	0.00				
46		21:35:00	19400		4000																		

Fast

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FieldNotes

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CENTRAL PRODUCTION TESTING LTD.

Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
47	1998/03/01	21:40:00	19980		3800					88.900													
48		21:45:00	20000		3575																		
49		22:00:00	20400		2200																		
50		22:00:00	Finish shipping to pit. New opening gauge.																				
51		22:00:00											0.21		0.00	-50.23	0.000	48.88	0.00				
52		22:15:00	20788		600																		
53		22:30:00	21050		0																		
54		22:30:00	Casing under vacuum.																				
55		23:00:00	21230		0																		
56		23:30:00	21445		0																		
57		23:59:59	21720		0																		
58	1998/03/02	00:30:00	21775		0																		
59		01:00:00	21815		0																		
60		01:30:00	21815		0																		
61		02:00:00	21787		0																		
62		02:30:00	21745		0																		
63		03:00:00	21720		0																		
64		03:30:00	21720		0																		
65		03:35:00	Wireline running into well to preform static gradient.																				
66		04:00:00	21720		0																		
67		04:30:00	21710		0																		
68		05:00:00	21705		0																		
69		05:30:00	21665		0																		
70		06:00:00	21660		0																		
71		06:30:00	21655		0																		
72		06:59:00	21650		0																		
73			Fluid (water) produced past 24 Hrs. = 48.88 M3																				
74			Total fluid (water) produced past 83 Hrs. = 46.88 M3																				
75	1998/03/02	07:00:00	Water salinity = 74000 ppm w/ Ph of 7.0, H2S = 7000 ppm, CO2 = 18.0%																				
76		07:30:00	21635																				
77		08:00:00	Wireline running static gradient.																				
78		08:00:00	21620		0																		
79		08:30:00	21610																				
80		09:00:00	21615		0																		
81		09:30:00	21610																				
82		10:00:00	21600		0																		
83		10:30:00	21595																				
84		11:00:00	21595		0																		
85		11:30:00	21600																				
86		12:00:00	21605		0																		
87		12:30:00	21605																				
88		13:00:00	21610		0																		
89		13:30:00	21615																				
90		14:00:00	21620		0																		
91		14:30:00	21625																				
92		15:00:00	21630		0		0	0.00	0	88.900	0.000	75.215	0.21		0.00	0.00	0.000	48.88	0.00				

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Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	LSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
93	1998/03/02	15:00:00	Open well to separator and continue cleanup. Gas to surface.																				
94		15:05:00	20450			9.53				88.900													
95		15:10:00	19780			10.32																	
96		15:15:00	18900	32		11.51																	
97		15:15:00	Note: Very abrupt obstruction at choke. Could not clear and switched to alternate choke increasing rapidly to 11.51 mm.																				
98		15:30:00	16050	37		11.91	3240	17.92	26		390.492	83.350											
99		15:30:00	Fluid to surface.																				
100		15:45:00	14100	40		15.08																	
101		16:00:00	13950	45	0	15.08	3035	18.91	33	88.900	382.360	91.401	3.64	100.0	0.00	3.43	0.000	52.31	82.37				
102		16:30:00	14050	49	0		3100	19.91	38		392.722	99.474											
103		17:00:00	14230	46	500	15.08	3100	19.16	42	88.900	382.320	107.548	15.39	100.0	0.00	11.75	0.000	64.06	282.00			50000	6.0
104		17:30:00	14180	56	3750		3100	19.66	43		386.526	115.557											
105		18:00:00	14200	62	6400	15.08	3100	20.65	46	88.900	393.977	123.687	26.56	100.0	0.00	11.17	0.000	75.23	268.08	1.5	14.5	50000	6.0
106		18:30:00	14250	65	9100		3100	20.41	47		390.863	131.862											
107		18:45:00	Bled Casing to 4000 Kpa																				
108		19:00:00	14350	67	5000	15.08	3135	20.41	49	88.900	391.654	140.013	37.42	100.0	0.00	10.86	0.000	86.09	260.64			96000	6.0
109		19:30:00	14000	70	9000		3135	20.41	51		390.217	148.158											
110		20:00:00	14000	74	8700	15.08	3135	20.41	54	88.900	388.098	156.265	47.31	100.0	0.00	9.89	0.000	95.98	237.36			101000	6.0
111		20:30:00	14250	76	4600		3135	20.65	56		389.062	164.361											
112		21:00:00	14300	75	5525	15.08	3135	20.65	58	88.900	387.682	172.452	56.67	100.0	0.00	9.36	0.000	105.34	224.64			105000	6.0
113		21:30:00	14300	78	6625		3135	20.65	59		386.998	180.521											
114		22:00:00	14400	81	7500	15.08	3135	20.65	60	88.900	386.318	188.577	65.55	100.0	0.00	8.88	0.000	114.22	213.12			106000	6.0
115		22:15:00	Bled Casing to 0 Kpa																				
116		22:30:00	14400	83	950		3150	20.65	62		385.904	196.621											
117		23:00:00	14400	83	1400	15.08	3150	20.65	63	88.900	385.235	204.353	74.39	100.0	0.00	8.84	0.000	123.06	212.16			108000	6.0
118		23:30:00	14500	84	2000		3160	20.90	64		387.505	212.703											
119		23:59:59	14625	85	2400	15.08	3170	21.15	64	88.900	390.433	220.802	82.76	100.0	0.00	8.37	0.000	131.43	200.94			109000	6.0
120			Water sample taken in 1 litre plastic sample container (dated and timed).																				
121	1998/03/03	00:30:00	14625	86	2900		3185	21.15	65		390.694	228.943											
122		01:00:00	14600	86	3300	15.08	3200	21.15	66	88.900	390.953	237.085	91.28	100.0	0.00	8.52	0.000	139.95	204.42			110000	6.0
123		01:30:00	14160	88	3600		3200	21.15	67		390.285	245.223											
124		02:00:00	14200	88	3900	15.08	3210	21.15	68	88.900	390.237	253.354	99.53	100.0	0.00	8.25	0.000	148.20	198.00			111000	6.0
125		02:30:00	14260	88	4150		3215	21.15	67		391.210	261.494											
126		02:40:00	Bled casing to 1000 Kpa.																				
127		03:00:00	14700	88	1100	15.08	3235	21.40	67	88.900	394.746	269.681	107.46	100.0	0.00	7.93	0.000	156.13	190.32			112000	6.0
128		03:30:00	14700	89	1475		3235	21.40	68		394.073	277.898											
129		04:00:00	14700	89	1700	15.08	3240	21.65	68	88.900	396.671	286.134	114.93	100.0	0.00	7.47	0.000	163.60	179.28			112000	6.0
130		04:30:00	14720	89	1900		3250	21.65	68		397.291	294.405											
131		05:00:00	14730	90	2200	15.08	3260	21.65	68	88.900	397.909	302.688	122.96	100.0	0.00	8.03	0.000	171.63	192.72			112000	6.0
132		05:30:00	14730	90	2400		3270	21.65	69		397.850	310.977											
133		06:00:00	14750	90	2500	15.08	3280	21.65	70	88.900	397.791	319.265	130.84	100.0	0.00	7.88	0.000	179.51	189.12			119000	6.0
134		06:30:00	14750	90	2600		3290	21.65	70		398.404	327.559											
135		06:45:00	Water sample taken in 1 litre plastic sample container (dated and timed).																				
136		06:59:59	14750	90	2800	15.08	3300	21.65	70	88.900	399.016	335.861	138.41	100.0	0.00	7.57	0.000	187.08	181.73			121000	6.0
137			Fluid (water) produced past 24 Hrs. = 138.200 M3																				
138			Total filuid (water) produced past 107 Hrs. = 187.08 M3																				

Fast

Job Number: 2720
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FieldNotes

CPT
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Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
139	1998/03/03		Water Salinity = 121000 ppm w/ Ph of 6.0																				
140			H2S = 12500 ppm @ 0600 Hrs.																				
141	1998/03/03	07:00:00	CO2 = 12.5 % @ 0600 Hrs.																				
142		07:30:00	14770	91		15.08	3320	21.65	68	88.900	401.603	344.205											
143		07:45:00	Decrease static pressure.																				
144		08:00:00	14780	91	3200		2620	27.87	68		404.632	352.604	145.58	100.0	0.00	7.17	0.000	194.25	172.03			124000	6.0
145		08:30:00	14770	91			2630	28.12	68		407.213	361.060											
146		09:00:00	14780	91	3400		2635	28.12	68		407.599	369.548	152.65	100.0	0.00	7.07	0.000	201.32	169.68			126000	6.0
147		09:30:00	14780	91			2635	28.37	68		409.404	378.058											
148		10:00:00	14780	92	3700		2640	28.37	68		409.792	386.592	159.73	100.0	0.00	7.08	0.000	208.40	169.92			126000	6.0
149		10:30:00	14780	92			2645	28.62	68		411.979	395.152											
150		11:00:00	14790	92	3900	15.08	2650	28.62	68	88.900	412.368	403.739	166.79	100.0	0.00	7.06	0.000	215.46	169.44			126000	6.0
151		11:30:00	14790	92			2660	28.87	68		414.942	412.357											
152		12:00:00	14790	92	4000		2675	28.87	68		416.110	421.013	173.87	100.0	0.00	7.08	0.000	222.54	169.92			128000	6.0
153		12:30:00	14790	92			2675	28.87	68		416.110	429.682											
154		13:00:00	14800	92	4150		2675	28.87	68		416.110	438.351	180.93	100.0	0.00	7.06	0.000	229.60	169.44			126000	6.0
155		13:30:00	14800	92			2675	29.11	68		417.905	447.039											
156		14:00:00	14810	92	4300		2680	29.11	69		417.602	455.742	187.44	100.0	0.00	6.51	0.000	236.11	156.24			126000	6.0
157		14:30:00	14810	92			2680	29.11	69		417.602	464.442											
158		15:00:00	14820	93	4450	15.08	2680	29.11	69	88.900	417.602	473.142	193.95	100.0	0.00	6.51	0.000	242.62	156.24			126000	6.0
159		15:30:00	14830	93			2680	29.11	69		417.602	481.842											
160		16:00:00	14830	93	4500		2680	29.11	69		417.602	490.542	200.27	100.0	0.00	6.32	0.000	248.94	151.68			130000	6.0
161		16:30:00	14830	93			2680	29.36	70		418.697	499.254											
162		17:00:00	14840	93	4600		2680	29.36	70		418.697	507.977	206.54	100.0	0.00	6.27	0.000	255.21	150.48			128000	6.0
163		17:30:00	14850	93			2680	29.36	70		418.697	516.699											
164		18:00:00	14850	93	4700		2685	29.36	70		419.087	525.426	212.68	100.0	0.00	6.14	0.000	261.35	147.36			130000	6.0
165		18:30:00	14870	93			2690	29.36	70		419.477	534.161											
166		19:00:00	14870	93	4900	15.08	2700	29.36	70		420.255	542.909	218.56	100.0	0.00	5.88	0.000	267.23	141.12	1.4	12.0	130000	6.0
167		19:30:00	14860	93			2710	29.36	70		421.032	551.672											
168		20:00:00	14850	93	5025		2710	29.36	70		421.032	560.444	223.62	100.0	0.00	5.06	0.000	272.29	121.44			130000	6.0
169		20:30:00	14710	93			2720	29.36	70		421.808	569.223											
170		21:00:00	14520	92	5200		2720	29.86	79		419.220	577.984	228.65	100.0	0.00	5.03	0.000	277.32	120.72			131000	6.0
171		21:30:00	14530	92			2725	29.86	70		425.769	586.786											
172		22:00:00	14500	92	5300		2730	29.86	70		426.159	595.660	234.01	100.0	0.00	5.36	0.000	282.68	128.64			133000	6.0
173		22:30:00	14500	93			2730	29.86	70		426.159	604.538											
174		23:00:00	14500	93	5350		2730	29.86	70		426.159	613.417	239.89	100.0	0.00	5.88	0.000	288.56	141.12			132000	6.0
175		23:30:00	14470	93			2735	30.11	70		428.328	622.318											
176		23:59:59	14300	93	5400		2730	30.11	70		427.936	631.232	245.97	100.0	0.00	6.08	0.000	294.64	145.96			134000	6.0
177	1998/03/04	00:30:00	14400	93			2740	30.36	71		429.784	640.172											
178		01:00:00	14200	93	5450		2740	30.36	70		430.493	649.133	251.31	100.0	0.00	5.34	0.000	299.98	128.12			138000	6.0
179		01:30:00	14100	93			2730	30.11	70		427.936	658.075											
180		02:00:00	14030	93	5525		2725	30.36	71		428.607	666.997	256.78	100.0	0.00	5.47	0.000	305.45	131.28			135000	6.0
181		02:30:00	14070	93			2730	29.61	71		423.676	675.875								12.5	15.7		
182		03:00:00	14180	93	5600	15.08	2730	29.61	71		423.676	684.702	261.93	100.0	0.00	5.15	0.000	310.60	123.60			138000	6.0
183		03:00:00	Shut in well and record build ups.																				
184		03:00:01	14190	93	5600	0.00	0	0.00	70		0.000	684.702	261.93	0.0	0.00	0.00	0.000	310.60	0.00				

Fast

Job Number: 2720
Customer: Ranger Oil Limited
Wellname: Fort Liard
Well Location: P - 65 - A
Formation: Nahanni

FieldNotes

CPT
CENTRAL PRODUCTION TESTING LTD.

Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
185	1998/03/04	03:05:00	20860							88.900													
186		03:10:00	21135																				
187		03:15:00	21260																				
188		03:30:00	21545		2000																		
189		03:45:00	21620																				
190		04:00:00	21765		0																		
191		04:30:00	21865																				
192		05:00:00	21865		0																		
193		05:30:00	21795																				
194		06:00:00	21830		0																		
195		06:30:00	21845																				
196		07:00:00	21830		0																		
197																							
198			Fluid produced past 24 Hrs. = 123.52 M3																				
199			Total fluid (water) produced past 131 Hrs. = 310.60 M3																				
200			Water ; Salinity = 138000 ppm w/ Ph of 6.0																				
201			H2S @ 0600 Hrs = 1.25 %.																				
202			CO2 @ 0600 Hrs = 15.7%																				
203			Fluid on location : Production Tanks ; #1 = 21.84 M3 & #2 = 18.62 M3 = 40.46 M3																				
204			: Storage Tanks ; A = 49.30 M3 & B = 56.89 & C = 45.45 M3 & D = 56.16 M3 = 207.80 M3																				
205		07:00:00	Total on location = 248.26 M3																				
206	1998/03/04	07:30:00	21830																				
207		08:00:00	21830		0																		
208		08:30:00	21830																				
209		09:00:00	21825		0																		
210		09:30:00	21825																				
211		10:00:00	21825		0																		
212		10:30:00	21825																				
213		11:00:00	21820		0																		
214		11:30:00	21820																				
215		12:00:00	21820		0																		
216		12:30:00	21810																				
217		13:00:00	21810		0																		
218		13:30:00	21800																				
219		14:00:00	21800		0																		
220		14:30:00	21800																				
221		15:00:00	21790		0																		
222		15:30:00	21790																				
223		16:00:00	21790		0																		
224		16:00:00	Close master to rig up wireline.																				
225		18:00:00	**** Shipped 60.0 M3 of fluid off location via Energetic tank truck. ****																				
226			Wireline rigged up.Prepare to pressure test.																				
227			Pressure up lubricator.At 17.0 Mpa pack off on lubricator started toleak.Shut in well and rig down wireline to repair pack off.																				
228			Repairs completed.Rig up wireline and pressure up lubricator.																				
229		22:15:00	Wireline preparing to start running.																				
230		22:30:00	21750		0																		

Fast

Job Number: 2720
Customer: Ranger Oil Limited
Wellname: Fort Liard
Well Location: P - 66 - A
Formation: Nahanni

FieldNotes

CPT
CENTRAL PRODUCTION TESTING LTD.

Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
231	1998/03/04	22:45:00	Grease injector can't keep pace.Pack off started to leak.Wireline pulling to surface.																				
232			Wireline at surface.Bled off and rig down wireline. Note: Crown valve on wellhead very stiff.																				
233		23:59:59	21740		0					88.900													
234	1998/03/05	00:30:00	21740																				
235		01:00:00	21740		0																		
236		01:30:00	21740																				
237		02:00:00	21740		0																		
238		02:30:00	21740																				
239		03:00:00	21740		0																		
240		03:30:00	21740																				
241		04:00:00	21740		0																		
242		04:30:00	21740																				
243		05:00:00	21740		0																		
244		05:30:00	21740																				
245		06:00:00	21740		0																		
246		06:30:00	21740																				
247		06:59:00	21740		0																		
248			Liquid (water) produced past 24 Hrs.= 000.00 M3																				
249			Cumulative water to date (155 Hrs.) = 310.60 M3																				
250			Cumulative condensate to date (155 Hrs.) = 0.0 M3.																				
251	1998/03/05	07:00:00	luid on location (water) = 158.26 M3. Cuml. water hauled off location to date = 60.0 M3.																				
252		07:30:00	Clear obstruction in deadweight line.																				
253		08:00:00	21705		0																		
254		09:00:00	21700		0																		
255		10:00:00	21700		0																		
256		11:00:00	21695		0																		
257		12:00:00	21690		0																		
258		13:00:00	21690		0																		
259		14:00:00	21685		0																		
260		14:55:00	Wireline begin running in hole for flowing gradient.																				
261		15:00:00	21680		0																		
262		16:00:00	21670		0																		
263		17:00:00	21660		0																		
264		18:00:00	21655		0		0	0.00	0		0.000	684.702	1.66		-260.27	0.00	0.000	310.60	0.00				
265		18:00:00	Open well through separator to flare. Wireline sitting on bottom.																				
266		18:10:00	21500			5.56																	
267		18:15:00	21330			5.95																	
268		18:20:00				6.75																	
269		18:30:00	21440	43	0	6.75	1165	6.97	28		145.730	687.738											
270		18:45:00	21060	45		6.75	1135	6.72	29		141.088	689.231											
271		19:00:00	20990	45	0	6.75	1135	6.72	29	88.900	141.088	690.701	1.66	0.0	0.00	0.00	0.000	310.60	0.00				
272		19:30:00	20825	45		6.75	1135	6.72	28		141.341	693.643											
273		20:00:00	20575	46	0	6.75	1470	5.10	26	88.900	139.936	696.573	1.66	100.0	0.00	0.00	0.000	310.60	0.00				
274		20:30:00	20870	47		6.75	1400	5.23	25		138.577	699.474											
275		20:34:00	Increase choke to 7.14mm (18/64).																				
276		21:00:00	20785	49	0	7.14	1800	5.04	23	88.900	154.488	702.527	1.77	100.0	0.00	0.11	0.000	310.71	2.64			150000	5.5

Fast

Job Number: 2720
Customer: Ranger Oil Limited
Wellname: Fort Liard
Well Location: P - 66 - A
Formation: Nahanni

FieldNotes

CPT
CENTRAL PRODUCTION TESTING LTD.

Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
277	1998/03/05	21:30:00	20785	49			1800	5.10	24	88.900	155.141	705.752											
278		22:00:00	20780	50	0	7.14	1800	5.10	23	88.900	155.439	708.988	2.17	100.0	0.00	0.40	0.000	311.11	9.60				
279		22:30:00	20810	50			1810	5.10	23		155.867	712.230											
280		23:00:00	20810	50	0	7.14	1810	5.10	23	88.900	155.867	715.478	2.50	100.0	0.00	0.33	0.000	311.44	7.92				
281		23:30:00	20810	50			1810	5.10	23		155.867	718.725											
282		23:35:00	20810	50	0	7.14	1810	5.10	23	88.900	155.867	719.266	2.84	100.0	0.00	0.34	0.000	311.78	13.99				
283		23:35:00	Shut in well with wireline still logging.																				
284		23:35:01	20820		0	0.00	0	0.00	23	88.900	0.000	719.266	2.84	0.0	0.00	0.00	0.000	311.78	0.00				
285		23:40:00	21580																				
286		23:45:00	21600																				
287		23:50:00	21630																				
288	1998/03/06	00:05:00	21690		0																		
289		00:30:00	21740																				
290		01:00:00	21740		0																		
291		01:30:00	21740																				
292		02:00:00	21740		0																		
293		02:30:00	21740																				
294		03:00:00	21740		0																		
295		03:30:00	21740																				
296		04:00:00	21740		0																		
297		04:30:00	21740																				
298		04:35:00	Wireline at surface.Rig off wireline and record build ups.																				
299		05:00:00	21705		0																		
300		05:30:00	21705																				
301		06:00:00	21705		0																		
302		06:30:00	21705																				
303		06:59:59	21705		0		0	0.00	0		0.000	719.266											
304			Water Salinity = 150000 ppm w/ Ph of 5.5 (taken during flowing log survey)																				
305	1998/03/06	07:00:00	Water on location = 103.38 M3; Daily water shipped off location = 62.53 M3; Cuml. water shipped off location = 147.94 M3.																				
306	1998/03/06	07:30:00	21700																				
307		08:00:00	21690		0																		
308		08:30:00	21690																				
309		09:00:00	21680		0																		
310		09:30:00	21675																				
311		10:00:00	21675		0																		
312		10:30:00	21675																				
313		11:00:00	21670		0																		
314		11:30:00	21670																				
315		12:00:00	21665		0																		
316		12:30:00	21665																				
317		13:00:00	21660		0																		
318		13:30:00	21660																				
319		14:00:00	21655		0																		
320		14:30:00	21655																				
321		15:00:00	21655		0																		
322		15:30:00	21650																				

FasT

Job Number: 2720
Customer: Ranger Oil Limited
Wellname: Fort Liard
Well Location: P - 65 - A
Formation: Nahanni

FieldNotes

CPT CENTRAL PRODUCTION TESTING LTD.

Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
323	1998/03/06	16:00:00	21650		0					88.900													
324		16:30:00	21645																				
325		17:00:00	21645		0																		
326		17:30:00	21640																				
327		18:00:00	21640		0																		
328		18:30:00	21640																				
329		19:00:00	21635		0																		
330		19:30:00	21630																				
331		20:00:00	21625		0																		
332		20:30:00	21625																				
333		21:00:00	21625		0																		
334		21:30:00	21630																				
335		22:00:00	21630		0																		
336		22:30:00	21625																				
337		23:00:00	21625		0																		
338		23:30:00	21625																				
339		23:59:59	21625		0																		
340	1998/03/07	00:30:00	21625																				
341		01:00:00	21625		0																		
342		01:30:00	21620																				
343		02:00:00	21615		0																		
344		02:30:00	21615																				
345		03:00:00	21610		0																		
346		03:15:00	Wireline on location with perforating guns.																				
347		03:30:00	21610																				
348		04:00:00	21610		0																		
349		04:30:00	21610																				
350		05:00:00	21610		0																		
351		05:30:00	21610																				
352		06:00:00	21615		0																		
353		06:30:00	21615																				
354		06:59:59	21615		0		0	0.00	0		0.000	719.266											
355			Cumulative Production of 160.5 Hrs. of flow (203 Hr. Report): Water = 311.78 M3 , Condensate = 000.00 M3																				
356			No samples taken in past 24 Hrs. Note: Adjusted previous cuml. water shipped off location after re-gauging tanks.																				
357	1998/03/07	07:00:00	Fluid on location = 16.43 M3 , Fluid hauled off location past 24 Hrs.= 86.95 M3 , Cumulative fluid hauled off location (203 Hrs.) = 246.68 M3.																				
358		08:00:00	21605		0		0	0.00	0		0.000	719.266	2.84		0.00	0.00	0.000	311.78	0.00				
359		09:00:00	21600		0																		
360		10:00:00	21595		0																		
361		11:00:00	21595		0																		
362		12:00:00	21595		0																		
363		13:00:00	21595		0																		
364		14:00:00	21590		0																		
365		15:00:00	21590		0																		
366		16:00:00	21585		0																		
367		17:00:00	21585		0																		
368		18:00:00	21585		0																		

Fast

Job Number: 2720
Customer: Ranger Oil Limited
Wellname: Fort Liard
Well Location: P - 56 - A
Formation: Nahanni

FieldNotes

CPT
CENTRAL PRODUCTION TESTING LTD.

Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
369	1998/03/07	19:00:00	21585		0					88.900			2.84		0.00	0.00	0.000	311.78	0.00				
370		19:30:00	21585		0																		
371		20:00:00	21585		0																		
372		20:30:00	21580		0																		
373		21:00:00	21580		0																		
374			Wireline at surface.Bleed off wireline and rig them off the well.																				
375			Install wellhead flange cap and pressure test to sut in pressure.																				
376			Pressure up to choke and prepare to flow well.																				
377		22:39:59	21580		0	0.00	0	0.00	0	88.900	0.000	719.266	2.84	0.0	0.00	0.00	0.000	311.78	0.00				
378		22:40:00	Open well to flow.Slowly increase choke to 15.08mm (38/64).																				
379		22:44:00	Choke set at 15.08mm (38/64).																				
380		22:45:00	16120		0	15.08	3225	36.58	-5	88.900	598.582	721.351											
381		22:50:00	15740				2990	33.34	-2		544.584	723.336											
382		22:55:00	15500				3000	33.84	3		542.998	725.224											
383		22:58:00	Fluid to surface.																				
384		23:00:00	15010	43	0	15.08	2480	29.86	16		448.744	726.946											
385		23:15:00	15550	44	0		2525	28.37	18		439.541	731.572											
386		23:30:00	15500	47	0		2510	28.37	17		439.120	736.149											
387		23:45:00	15500	48	0		2525	28.12	18		437.603	740.715											
388	1998/03/07	23:59:59	15370	51	0	15.08	2470	27.87	18	88.900	430.782	745.233	8.98	100.0	0.00	6.14	0.000	317.92	110.52			77000	6.0
389	1998/03/08	00:30:00	15190	55	0		2375	27.37	21		415.905	754.057											
390		01:00:00	15175	58	0	15.08	2350	26.88	23	88.900	408.242	762.642	15.06	100.0	0.00	6.08	0.000	324.00	145.88			83000	6.0
391		01:30:00	15240	62	0		2360	26.88	28		405.093	771.114											
392		02:00:00	15260	65	0	15.08	2400	27.12	31	88.900	408.052	779.585	20.78	100.0	0.00	5.72	0.000	329.72	137.28			108000	6.0
393		02:30:00	15320	66	0		2400	27.25	34		406.646	788.071											
394		03:00:00	15330	68	0	15.08	2400	27.25	36	88.900	405.110	796.527	26.66	100.0	0.00	5.88	0.000	335.60	141.12			116000	6.0
395		03:30:00	15330	70	25		2400	27.37	37		405.275	804.968											
396		04:00:00	15835	72	200	15.08	2320	26.13	38	88.900	388.522	813.237	32.58	100.0	0.00	5.92	0.000	341.52	142.08			118000	6.0
397		04:01:00	Rock choke to free up blockage.																				
398		04:30:00	15140	76	550		2470	28.12	46		409.916	821.554											
399		05:00:00	15160	77	1000	15.08	2480	28.37	47	88.900	411.824	830.114	38.71	100.0	0.00	6.13	0.000	347.65	147.12			122000	6.0
400		05:30:00	15170	79	1500		2510	28.62	48		415.388	838.731											
401		06:00:00	15190	81	2400	15.08	2495	28.62	49	88.900	413.401	847.364	44.96	100.0	0.00	6.25	0.000	353.90	150.00	1.6	18.0	138000	6.0
402		06:30:00	15300	82	3100		2510	28.62	52		412.445	855.967											
403		06:59:59	15370	85	3500	15.08	2260	32.35	53	88.900	415.541	864.587	50.25	100.0	0.00	5.29	0.000	359.19	127.00			142000	6.0
404			Water Sample : Salinity = 142000 ppm w/ Ph of 6.0																				
405			Gas Sample @ 0600 Hrs. : H2S = 1.6% or 16000 ppm ; CO2 = 18.0% or 180000 ppm																				
406	1998/03/08	07:00:00	Fluid on location = 63.85 M3 ; Fluid hauled off location past 24 Hrs. = 000.00 M3 ; Cumulative fluid hauled off location (227 Hrs.) = 246.68 M3																				
407		07:30:00	15410	85			2250	32.35	53		414.627	873.239											
408		08:00:00	15300	86	4400	15.08	2255	32.35	53	88.900	415.084	881.882	55.55	100.0	0.00	5.30	0.000	364.49	127.16			150000	6.0
409		08:15:00	Obstruction in deadweight line. Trying to locate problem.																				
410		08:30:00		87			2275	32.35	54		416.187	890.541											
411		09:00:00		87	5000	15.08	2275	32.35	55		415.471	899.204	60.85	100.0	0.00	5.30	0.000	369.79	127.20			155000	6.0
412		09:30:00		88			2300	32.35	55		417.731	907.883											
413		09:50:00	Unable to clear deadweight line. Change pressure source to needle valve upstream of choke.																				
414		10:00:00	15300	89	5800	15.08	2300	32.35	56		417.015	916.579	66.15	100.0	0.00	5.30	0.000	375.09	127.20			160000	6.0

Fast

Job Number: 2720
Customer: Ranger Oil Limited
Weliname: Fort Liard
Well Location: P - 66 - A
Formation: Nahanni

FieldNotes

CPT
CENTRAL PRODUCTION TESTING LTD.

Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
415	1998/03/08	10:30:00	15320	90			2320	32.35	58	88.900	417.384	925.270											
416		11:00:00	15350	91	6250	15.08	2320	32.60	58		418.992	933.982	71.56	100.0	0.00	5.41	0.000	380.50	129.84			155000	6.0
417		11:15:00	Bleed casing to 2000 kPa.																				
418		11:30:00	15320	91			2320	32.85	58		420.595	942.728											
419		12:00:00	15360	91	2450	15.08	2340	32.85	59		421.674	951.502	75.93	100.0	0.00	4.37	0.000	384.87	104.88			152000	6.0
420		12:30:00	15410	92			2360	32.85	59		423.459	960.305											
421		13:00:00	15390	92	2750	15.08	2330	33.10	59	88.900	422.376	969.116	81.13	100.0	0.00	5.20	0.000	390.07	124.80			152000	6.0
422		13:30:00	15390	93			2330	33.10	59		422.376	977.916											
423		14:00:00	15440	93	3350	15.08	2345	33.10	60		423.007	986.722	86.12	100.0	0.00	4.99	0.000	395.06	119.76			148000	6.0
424		14:30:00	15410	93			2360	33.10	60		424.348	995.548											
425		15:00:00	15440	93	3600	15.08	2360	33.10	60		424.348	1004.389	90.49	100.0	0.00	4.37	0.000	399.43	104.88			150000	6.0
426		15:30:00	15440	93			2360	33.10	60		424.348	1013.229	93.40	100.0	0.00	2.91	0.000	402.34	139.68			150000	6.0
427		15:35:00	Close upper master to service wellhead (Wait on valve tech.). Blow down separator and lines to tank.																				
428		15:35:00	15440	93	3600	0.00	0	0.00	60	88.900	0.000	1013.229	93.40	0.0	0.00	0.00	0.000	402.34	0.00				
429		15:35:00	Water recovered since opening well @ 22:40 hrs. 98/03/08 = 90.56 M3 (17 hours)																				
430		18:00:00	Close lower master valve once wellhead was cooled down.																				
431		19:00:00	Transfer fluid from production tanks to storage tanks.																				
432	1998/03/09	07:00:00	Water sample at 1500 Hrs. of March 8th 1998 = Salinity = 150000 ppm w/ Ph of 6.0																				
433		17:30:00	Begin rigging out lines to move rig off location. Closing water on location = 107.0 M3.																				
434	1998/03/10	07:00:00	0	0	0	0.00	0	0.00	0		0.000	1013.229	0.00		-93.40	0.00	0.000	402.34	0.00				
435	1998/03/20	16:00:00	21490	0	0		0	0.00	0	95.250	0.000	1013.229	0.00		0.00	0.00	0.000	402.34	0.00				
436		16:00:00	Begin running in to perforate.																				
437		19:45:00	Wireline at surface.Rig off wireline to set up for second run.																				
438		23:20:00	Wireline rigging back up to run second perforating run.																				
439		23:35:00	21510		0																		
440		23:35:00	Casing under vaccum.																				
441	1998/03/21	00:30:00	21510		0																		
442		01:00:00	21510		0																		
443		02:00:00	21510		0																		
444		03:00:00	21510		0																		
445		03:15:00	Wireline at surface.Rig off wireline.Perferating guns didn't fire.																				
446		04:00:00	21510		0																		
447		05:00:00	21510		0																		
448		06:00:00	21510		0																		
449		06:15:00	Wireline running in to perforate.																				
450	1998/03/21	07:00:00	21510		0		0	0.00	0		0.000	1013.229	0.00		0.00	0.00	0.000	402.34	0.00				
451	1998/03/21	08:00:00	21510		0																		
452		09:00:00	21510		0																		
453		10:00:00	21510		0																		
454		11:00:00	Wireline repairing perforating gun.																				
455		12:00:00	21510		0																		
456		13:00:00	21510		0																		
457		14:00:00	21510		0																		
458		15:00:00	21510		0																		
459		15:15:00	Perforating completed. Close master valve to rig out wireline and rig in DS to acidize with coil tubing.																				
460		22:30:00	Coiled tubing rigged up.Wait til morning before running in hole.																				

Fast

Job Number: 2720
Customer: Ranger Oil Limited
Wellname: Fort Liard
Well Location: P - 66 - A
Formation: Nahanni

FieldNotes

CPT
CENTRAL PRODUCTION TESTING LTD.

Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
461	1998/03/22	03:30:00	Coiled tubing rigged up and preparining to pressure test.																				
462		04:15:00	Gas leak at wellhead;Between upper and lower master valves.Attempt to repair.																				
463		05:40:00	Gas leak repaired.Hold safety meeting.																				
464		06:15:00	Pressure test coiled tubing to 35.0 Mpa agiast master valve and wing valves.																				
465		06:45:00	Bled down coil to 25.0 Mpa and then close wing valve.Open master valve and coiled tubing starting to run in.																				
466	1998/03/22	07:00:00	Prepare to run in hole with coil tubing.																				
467		09:30:00	Coil on bottom, begin pumping first stage of acid.																				
468		10:30:00	Finish second stage of pumping and run back down below the perfs.																				
469		10:40:00	21480				0	0.00	0	88.900	0.000	1013.229	0.00		0.00	0.00	0.000	402.34	0.00				
470		10:40:00	Open well through separator to flare. Flammable gas to surface.																				
471		10:50:00	18800		100	7.94																	
472		11:00:00	18775	20	100	7.94	3000	6.22	34	88.900	217.468	1016.250	0.00		0.00	0.00	0.000	402.34	0.00				
473		11:05:00	Shut down N2 and begin coming out of hole. Short slug of fluid present but unable to measure.																				
474		11:12:00				8.33																	
475		11:16:00				8.73																	
476		11:23:00				9.13																	
477		11:30:00	17800	22	100	9.13	3000	7.96	18		254.306	1021.164	0.00		0.00	0.00	0.000	402.34	0.00				
478		11:31:00	Fluid present. Unable to obtain salinity. Fluid sample obtained contained appearance of drilling mud mixture and water.																				
479		11:45:00	18090	24		9.13																	
480		12:00:00	18155	24	100	9.13	3550	7.96	6		285.771	1026.790	0.00		0.00	0.00	0.000	402.34	0.00				
481		12:00:00	Coil near surface. Shut in well at wing valve. Note: 2.4 m3 of water is needed to reach first sight glass reading in pressure tank.																				
482		12:30:00	21240		100	0.00	0	0.00	0		0.000	1026.790											
483		12:30:00	Coil at surface. Close master valve and bleed coil to 0. Rig out coil tubing unit.																				
484		14:30:00	Open well to separator to flare on cleanup.																				
485		14:30:00	21540		100		0	0.00	0	88.900	0.000	1026.790	0.00		0.00	0.00	0.000	402.34	0.00				
486		14:45:00	19050	26		10.32																	
487		14:45:00	Fluid to surface. Note: No drilling mud present in water sample.																				
488		15:00:00	17370	28	100	11.11	3200	17.42	14		392.628	1034.970	0.00		0.00	0.00	0.000	402.34	0.00			14000	6.0
489		15:15:00	14800	34		14.29																	
490		15:30:00	15800	38		14.29	3130	23.39	26		438.343	1043.626	0.00	100.0	0.00	0.00	0.000	402.34	0.00				
491		15:45:00	15790	41																			
492		16:00:00	15140	41	400	15.08	3050	28.37	26	88.900	476.404	1053.154	5.25	100.0	0.00	5.25	0.000	407.59	252.00				4.0
493		16:30:00	14900	46	600	15.08	3000	27.87	32		462.515	1062.935											
494		17:00:00	14860	51	800	15.08	2990	27.62	36	88.900	456.036	1072.503	13.04	100.0	0.00	7.79	0.000	415.38	186.96				4.0
495		17:30:00	14875	57	1000	15.08	2975	27.62	44		447.959	1081.919											
496		18:00:00	14885	59	1300	15.08	2975	27.62	45	88.900	447.123	1091.243	20.48	100.0	0.00	7.44	0.000	422.82	178.56			152000	5.0
497		18:30:00	14890	63	1700		2950	27.12	46		440.349	1100.488											
498		19:00:00	14910	66	2200	15.08	2980	27.12	48	88.900	440.988	1109.668	28.38	100.0	0.00	7.90	0.000	430.72	189.60			154000	6.0
499		19:30:00	14920	68	2550		2990	27.12	49		440.929	1118.855											
500		20:00:00	14935	70	2900	15.08	3000	27.37	51	88.900	442.088	1128.053	36.01	100.0	0.00	7.63	0.000	438.35	183.17			151000	6.0
501		20:30:00	14970	73	4200		3010	27.37	53		441.237	1137.254											
502		21:00:00	15000	74	4700	15.08	3010	27.62	55	88.900	441.658	1146.451	43.11	100.0	0.00	7.10	0.000	445.45	170.35			152000	6.0
503		21:30:00	15035	76	5250		3020	27.62	58		440.055	1155.636											
504		22:00:00	15045	78	5500	15.08	3030	27.62	59	88.900	440.018	1164.803	50.73	100.0	0.00	7.62	0.000	453.07	182.88	1.3	16.6	154000	6.0
505		22:30:00	15065	79	5800		3030	27.62	61		438.485	1173.954											
506		23:00:00	15080	81	1600	15.08	3030	27.62	61	88.900	438.485	1183.089	57.72	100.0	0.00	6.99	0.000	460.06	167.76			154000	6.0

Fast

Job Number: 2720
Customer: Ranger Oil Limited
Wellname: Fort Liard
Well Location: P - 66 - A
Formation: Nahanni

FieldNotes

CPT
CENTRAL PRODUCTION TESTING LTD.

Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
507	1998/03/22	23:30:00	15085	82	1950		3030	27.62	61	88.900	438.485	1192.224											
508		23:45:00	Bled down casing to 1300 Kpa.																				
509		23:59:59	15095	83	2400	15.08	3040	27.62	62	88.900	438.455	1201.354	64.97	100.0	0.00	7.25	0.000	467.31	174.05			153000	6.0
510	1998/03/23	00:00:00	Shut in well and record build ups.																				
511		00:00:00	Shipped 57.7 M3 water off location.																				
512		00:00:01	15100	83	2400	0.00	0	0.00	0	88.900	0.000	1201.354	65.53	100.0	0.00	0.56	0.000	467.82	4192.00				
513		00:00:02	Fluid listed at 00:00:01 Hrs. is what was in the high stage separator prior to dump activating.																				
514		00:00:03	15120		2400	0.00	0	0.00	0	88.900	0.000	1201.354	65.53	100.0	0.00	0.00	0.000	467.87	0.00				
515		00:05:00	20670		1800																		
516		00:10:00	20860		1300																		
517		00:15:00	20990		900																		
518		00:30:00	21500		625																		
519		00:45:00	21640		500																		
520		01:00:00	21735		450																		
521		01:30:00	21820		400																		
522		02:00:00	21870		325																		
523		02:05:00	Shut in wellhead master valves and bled off wellhead.Rig in wirerline.																				
524		04:05:00	Wireline rigged in and starting to run in hole.Casing on vacuum.																				
525		04:10:00	21900		0																		
526		04:30:00	21890		0																		
527		05:00:00	21880		0																		
528		05:30:00	21875		0																		
529		06:00:00	21870		0																		
530		06:30:00	21865		0																		
531		06:59:59	21860		0		0	0.00	0		0.000	1201.354	65.53		0.00	0.00	0.000	467.87	0.00				
532			Water shipped off location in last 24 hours = 57.7 M3; Water on location @ 07:00 hrs. = 9.06 M3.																				
533			Gas sample : H2S = 1.3% ; CO2 = 16.6%																				
534	1998/03/23	07:00:00	Water sample : Salinity = 153000 ppm w/ Ph of 6.0																				
535		07:45:00	Wireline beginning down hole.																				
536		08:00:00	21830		0																		
537		09:00:00	21810		0																		
538		10:00:00	21795		0	0.00	0	0.00	0	88.900	0.000	1201.354	65.53	0.0	0.00	0.00	0.000	467.87	0.00				
539		10:15:00	Deadweight line connection to wing valve parted at 2 inch to 1/2 inch blow plug.																				
540		10:20:00	Well secured. Wireline tools at surface. Remove damaged parts and wait for parts.																				
541		19:30:00	Rig off flowline from wellhead.Disassemble wellhead above lower master valve.																				
542		22:00:00	Install new upper master valve , new wing valves (2) and new crown (work) valve.																				
543		23:00:00	Shut ESD and fill wellhead with diesel / cronox mixture to lower master valve and prepare to pressure test.																				
544		23:30:00	Pressure test wellhead to 35.0 Mpa for 5 minutes.Passed.																				
545	1998/03/24	00:00:00	Rig in flowline and fill with diesel / cronox mixture.																				
546		02:30:00	Rebuild deadweight line and pressure test to 35.0 Mpa.																				
547		03:00:00	Packing gland nut blew out of injetion pump at 27.5 Mpa.Check valve on pump held at 27.5 Mpa and maintained 27.25 Mpa on deadweight line.																				
548		03:15:00	Deadweight line passed pressure test of 27.25 Mpa.																				
549		03:30:00	With methonal pump down , the pressure test on the flowline has been defered til morning.																				
550		03:45:00	Perpare to take deadweight of well.																				
551		03:55:00	Open lower master valve then upper master valve.Open wing vavle to needle valve before deadweight line.																				
552		04:00:00	Upon opening new needle valve to deadweight line,the needle valve started leaking out stem.																				

Fast

Job Number: 2720
Customer: Ranger Oil Limited
Wellname: Fort Liard
Well Location: P - 66 - A
Formation: Nahanni

FieldNotes

CPT
CENTRAL PRODUCTION TESTING LTD.

Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
553	1998/03/24	04:30:00	Shut in well , bled pressure into flowline (pressure test on flowline of 3500 Kpa) and remove faulty needle valve.Replace and reconnect deadwieghtline.																				
554		04:45:00	Pressure test deadwieght line with 20.0 Mpa baker pump.																				
555		05:00:00	Pressure test of 20.0 Mpa on deadweight line passed.																				
556		05:15:00	Shut in all valves and wait on day break to continue with pressure testing.																				
557		06:15:00	Check deadweight line pressure test.Pressure maintianing at 20.0 Mpa.Open wellhead to deadweight.																				
558		06:30:00	21645		0					88.900													
559		07:00:00	21645		0																		
560		08:00:00	21640		1600																		
561		09:00:00	21640		1600																		
562		10:00:00	21630		1600																		
563		11:00:00	21630		1625																		
564		12:00:00	21620		1650																		
565		13:00:00	21620		1650																		
566		14:00:00	21615		1675																		
567		15:00:00	21615		1700																		
568		15:05:00	Bleed casing to 1000 kPa. Note: Sweet gas/air. No fluid present during bleed down.																				
569		16:00:00	21610		1200																		
570		17:00:00	21610		1250																		
571		18:00:00	21600		1300																		
572		19:00:00	21600		1330																		
573		20:00:00	21595		1350																		
574		21:00:00	21595		1385																		
575		21:15:00	High pressure injection pump repaired.Shut in wing valve to deadweight line and prepare to pressure test with diesel / cronox mixture.																				
576		21:45:00	Pressure up deadweight line to 35.0 Mpa.																				
577		23:30:00	Deadweight line pressure still at 35.0 Mpa.																				
578		23:45:00	Open wing valve and resume monitoring wellhead pressures.																				
579	1998/03/25	00:00:00	21590		1475																		
580		00:30:00	21585		1500																		
581		01:00:00	21585		1520																		
582		02:00:00	21585		1540																		
583		03:00:00	21580		1560																		
584		04:00:00	21580		1580																		
585		05:00:00	21580		1600																		
586		06:00:00	21580		1620																		
587		07:00:00	21575		1640	0.00	0	0.00	0	88.900	0.000	1201.354	65.53	0.0	0.00	0.00	0.000	467.87	0.00				
588		08:00:00	21575		1665																		
589		09:00:00	21575		1675																		
590		10:00:00	21560		1700																		
591		11:00:00	21560		1725																		
592		12:00:00	21550		1745																		
593		13:00:00	21550		1765																		
594		14:00:00	21540		1775																		
595		15:00:00	21540		1775																		
596		16:00:00	21530		1775																		
597		17:00:00	21530		1800																		
598		18:00:00	21520		1800																		

Fast

Job Number: 2720
Customer: Ranger Oil Limited
Wellname: Fort Liard
Well Location: P - 65 - A
Formation: Nahanni

FieldNotes

CPT
CENTRAL PRODUCTION TESTING LTD.

Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
599	1998/03/25	19:00:00	21550		1800					88.900													
600		20:00:00	21540		1810																		
601		21:00:00	21540		1810																		
602		22:00:00	21540		1820																		
603		23:00:00	21540		1820																		
604	1998/03/26	00:00:00	21540		1830																		
605		01:00:00	21540		1830																		
606		02:00:00	21540		1830																		
607		03:00:00	21540		1840																		
608		04:00:00	21540		1840																		
609		05:00:00	21540		1840																		
610		06:00:00	21540		1850																		
611		07:00:00	21540		1850	0.00	0	0.00	10	88.900	0.000	1201.354	65.53	0.0	0.00	0.00	0.000	467.87	0.00				
612		08:00:00	21540		1850																		
613		09:00:00	21540		1850																		
614		10:00:00	21540		1850																		
615		11:00:00	21540		1850																		
616		12:00:00	21540		1850																		
617		13:00:00	21530		1850																		
618		14:00:00	21530		1860																		
619		15:00:00	21530		1860																		
620		16:00:00	21530		1870																		
621		17:00:00	21530		1870																		
622		18:00:00	21520		1880																		
623		19:00:00	21520		1880																		
624		20:00:00	21520		1880																		
625		21:00:00	21520		1880																		
626		22:00:00	21520		1880																		
627		23:00:00	21520		1880																		
628	1998/03/27	00:00:00	21520		1880																		
629		01:00:00	21520		1880																		
630		01:05:00	Sample casing gas with Gas-Tech ; showed no H2S present.Bled casing down to 1000 Kpa.Check at end of bleed off for H2S ; None present.																				
631		02:00:00	21520		1190																		
632		02:33:00	Solid wireline on location.																				
633		03:00:00	Shut in master valves and bled off wellhead to flare stack.Close all valves on wellhead.																				
634		04:00:00	Hold safety meeting.																				
635		05:15:00	Wireline running in hole with plug mandril.																				
636		06:00:00	Wireline at surface.Bleed off wellhead to stack.																				
637		06:30:00	Wireline preparing to run in well with prong.																				
638		06:35:00	21520		1450	0.00	0	0.00	10	88.900	0.000	1201.354	65.53	0.0	0.00	0.00	0.000	467.87	0.00				
639		06:36:00	Wireline running in well with prong.																				
640		07:00:00	21500																				
641		07:35:00	Wireline out of hole and cap secured. Pressure up to choke to bleed down tubing. Pressure @ 21500 kPa.																				
642		07:35:00	Begin bleeding off tubing to flare at a slow rate.																				
643		08:00:00	9850																				
644		08:00:00	2 high pressure gas samples taken from meter run: AGAT: cyl # 5094 & #17806 at 750 kPa and 38 C.																				

Fast

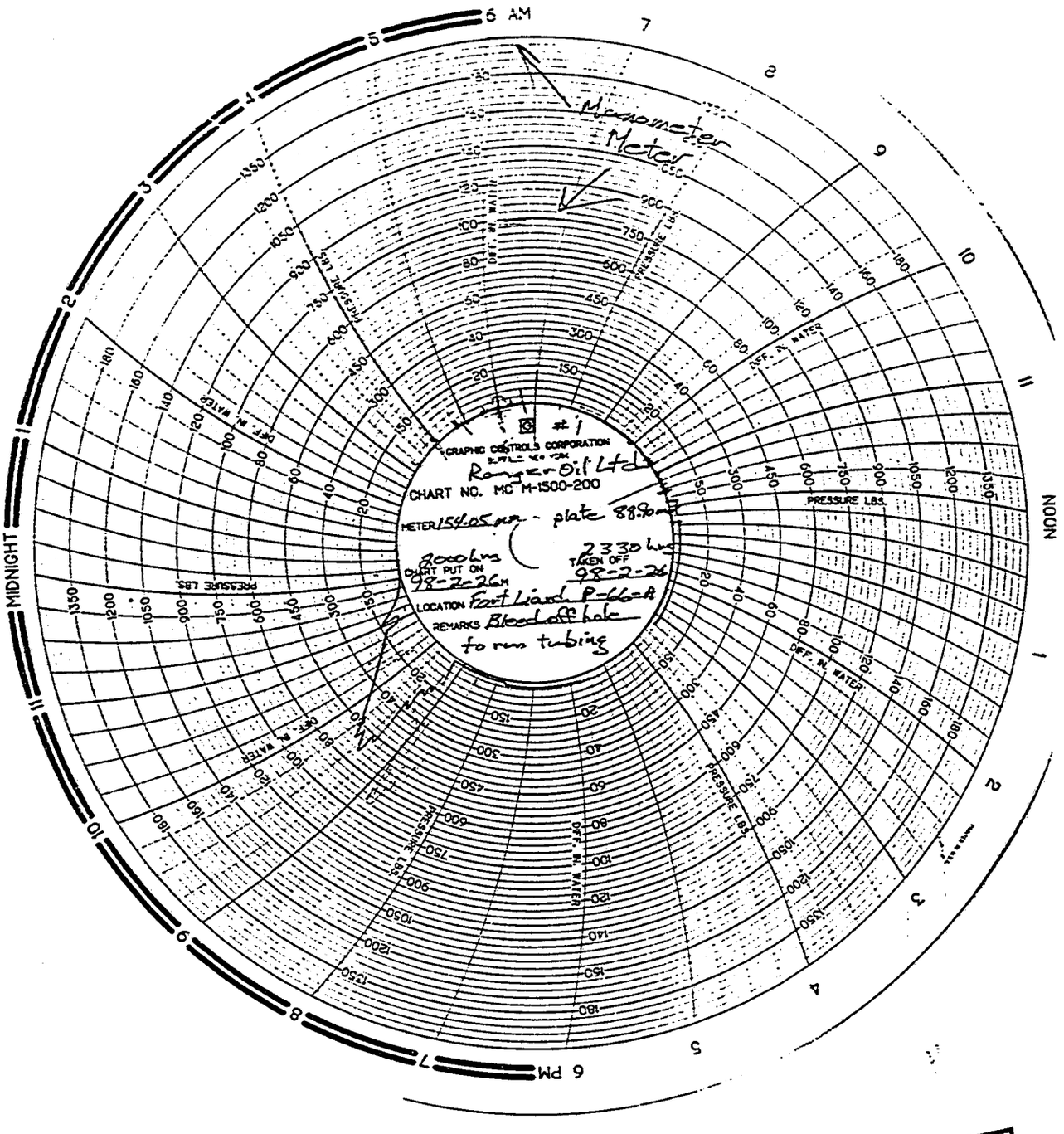
Job Number: 2720
Customer: Ranger Oil Limited
Wellname: Fort Liard
Well Location: P - 66 - A
Formation: Nahanni

FieldNotes

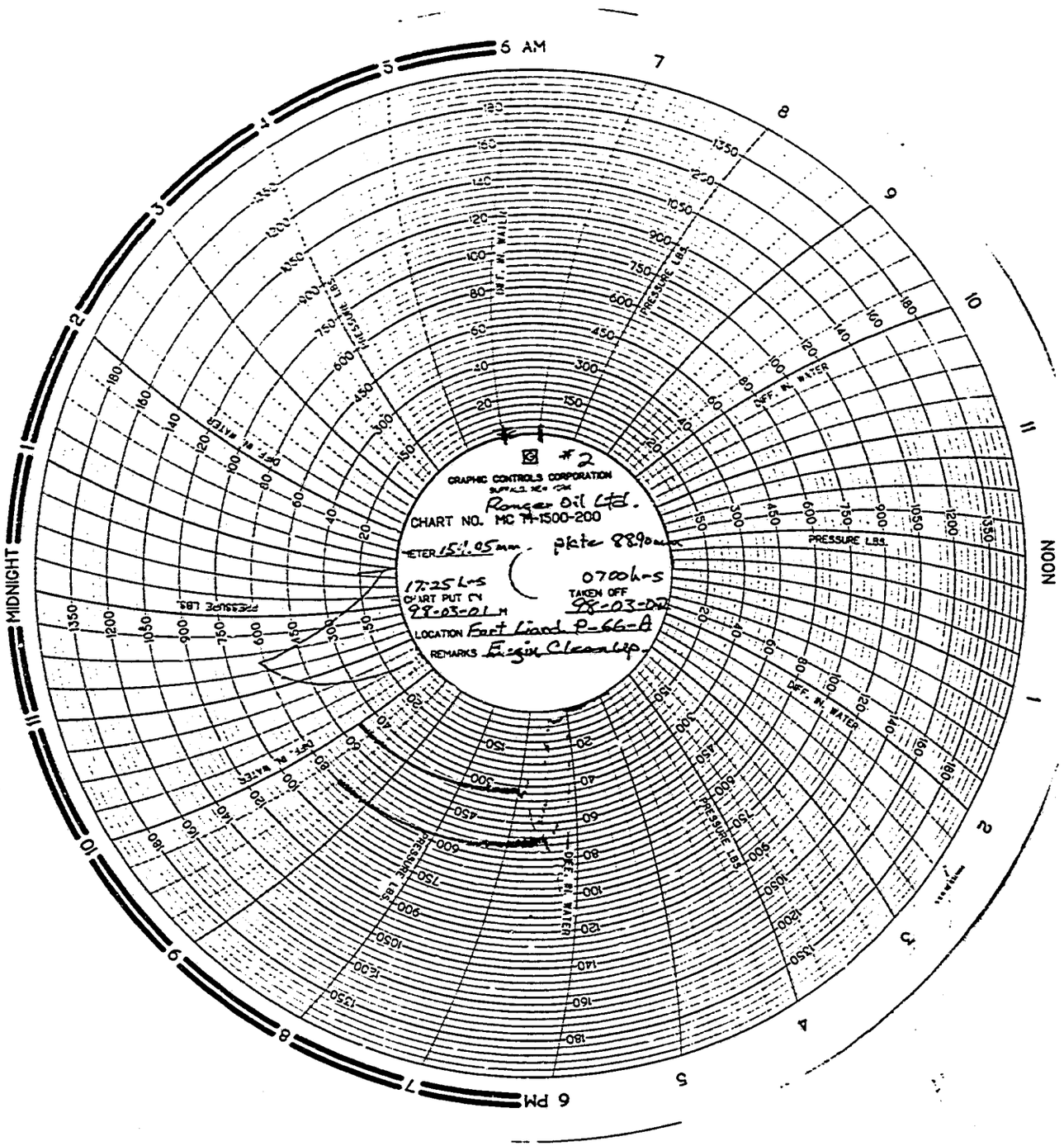
CPT
CENTRAL PRODUCTION TESTING LTD.

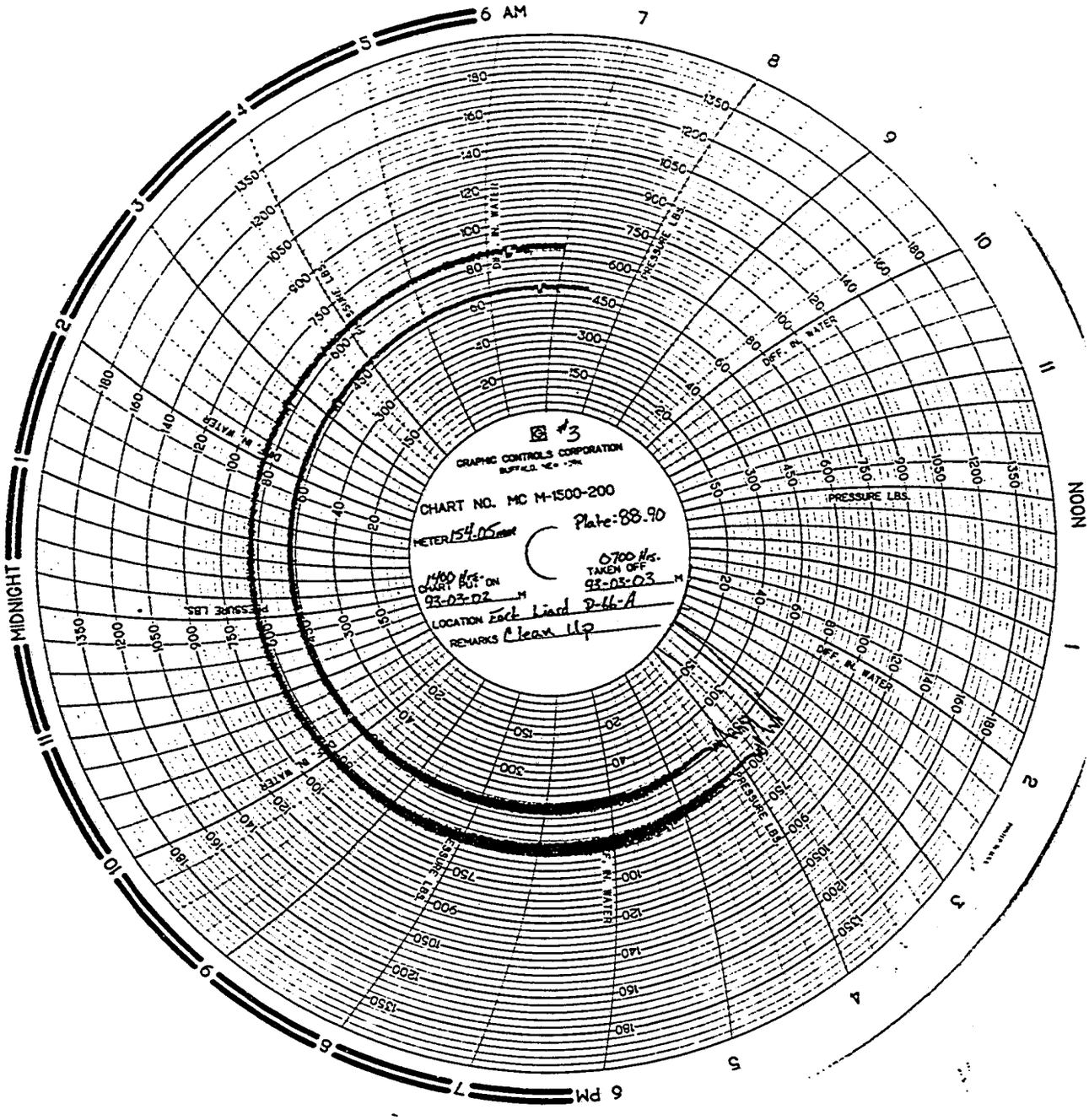
Row	Date	Clk Tim	Tbg Pres	Tbg T	Csg Pres	Choke	Static1	Diff1	Temp1	Orif1	Gas Rate1	Cum Gas1	Fld Vol1	BSW1	Oil1 gain	Wat1 gain	Cum Oil1	Cum Wat1	Wat Rate1	H2S	CO2	SALINITY	pH
	yy/mm/dd	clock	kPa	C	kPa	mm	kPa	kPa	C	mm	10^3m3/d	10^3m3	m3	%	m3	m3	m3	m3	m3/d	%	%	ppm	
645	1998/03/27	08:15:00	250							88.900													
646		08:30:00	0																				
647		08:45:00	0																				
648		09:00:00	Rig up to pressure test plug with inhibited water.																				
649		09:30:00	Tubing began to pressure up after 13.8 M3 pumped. Slow down pump rate and continue pressure test.																				
650		09:45:00	Pressure test good to 28 MPa. Bleed off and rig out pressure truck.																				
651		10:00:00	No gas build up present. Rig up to run surface safety valve.																				
652		14:00:00	Surface safety valve set. Begin rigging out test equipment.																				
653		15:00:00	Casing pressure @ 1500 kPa. Bleed to 0.																				

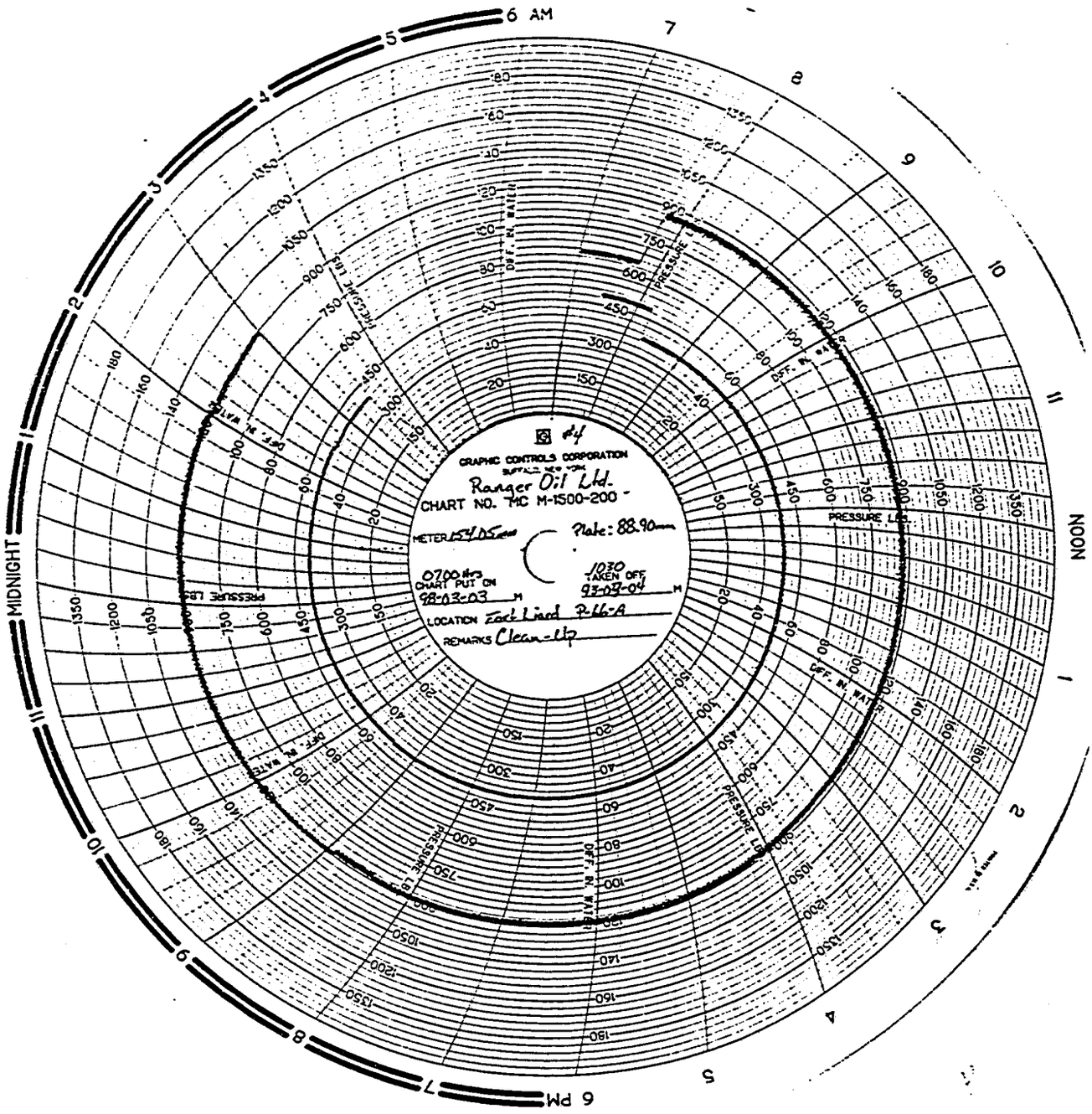
FasT

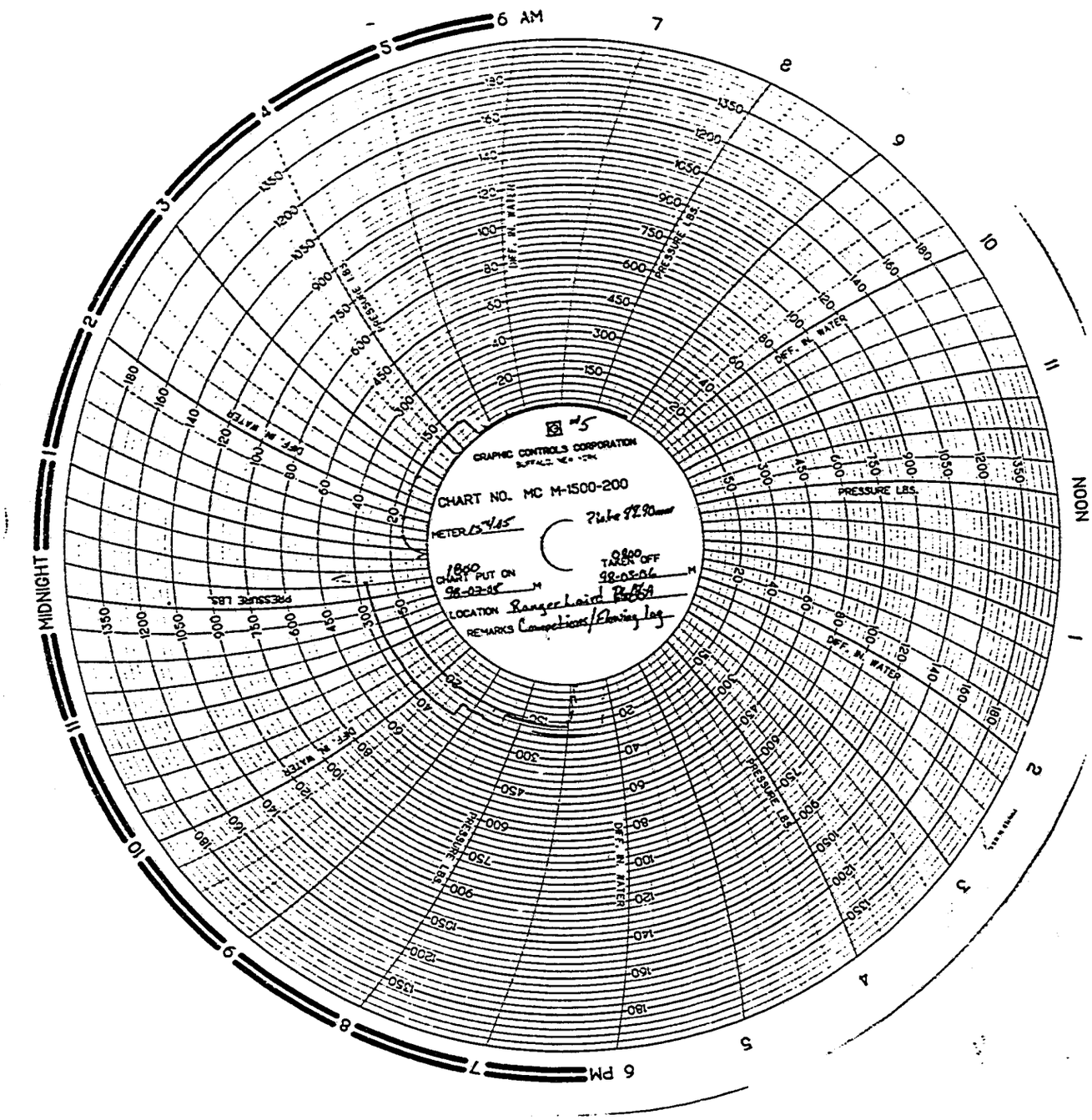


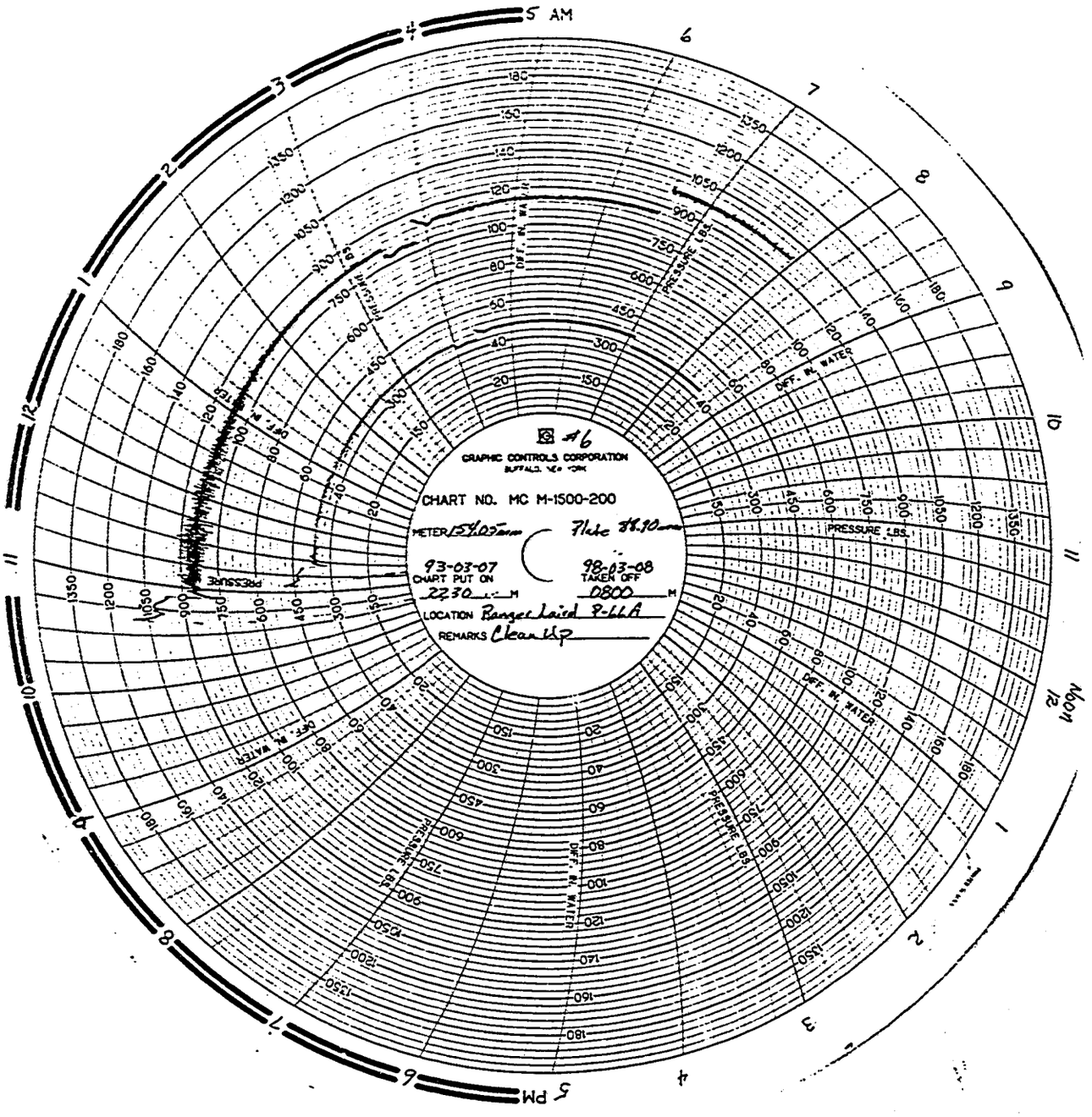
NATIONAL ENERGY BOARD
ENGINEERING BRANCH
MAY - 4 1998

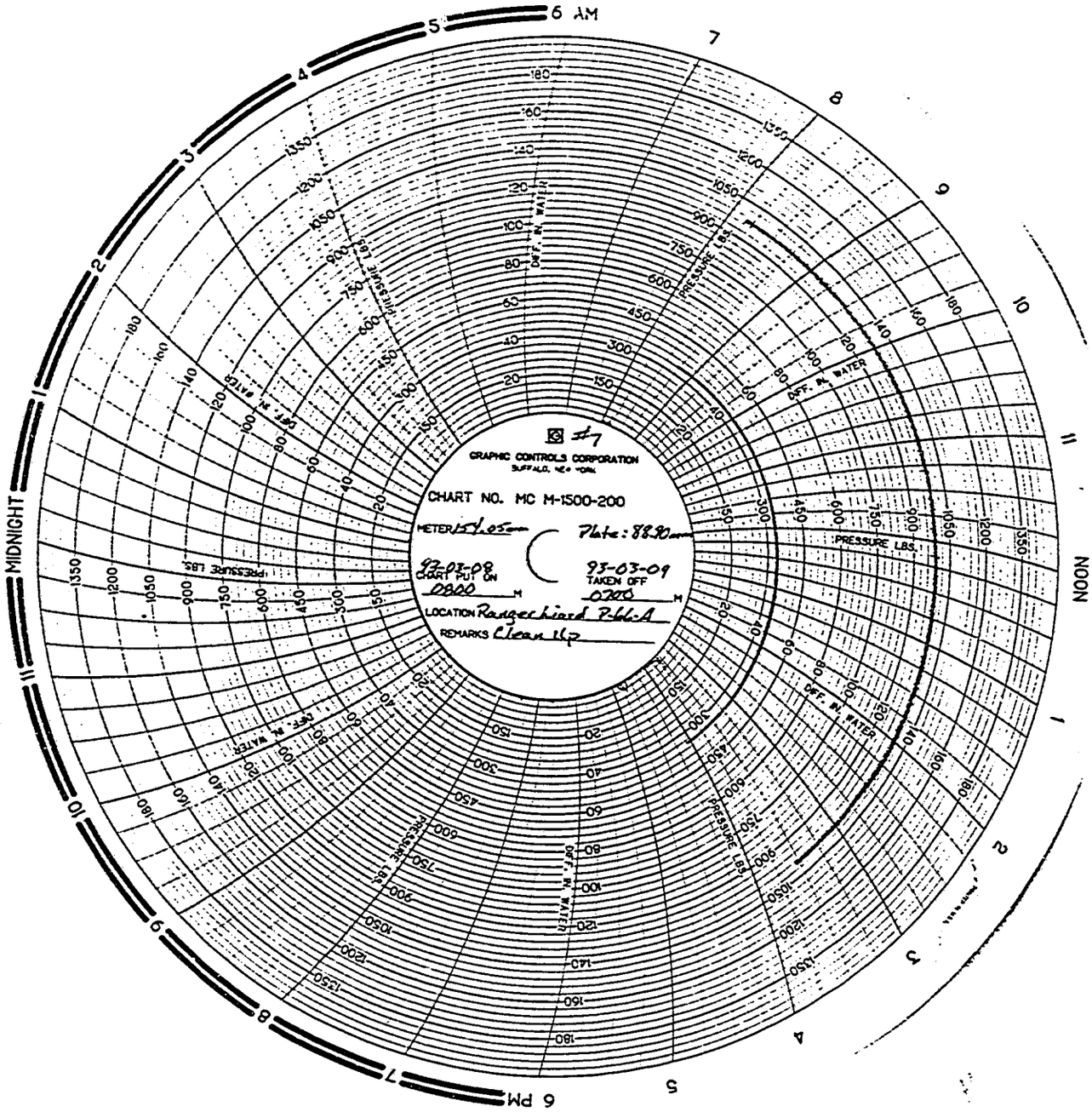

6 AM
NOON
MIDNIGHT
6 PM
#2
GRAPHIC CONTROLS CORPORATION
Ranger Oil Ltd.
CHART NO. MC M-1500-200
METER 15:05 hrs
plate 8890
0700 hrs
17:25 hrs
CHART PUT ON
98-03-01
TAKEN OFF
98-03-02
LOCATION Fort Liard P-66-A
REMARKS Engin Clean up
PRESSURE LBS.
DIFF. IN. WATER

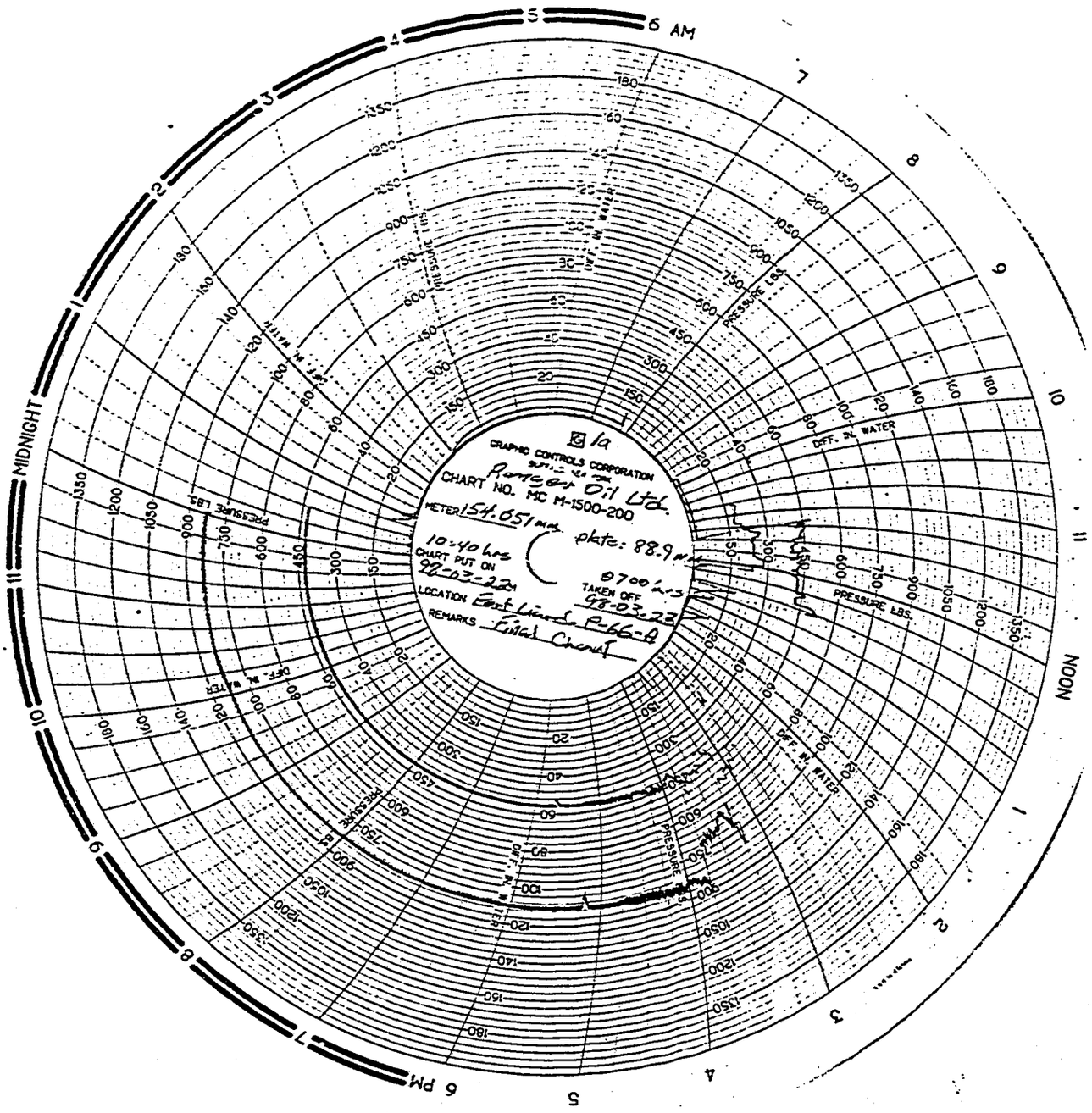

#3
GRAPHIC CONTROLS CORPORATION
CHART NO. MC M-1500-200
Plate: 88.90
METER 154.05 mcf
1400 Hrs.
CHART PUT ON
93-03-02 M
0700 Hrs.
TAKEN OFF
93-03-03 M
LOCATION Lock Lion D-66-A
REMARKS Clean Up
6 AM
NOON
MIDNIGHT
6 PM
PRESSURE LBS.
DIFF. IN. WATER


6 AM
NOON
6 PM
MIDNIGHT
GRAPHIC CONTROLS CORPORATION
Ranger Oil Ltd.
CHART NO. MC M-1500-200
METER 1545 mm
Plate: 88.90 mm
0700 hrs
CHART PUT ON
98-03-03
1030
TAKEN OFF
93-03-04
LOCATION Zama Lind P-16-A
REMARKS Clean-Up
PRESSURE LBS.
DIFF. IN WATER


6 AM
NOON
6 PM
MIDNIGHT
GRAPHIC CONTROLS CORPORATION
CHART NO. MC M-1500-200
METER 15"/45
CHART PUT ON 1800 98-03-05
TAKEN OFF 0800 98-03-06
LOCATION Ranger Laird Battery
REMARKS Completions/Flowing log
PRESSURE LBS.
DIFF. IN WATER


5 AM
6
7
8
9
10
11
NOON
12
1
2
3
4
5 PM
#6
GRAPHIC CONTROLS CORPORATION
BUFFALO, N.Y. U.S.A.
CHART NO. MC M-1500-200
METER 15x.05 Orifice
Plate 88.90
93-03-07
CHART PUT ON
2230 M
98-03-08
TAKEN OFF
0800 M
LOCATION Ranger Laird 8-11A
REMARKS Clean Up
PRESSURE LBS.
DIFF. IN. WATER


#7
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
CHART NO. MC M-1500-200
METER 15405
Plate: 8830
93-03-08
CHART PUT ON
0800 M
93-03-09
TAKEN OFF
0700 M
LOCATION Rangerhead P66-A
REMARKS Clean up
6 AM
NOON
6 PM
MIDNIGHT
PRESSURE LBS.
DIFF. IN. WATER


6 AM
NOON
6 PM
MIDNIGHT
GRAPHIC CONTROLS CORPORATION
Ranger Oil Ltd.
CHART NO. MC M-1500-200
METER 54.651 mm
plate: 88.9 mm
10:40 hrs
CHART PUT ON
98-03-22
07:00 hrs
TAKEN OFF
98-03-22
LOCATION East Lizard P-66-A
REMARKS Final Chart
PRESSURE LBS.
DIFF. IN. WATER

GENCO SUBSURFACE PRESSURE MEASUREMENTS

(403) 250-3800

GENCO Pressure Control Limited

SUBSURFACE PRESSURE MEASUREMENTS

CALGARY, AB.

Basic Data:

Company Ranger Oil Limited

Address 1600, 321 - 6 Avenue S.W.

Calgary, Alberta

Gentronics Electronic Gauge
c/w Memory Recorder

S/N: GSB-20881

Well Name Ranger ~~Port~~ North Liard

Well Identifier P-66-A

Status Gas

DWG Tubing Pressure _____ kPa

Tubing _____ mm @ _____ m KB

Producing Interval _____

Elevation _____ m CF, _____ m KB

Datum Depth of Well _____ m CF

Temperature at Run Depth 150.4 °C

Pressure at Run Depth 26770 kPaG

MPP Pressure _____ kPaG

Final Buildup Pressure _____ kPaG

Date off Bottom Mar 2, 1998 @ 14:45

Field & Pool TIGHT HOLE

Type of Test Static Gradient

Date of Test Mar 02, 1998

DWG Casing Pressure _____ kPa

Casing _____ mm @ _____ m KB

Producing Through _____

MPP Interval _____ m CF

Run Depth 3276.4 m CF

Pool Datum _____ m (subsea)

Gradient at Run Depth 0.85 kPa/m

Datum Depth Pressure _____ kPaG

Date on Bottom Mar 2, 1998 @ 09:58

Shut in Date _____

Summary:

Gentronic Strain Recorder. Recorder Ran Within Specification.

*Note: Tight Hole.

Please Find Enclosed Verification Numbers of Top Gauge As Per Conversation With Tim Metz On March 5, 1998.

Preparation Data:

Tested By GENCO Computed By T. Metz Report Date Mar 06, 1998

TOP GAUGE

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

STATIC GRADIENT SURVEY

Company: **Ranger Oil Limited**
Ranger Fort Liard

LSD: **P-66-A**

Top Gauge

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Gradient (°C/m)
At Surface: 1998/03/02 03:22:30 (Running In)				
000	21733	-----	14.3	-----
500	22804	2.14	46.9	0.065
1000	23734	1.86	74.8	0.056
1500	24621	1.77	98.7	0.048
2000	25282	1.32	114.0	0.031
2200	25510	1.14	120.2	0.031
2400	25738	1.14	125.6	0.027
2600	25965	1.13	130.5	0.025
2800	26217	1.26	135.5	0.025
3000	26459	1.21	140.3	0.024
3050	26518	1.17	142.8	0.050
3100	26581	1.26	145.9	0.062
3150	26637	1.13	148.4	0.050
3200	26705	1.36	149.1	0.014
3276	26770	0.85	150.4	0.017

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

N.E.B. COPY 15

(403) 250-3800

GENCO Pressure Control Limited

SUBSURFACE PRESSURE MEASUREMENTS

CALGARY, AB.

Basic Data:

Company Ranger Oil Limited

Address 1600, 321 - 6 Avenue S.W.
Calgary, Alberta

Gentronics Electronic Gauge
c/w Memory Recorder
S/N: GSB-20880

Well Name Ranger Fort Liard	Field & Pool TIGHT HOLE
Well Identifier P-66-A	Type of Test Static Gradient
Status Gas	Date of Test Mar 02, 1998
DWG Tubing Pressure _____ kPa	DWG Casing Pressure _____ kPa
Tubing _____ mm @ _____ m KB	Casing _____ mm @ _____ m KB
Producing Interval _____	Producing Through _____
Elevation _____ m CF, _____ m KB	MPP Interval _____ m CF
Datum Depth of Well _____ m CF	Run Depth 3276.4 m CF
Temperature at Run Depth 150.9 °C	Pool Datum _____ m (subsea)
Pressure at Run Depth 26749.6 kPaG	Gradient at Run Depth 1.38 kPa/m
MPP Pressure _____ kPaG	Datum Depth Pressure _____ kPaG
Final Buildup Pressure _____ kPaG	Date on Bottom Mar 2, 1998 @ 09:58
Date off Bottom Mar 2, 1998 @ 14:45	Shut in Date _____

Summary:

Gentronic Strain Recorder. Recorder Ran Within Specification.

*Note: Tight Hole.

Preparation Data:

Tested By GENCO Computed By L. Champagne Report Date Mar 05, 1998

ENERGY BOARD
BRANCH
MAR 19 1998

BOTTOM GAUGE

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 — Calgary, AB.

OPERATIONS SUMMARY

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/03/02	06:04:50	0.0000	7.5	9.9	1	Begin Data Acquisition
	06:13:50	0.1500	21729.6	12.9	14	@ surface
	06:42:50	0.6333	22749.3	47.5	71	@ 500.0 mCF
	07:01:50	0.9500	23693.7	74.3	135	@ 1000.0 mCF
	07:19:50	1.2500	24592.4	98.3	188	@ 1500.0 mCF
	07:36:50	1.5333	25257.1	115.2	235	@ 2000.0 mCF
	07:51:50	1.7833	25483.1	120.4	255	@ 2200.0 mCF
	08:05:50	2.0167	25713.5	125.7	274	@ 2400.0 mCF
	08:18:50	2.2333	25944.2	130.7	292	@ 2600.0 mCF
	08:31:50	2.4500	26177.3	135.6	305	@ 2800.0 mCF
	08:43:50	2.6500	26411.1	140.4	327	@ 3000.0 mCF
	08:50:50	2.7667	26486.2	142.0	334	@ 3050.0 mCF
	09:04:50	3.0000	26545.8	144.8	348	@ 3100.0 mCF
	09:20:50	3.2667	26602.6	148.3	364	@ 3150.0 mCF
	09:31:50	3.4500	26659.5	149.4	375	@ 3200.0 mCF
	09:38:50	3.5667	26713.2	150.3	382	@ 3250.0 mCF
	09:58:50	3.9000	26746.2	150.9	402	Recorder On Bottom
	10:53:50	4.8167	26749.6	150.9	457	@ 3276.4 mCF
						Gradient Pressure
	14:45:00	8.6694	27193.1	154.3	694	Recorder Off Bottom
	15:59:40	9.9139	96.4	21.1	899	End Data Acquisition

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

STATIC GRADIENT SURVEY

Company: Ranger Oil Limited
Ranger Fort Liard

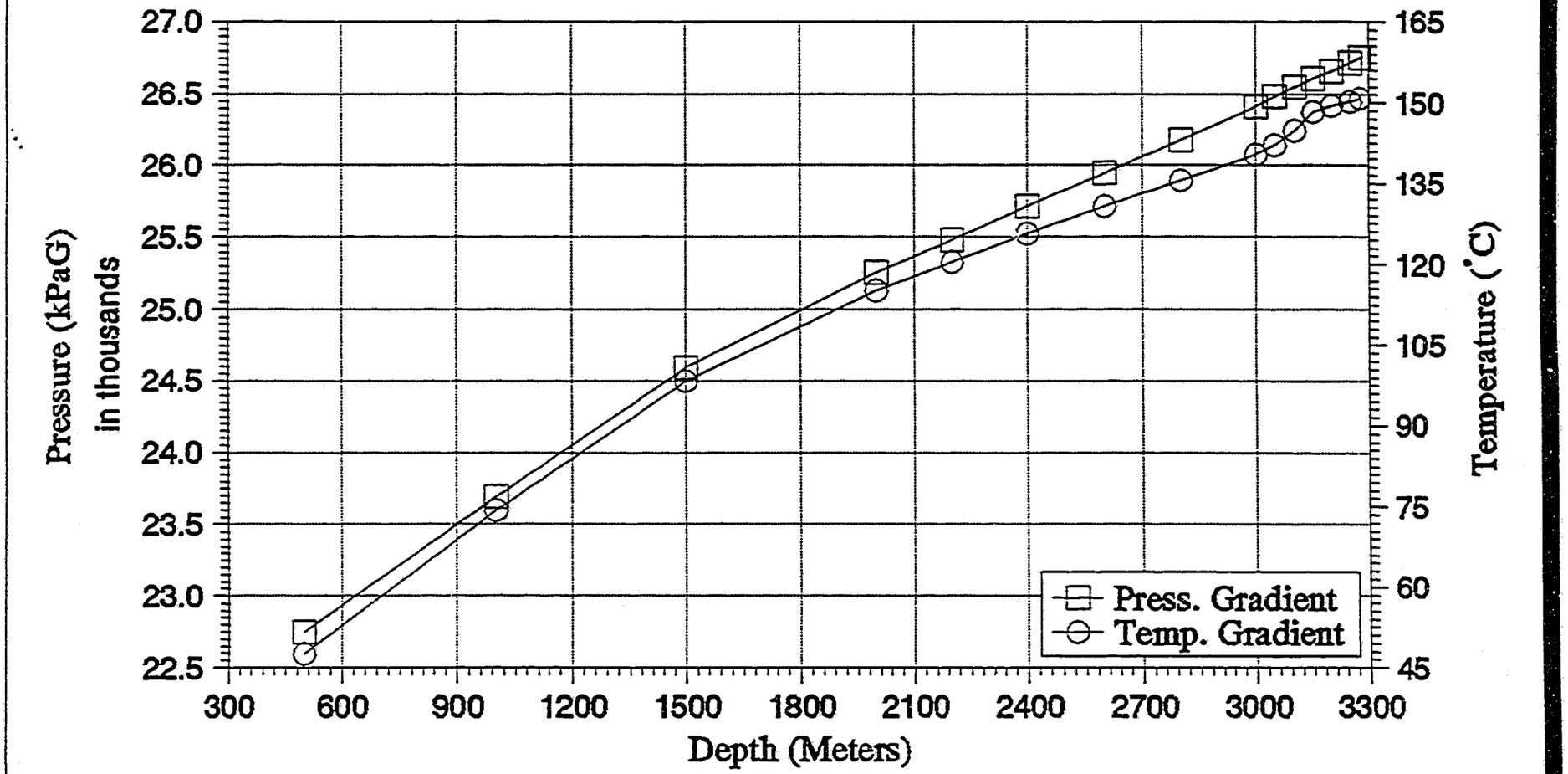
LSD: P-66-A

Bottom Gauge

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Gradient (°C/m)
At Surface: 1998/03/02 06:13:50 (Running In)				
000	21730	-----	12.9	-----
500	22749	2.04	47.5	0.069
1000	23694	1.89	74.3	0.054
1500	24592	1.80	98.3	0.048
2000	25257	1.33	115.2	0.034
2200	25483	1.13	120.4	0.026
2400	25714	1.15	125.7	0.027
2600	25944	1.15	130.7	0.025
2800	26177	1.17	135.6	0.025
3000	26411	1.17	140.4	0.024
3050	26486	1.50	142.0	0.032
3100	26546	1.19	144.8	0.056
3150	26603	1.14	148.3	0.070
3200	26660	1.14	149.4	0.022
3250	26713	1.07	150.3	0.018
3276	26750	1.38	150.9	0.023

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

Ranger Oil Limited
P-66-A
Gentronics ES Static Gradient Survey



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/03/02 06:04:50
End Aquisition: 1998/03/02 15:59:40

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
				Begin Data Acquisition:			
1998/03/02	06:04:50	0.0000	7.5	7.5	9.9	9.9	0:
	06:05:20	0.0083	6341.8	6334.3	9.8	-0.1	4:
	06:07:50	0.0500	21727.6	15385.8	11.0	1.1	8:
	06:11:50	0.1167	21729.7	2.1	12.6	1.6	12:
	06:15:50	0.1833	21731.3	1.6	13.3	0.8	16:
	06:19:50	0.2500	21724.7	-6.6	13.7	0.3	20:
	06:23:50	0.3167	21714.1	-10.6	15.1	1.4	24:
	06:27:10	0.3722	21872.4	158.2	18.5	3.4	28:
	06:27:50	0.3833	21945.0	72.7	19.8	1.3	32:
	06:28:30	0.3944	22033.6	88.6	20.9	1.1	36:
	06:29:10	0.4056	22144.4	110.8	22.3	1.4	40:
	06:29:50	0.4167	22243.3	98.9	24.1	1.8	44:
	06:30:30	0.4278	22350.8	107.5	25.6	1.5	48:
	06:31:10	0.4389	22450.8	100.0	27.1	1.5	52:
	06:31:50	0.4500	22547.3	96.5	28.9	1.8	56:
	06:32:30	0.4611	22646.3	99.1	30.4	1.5	60:
	06:35:50	0.5167	22750.4	104.1	38.5	8.1	64:
	06:39:50	0.5833	22751.8	1.3	44.6	6.1	68:
	06:43:50	0.6500	22751.6	-0.1	48.3	3.8	72:
	06:44:30	0.6611	22812.2	60.5	48.7	0.4	76:
	06:45:10	0.6722	22887.2	75.1	49.3	0.6	80:
	06:45:50	0.6833	22959.4	72.2	49.8	0.5	84:
	06:46:30	0.6944	23029.6	70.1	50.6	0.7	88:
	06:47:10	0.7056	23099.8	70.3	51.3	0.7	92:
	06:47:50	0.7167	23170.1	70.3	52.2	0.9	96:
	06:48:30	0.7278	23240.5	70.3	53.5	1.3	100:
	06:49:10	0.7389	23309.1	68.6	54.6	1.1	104:
	06:49:50	0.7500	23376.9	67.8	55.6	1.0	108:
	06:50:30	0.7611	23445.0	68.1	56.8	1.2	112:
	06:51:10	0.7722	23507.6	62.6	58.1	1.3	116:
	06:51:50	0.7833	23579.7	72.1	59.4	1.3	120:
	06:52:30	0.7944	23650.9	71.2	60.9	1.4	124:
	06:54:50	0.8333	23669.4	18.5	65.8	4.9	128:
	06:58:50	0.9000	23686.5	17.1	71.6	5.8	132:
	07:02:50	0.9667	23703.8	17.3	75.1	3.5	136:
	07:03:30	0.9778	23793.2	89.4	75.4	0.3	140:
	07:04:10	0.9889	23873.5	80.3	75.8	0.3	144:
	07:04:50	1.0000	23956.4	82.9	76.7	0.9	148:
	07:05:30	1.0111	24037.7	81.4	77.2	0.5	152:
	07:06:10	1.0222	24120.3	82.5	78.0	0.8	156:
	07:06:50	1.0333	24200.6	80.3	78.8	0.8	160:
	07:07:30	1.0444	24282.3	81.7	79.9	1.2	164:
	07:08:10	1.0556	24362.9	80.6	81.3	1.3	168:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	07:08:50	1.0667	24449.8	86.9	82.7	1.4	172:
	07:09:30	1.0778	24524.0	74.3	84.3	1.6	176:
	07:11:50	1.1167	24591.3	67.3	89.5	5.2	180:
	07:15:50	1.1833	24599.6	8.3	95.0	5.5	184:
	07:19:50	1.2500	24592.4	-7.2	98.3	3.3	188:
	07:21:20	1.2750	24652.8	60.3	99.1	0.8	192:
	07:22:00	1.2861	24722.3	69.6	99.5	0.4	196:
	07:22:40	1.2972	24797.7	75.4	100.3	0.8	200:
	07:23:20	1.3083	24873.5	75.8	100.9	0.6	204:
	07:24:50	1.3333	24983.7	110.3	103.1	2.2	208:
	07:25:30	1.3444	25050.1	66.3	104.0	0.9	212:
	07:26:10	1.3556	25100.3	50.2	104.8	0.8	216:
	07:26:50	1.3667	25154.8	54.5	105.8	0.9	220:
	07:27:30	1.3778	25202.0	47.2	106.8	1.0	224:
	07:29:50	1.4167	25252.3	50.3	110.1	3.3	228:
	07:33:50	1.4833	25255.7	3.4	113.7	3.6	232:
	07:37:50	1.5500	25257.8	2.1	115.6	1.9	236:
	07:39:20	1.5750	25292.3	34.5	116.3	0.7	240:
	07:40:50	1.6000	25417.6	125.4	116.9	0.7	244:
	07:44:50	1.6667	25480.0	62.3	118.8	1.9	248:
	07:48:50	1.7333	25483.6	3.6	119.7	0.9	252:
	07:52:50	1.8000	25556.8	73.2	120.4	0.7	256:
	07:53:30	1.8111	25611.5	54.7	120.6	0.2	260:
	07:55:50	1.8500	25703.2	91.7	122.2	1.6	264:
	07:59:50	1.9167	25709.6	6.3	124.2	2.0	268:
	08:03:50	1.9833	25712.0	2.4	125.2	1.1	272:
	08:07:00	2.0361	25781.7	69.7	125.9	0.7	276:
	08:07:40	2.0472	25837.5	55.8	126.1	0.2	280:
	08:10:50	2.1000	25932.8	95.3	128.0	1.9	284:
	08:14:50	2.1667	25938.4	5.6	129.7	1.7	288:
	08:18:50	2.2333	25944.2	5.8	130.7	1.0	292:
	08:22:50	2.3000	26165.7	221.5	132.1	1.4	296:
	08:26:50	2.3667	26173.7	7.9	134.4	2.3	300:
	08:30:50	2.4333	26178.9	5.2	135.2	0.8	304:
	08:33:10	2.4722	26204.2	25.3	135.9	0.7	308:
	08:33:50	2.4833	26260.8	56.5	136.2	0.2	312:
	08:34:30	2.4944	26320.4	59.6	136.3	0.1	316:
	08:36:50	2.5333	26401.6	81.2	137.8	1.5	320:
	08:40:50	2.6000	26408.4	6.8	139.5	1.7	324:
	08:44:50	2.6667	26410.8	2.4	140.6	1.1	328:
	08:48:50	2.7333	26483.5	72.7	141.7	1.1	332:
	08:52:50	2.8000	26486.4	2.8	142.4	0.7	336:
	08:56:50	2.8667	26480.1	-6.3	142.8	0.4	340:
	09:00:50	2.9333	26542.7	62.6	144.1	1.3	344:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	09:04:50	3.0000	26545.8	3.1	144.8	0.7	348:
	09:08:50	3.0667	26545.6	-0.2	145.6	0.8	352:
	09:12:50	3.1333	26598.6	53.0	146.2	0.7	356:
	09:16:50	3.2000	26602.2	3.6	147.6	1.4	360:
	09:20:50	3.2667	26602.6	0.4	148.3	0.7	364:
	09:24:50	3.3333	26659.9	57.3	148.8	0.6	368:
	09:28:50	3.4000	26662.9	3.0	149.2	0.3	372:
	09:32:50	3.4667	26658.9	-4.1	149.6	0.4	376:
	09:36:50	3.5333	26712.9	54.0	150.3	0.7	380:
	09:40:50	3.6000	26713.2	0.3	150.3	0.1	384:
	09:44:50	3.6667	26721.2	8.0	150.9	0.6	388:
	09:48:50	3.7333	26747.8	26.5	151.0	0.1	392:
	09:52:50	3.8000	26747.3	-0.5	150.9	-0.1	396:
	09:56:50	3.8667	26745.1	-2.2	150.9	0.1	400:
	10:00:50	3.9333	26746.2	1.1	150.9	0.0	404:
	10:04:50	4.0000	26746.3	0.1	150.9	0.0	408:
	10:08:50	4.0667	26746.8	0.5	150.9	0.0	412:
	10:12:50	4.1333	26747.1	0.3	150.9	0.0	416:
	10:16:50	4.2000	26747.4	0.3	150.9	0.0	420:
	10:20:50	4.2667	26747.8	0.3	150.9	0.0	424:
	10:24:50	4.3333	26747.9	0.1	150.9	0.0	428:
	10:28:50	4.4000	26748.2	0.3	150.9	0.0	432:
	10:32:50	4.4667	26748.4	0.2	150.9	0.0	436:
	10:36:50	4.5333	26748.6	0.3	150.9	0.0	440:
	10:40:50	4.6000	26748.8	0.1	150.9	0.0	444:
	10:44:50	4.6667	26749.0	0.2	150.9	0.0	448:
	10:48:50	4.7333	26749.3	0.3	150.9	0.0	452:
	10:52:50	4.8000	26749.6	0.3	150.9	0.0	456:
	10:56:50	4.8667	26749.8	0.1	150.9	0.0	460:
	11:00:50	4.9333	26750.1	0.3	150.9	0.0	464:
	11:04:50	5.0000	26750.2	0.1	150.9	0.0	468:
	11:08:50	5.0667	26750.6	0.3	150.9	0.0	472:
	11:12:50	5.1333	26750.7	0.1	150.9	0.0	476:
	11:16:50	5.2000	26750.9	0.1	150.9	0.0	480:
	11:20:50	5.2667	26751.2	0.3	150.9	0.0	484:
	11:24:50	5.3333	26751.3	0.1	150.9	0.0	488:
	11:28:50	5.4000	26751.5	0.1	150.9	0.0	492:
	11:32:50	5.4667	26751.8	0.3	150.9	0.0	496:
	11:36:50	5.5333	26752.0	0.1	150.9	0.0	500:
	11:40:50	5.6000	26752.1	0.1	150.9	0.0	504:
	11:44:50	5.6667	26752.3	0.2	150.9	0.0	508:
	11:48:50	5.7333	26752.4	0.1	150.9	-0.1	512:
	11:52:50	5.8000	26752.6	0.1	150.9	0.0	516:
	11:56:50	5.8667	26752.6	0.0	150.9	0.0	520:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	12:00:50	5.9333	26752.7	0.1	150.9	0.0	524:
	12:04:50	6.0000	26752.9	0.2	150.9	0.0	528:
	12:08:50	6.0667	26752.9	0.0	150.9	0.0	532:
	12:12:50	6.1333	26753.1	0.1	150.9	0.0	536:
	12:16:50	6.2000	26753.2	0.1	150.9	0.0	540:
	12:20:50	6.2667	26753.3	0.1	150.9	0.0	544:
	12:24:50	6.3333	26753.5	0.2	150.9	0.0	548:
	12:28:50	6.4000	26753.5	0.0	150.9	0.0	552:
	12:32:50	6.4667	26753.5	0.0	150.9	0.0	556:
	12:36:50	6.5333	26753.7	0.1	150.9	0.0	560:
	12:40:50	6.6000	26753.7	0.0	150.9	0.0	564:
	12:44:50	6.6667	26753.7	0.0	150.9	0.0	568:
	12:48:50	6.7333	26753.7	0.0	150.8	-0.1	572:
	12:52:50	6.8000	26753.8	0.1	150.8	0.0	576:
	12:56:50	6.8667	26754.0	0.1	150.8	0.0	580:
	13:00:50	6.9333	26754.2	0.2	150.8	0.0	584:
	13:04:50	7.0000	26754.2	0.0	150.8	0.0	588:
	13:08:50	7.0667	26754.3	0.1	150.8	0.0	592:
	13:12:50	7.1333	26754.4	0.1	150.8	0.0	596:
	13:16:50	7.2000	26754.6	0.2	150.8	0.0	600:
	13:20:50	7.2667	26754.8	0.1	150.8	0.0	604:
	13:24:50	7.3333	26754.9	0.1	150.8	0.0	608:
	13:28:50	7.4000	26755.5	0.6	150.8	-0.1	612:
	13:32:50	7.4667	26756.0	0.5	150.8	0.0	616:
	13:36:50	7.5333	26756.8	0.8	150.8	0.0	620:
	13:40:50	7.6000	26759.5	2.7	150.8	0.1	624:
	13:44:50	7.6667	26755.9	-3.6	150.8	-0.1	628:
	13:48:50	7.7333	26761.3	5.4	150.3	-0.4	632:
	13:50:20	7.7583	26770.1	8.8	150.3	0.0	636:
	13:51:50	7.7833	26912.5	142.4	150.3	0.0	640:
	13:55:50	7.8500	26988.8	76.3	151.5	1.2	644:
	13:59:50	7.9167	26993.0	4.2	151.7	0.2	648:
	14:03:50	7.9833	26993.4	0.3	151.7	0.0	652:
	14:07:50	8.0500	27036.4	43.0	151.8	0.1	656:
	14:11:50	8.1167	27043.4	7.0	152.9	1.2	660:
	14:15:50	8.1833	27043.1	-0.3	153.1	0.1	664:
	14:19:50	8.2500	27044.4	1.4	153.1	0.0	668:
	14:23:50	8.3167	27072.6	28.2	153.1	0.0	672:
	14:27:50	8.3833	27102.5	29.9	153.4	0.4	676:
	14:31:50	8.4500	27133.0	30.5	153.6	0.2	680:
	14:35:50	8.5167	27176.2	43.2	153.8	0.2	684:
	14:39:50	8.5833	27166.5	-9.7	154.0	0.2	688:
	14:43:50	8.6500	27166.6	0.1	154.3	0.3	692:
	14:45:20	8.6750	27116.4	-50.3	154.3	0.0	696:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	14:46:50	8.7000	26721.4	-394.9	153.8	-0.5	700:
	14:50:50	8.7667	26715.3	-6.1	151.7	-2.1	704:
	14:54:50	8.8333	26521.3	-194.1	151.0	-0.7	708:
	14:58:50	8.9000	26338.9	-182.4	147.2	-3.8	712:
	15:02:50	8.9667	26110.2	-228.6	142.6	-4.6	716:
	15:06:50	9.0333	25887.9	-222.4	137.3	-5.3	720:
	15:10:50	9.1000	25651.2	-236.7	131.8	-5.4	724:
	15:11:30	9.1111	25596.8	-54.4	130.8	-1.0	728:
	15:12:10	9.1222	25538.5	-58.3	129.8	-1.1	732:
	15:12:50	9.1333	25482.0	-56.5	128.8	-0.9	736:
	15:13:30	9.1444	25425.0	-57.0	127.8	-1.0	740:
	15:14:10	9.1556	25367.1	-57.9	126.8	-1.1	744:
	15:14:50	9.1667	25314.5	-52.6	125.7	-1.1	748:
	15:15:30	9.1778	25248.5	-66.0	124.7	-1.0	752:
	15:16:10	9.1889	25186.3	-62.2	123.6	-1.1	756:
	15:16:50	9.2000	25129.4	-57.0	122.6	-1.1	760:
	15:17:30	9.2111	25061.6	-67.8	121.4	-1.2	764:
	15:18:10	9.2222	24984.4	-77.2	120.3	-1.1	768:
	15:18:50	9.2333	24891.8	-92.6	119.1	-1.2	772:
	15:19:30	9.2444	24787.0	-104.7	117.9	-1.2	776:
	15:20:10	9.2556	24680.8	-106.2	116.9	-1.0	780:
	15:20:50	9.2667	24566.5	-114.3	115.6	-1.3	784:
	15:21:30	9.2778	24454.4	-112.1	114.2	-1.4	788:
	15:22:10	9.2889	24341.3	-113.1	112.3	-1.8	792:
	15:22:50	9.3000	24228.5	-112.7	111.0	-1.3	796:
	15:23:30	9.3111	24109.2	-119.3	109.2	-1.8	800:
	15:24:10	9.3222	24001.5	-107.7	107.1	-2.2	804:
	15:24:50	9.3333	23887.5	-114.0	104.8	-2.3	808:
	15:25:30	9.3444	23776.5	-111.0	102.7	-2.1	812:
	15:26:10	9.3556	23661.6	-114.9	100.4	-2.2	816:
	15:26:50	9.3667	23542.1	-119.4	98.3	-2.2	820:
	15:27:30	9.3778	23409.1	-133.0	96.0	-2.3	824:
	15:28:10	9.3889	23273.8	-135.3	94.0	-2.0	828:
	15:28:50	9.4000	23128.6	-145.2	91.8	-2.2	832:
	15:29:30	9.4111	22973.6	-155.0	89.8	-2.1	836:
	15:30:10	9.4222	22821.1	-152.5	87.6	-2.2	840:
	15:30:50	9.4333	22659.0	-162.0	85.0	-2.6	844:
	15:31:30	9.4444	22502.8	-156.2	82.2	-2.8	848:
	15:32:10	9.4556	22353.4	-149.5	79.4	-2.8	852:
	15:32:50	9.4667	22212.1	-141.3	76.4	-2.9	856:
	15:33:30	9.4778	22064.1	-148.0	73.3	-3.2	860:
	15:34:10	9.4889	21956.3	-107.8	70.3	-2.9	864:
	15:34:50	9.5000	21854.0	-102.4	67.2	-3.1	868:
	15:35:30	9.5111	21783.8	-70.2	64.4	-2.8	872:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	15:38:50	9.5667	21703.2	-80.6	51.4	-12.9	876:
	15:42:50	9.6333	21693.6	-9.6	41.1	-10.3	880:
	15:46:50	9.7000	21675.7	-17.9	34.3	-6.8	884:
	15:50:50	9.7667	21673.2	-2.4	29.9	-4.4	888:
	15:54:50	9.8333	21668.8	-4.5	27.1	-2.8	892:
	15:59:00	9.9028	21355.1	-313.7	22.0	-5.1	896:
1998/03/02	15:59:40	9.9139	96.4	-21258.7	21.1	-0.9	899:
					End Data Acquisition:		

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

(403) 250-3800

GENCO Pressure Control Limited

SUBSURFACE PRESSURE MEASUREMENTS

CALGARY, AB.

Basic Data:

Company Ranger Oil Limited

Address 1600, 321 - 6 Avenue S.W.

Calgary, Alberta

Gentronics Electronic Gauge
c/w Memory Recorder

S/N: GSB-20880

Well Name Ranger Fort Liard	Field & Pool TIGHT HOLE
Well Identifier P-66-A	Type of Test Static Gradient
Status Gas	Date of Test Mar 02, 1998
DWG Tubing Pressure _____ kPa	DWG Casing Pressure _____ kPa
Tubing _____ mm @ _____ m KB	Casing _____ mm @ _____ m KB
Producing Interval _____	Producing Through _____
Elevation _____ m CF, _____ m KB	MPP Interval _____ m CF
Datum Depth of Well _____ m CF	Run Depth 3276.4 m CF
Temperature at Run Depth 150.9 °C	Pool Datum _____ m (subsea)
Pressure at Run Depth 26749.6 kPaG	Gradient at Run Depth 1.38 kPa/m
MPP Pressure _____ kPaG	Datum Depth Pressure _____ kPaG
Final Buildup Pressure _____ kPaG	Date on Bottom Mar 2, 1998 @ 09:58
Date off Bottom Mar 2, 1998 @ 14:45	Shut in Date _____

Summary:

Gentronic Strain Recorder. Recorder Ran Within Specification.

*Note: Tight Hole.

Preparation Data:

Tested By GENCO Computed By L. Champagne Report Date Mar 05, 1998

BOTTOM GAUGE

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 — Calgary, AB.

OPERATIONS SUMMARY

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/03/02	06:04:50	0.0000	7.5	9.9	1	Begin Data Acquisition
	06:13:50	0.1500	21729.6	12.9	14	@ surface
	06:42:50	0.6333	22749.3	47.5	71	@ 500.0 mCF
	07:01:50	0.9500	23693.7	74.3	135	@ 1000.0 mCF
	07:19:50	1.2500	24592.4	98.3	188	@ 1500.0 mCF
	07:36:50	1.5333	25257.1	115.2	235	@ 2000.0 mCF
	07:51:50	1.7833	25483.1	120.4	255	@ 2200.0 mCF
	08:05:50	2.0167	25713.5	125.7	274	@ 2400.0 mCF
	08:18:50	2.2333	25944.2	130.7	292	@ 2600.0 mCF
	08:31:50	2.4500	26177.3	135.6	305	@ 2800.0 mCF
	08:43:50	2.6500	26411.1	140.4	327	@ 3000.0 mCF
	08:50:50	2.7667	26486.2	142.0	334	@ 3050.0 mCF
	09:04:50	3.0000	26545.8	144.8	348	@ 3100.0 mCF
	09:20:50	3.2667	26602.6	148.3	364	@ 3150.0 mCF
	09:31:50	3.4500	26659.5	149.4	375	@ 3200.0 mCF
	09:38:50	3.5667	26713.2	150.3	382	@ 3250.0 mCF
	09:58:50	3.9000	26746.2	150.9	402	Recorder On Bottom
	10:53:50	4.8167	26749.6	150.9	457	@ 3276.4 mCF
						Gradient Pressure
	14:45:00	8.6694	27193.1	154.3	694	Recorder Off Bottom
	15:59:40	9.9139	96.4	21.1	899	End Data Acquisition

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

STATIC GRADIENT SURVEY

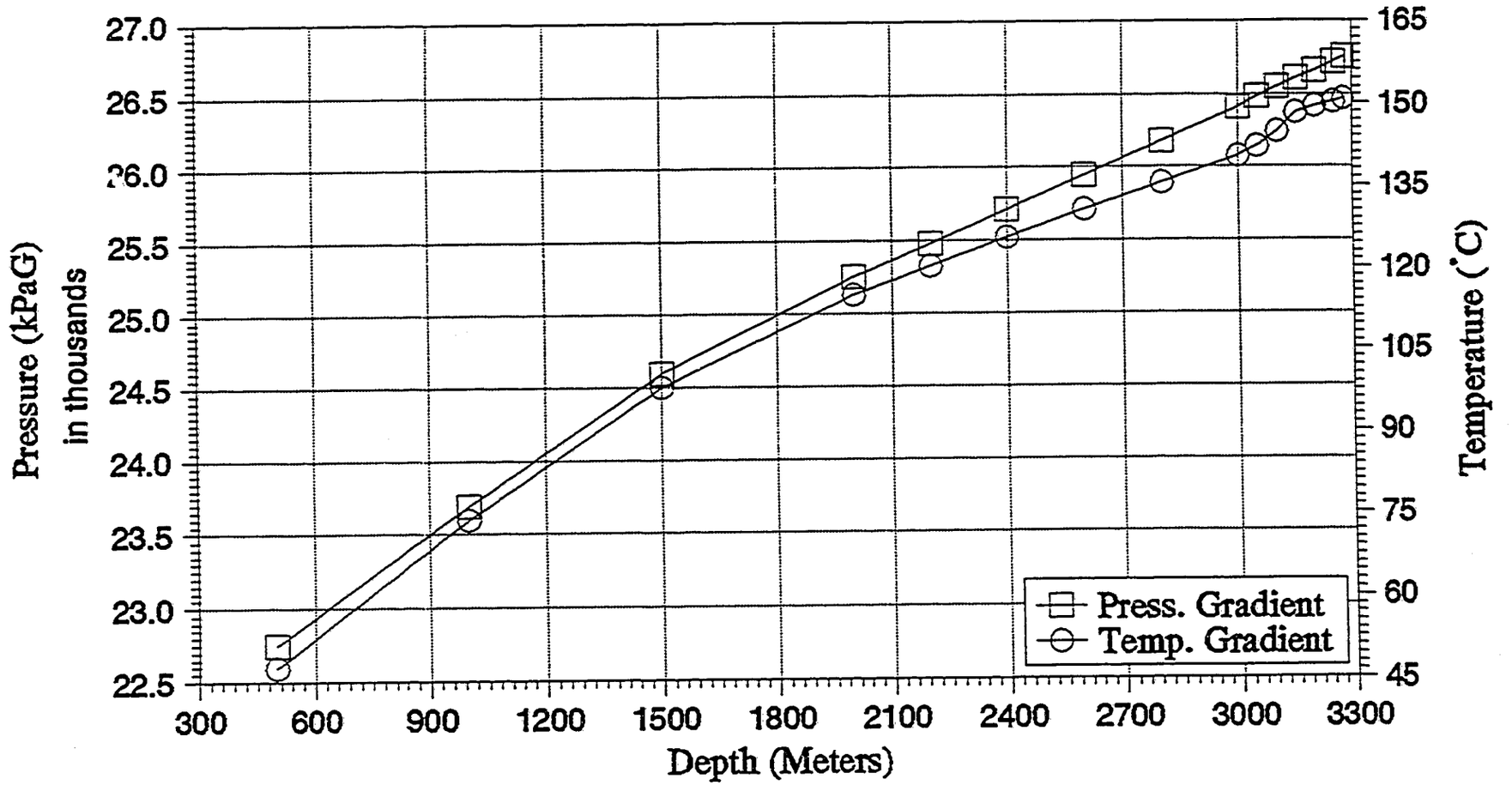
Company: Ranger Oil Limited LSD: P-65-A
Ranger Fort Liard

Bottom Gauge

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Gradient (°C/m)
At Surface: 1998/03/02 06:13:50 (Running In)				
000	21730	-----	12.9	-----
500	22749	2.04	47.5	0.069
1000	23694	1.89	74.3	0.054
1500	24592	1.80	98.3	0.048
2000	25257	1.33	115.2	0.034
2200	25483	1.13	120.4	0.026
2400	25714	1.15	125.7	0.027
2600	25944	1.15	130.7	0.025
2800	26177	1.17	135.6	0.025
3000	26411	1.17	140.4	0.024
3050	26486	1.50	142.0	0.032
3100	26546	1.19	144.8	0.056
3150	26603	1.14	148.3	0.070
3200	26660	1.14	149.4	0.022
3250	26713	1.07	150.3	0.018
3276	26750	1.38	150.9	0.023

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

Ranger Oil Limited
P-66-A
Gentronics ES Static Gradient Survey



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/03/02 06:04:50
End Aquisition: 1998/03/02 15:59:40

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 — Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
				Begin Data Acquisition:			
1998/03/02	06:04:50	0.0000	7.5	7.5	9.9	9.9	0:
	06:05:20	0.0083	6341.8	6334.3	9.8	-0.1	4:
	06:07:50	0.0500	21727.6	15385.8	11.0	1.1	8:
	06:11:50	0.1167	21729.7	2.1	12.6	1.6	12:
	06:15:50	0.1833	21731.3	1.6	13.3	0.8	16:
	06:19:50	0.2500	21724.7	-6.6	13.7	0.3	20:
	06:23:50	0.3167	21714.1	-10.6	15.1	1.4	24:
	06:27:10	0.3722	21872.4	158.2	18.5	3.4	28:
	06:27:50	0.3833	21945.0	72.7	19.8	1.3	32:
	06:28:30	0.3944	22033.6	88.6	20.9	1.1	36:
	06:29:10	0.4056	22144.4	110.8	22.3	1.4	40:
	06:29:50	0.4167	22243.3	98.9	24.1	1.8	44:
	06:30:30	0.4278	22350.8	107.5	25.6	1.5	48:
	06:31:10	0.4389	22450.8	100.0	27.1	1.5	52:
	06:31:50	0.4500	22547.3	96.5	28.9	1.8	56:
	06:32:30	0.4611	22646.3	99.1	30.4	1.5	60:
	06:35:50	0.5167	22750.4	104.1	38.5	8.1	64:
	06:39:50	0.5833	22751.8	1.3	44.6	6.1	68:
	06:43:50	0.6500	22751.6	-0.1	48.3	3.8	72:
	06:44:30	0.6611	22812.2	60.5	48.7	0.4	76:
	06:45:10	0.6722	22887.2	75.1	49.3	0.6	80:
	06:45:50	0.6833	22959.4	72.2	49.8	0.5	84:
	06:46:30	0.6944	23029.6	70.1	50.6	0.7	88:
	06:47:10	0.7056	23099.8	70.3	51.3	0.7	92:
	06:47:50	0.7167	23170.1	70.3	52.2	0.9	96:
	06:48:30	0.7278	23240.5	70.3	53.5	1.3	100:
	06:49:10	0.7389	23309.1	68.6	54.6	1.1	104:
	06:49:50	0.7500	23376.9	67.8	55.6	1.0	108:
	06:50:30	0.7611	23445.0	68.1	56.8	1.2	112:
	06:51:10	0.7722	23507.6	62.6	58.1	1.3	116:
	06:51:50	0.7833	23579.7	72.1	59.4	1.3	120:
	06:52:30	0.7944	23650.9	71.2	60.9	1.4	124:
	06:54:50	0.8333	23669.4	18.5	65.8	4.9	128:
	06:58:50	0.9000	23686.5	17.1	71.6	5.8	132:
	07:02:50	0.9667	23703.8	17.3	75.1	3.5	136:
	07:03:30	0.9778	23793.2	89.4	75.4	0.3	140:
	07:04:10	0.9889	23873.5	80.3	75.8	0.3	144:
	07:04:50	1.0000	23956.4	82.9	76.7	0.9	148:
	07:05:30	1.0111	24037.7	81.4	77.2	0.5	152:
	07:06:10	1.0222	24120.3	82.5	78.0	0.8	156:
	07:06:50	1.0333	24200.6	80.3	78.8	0.8	160:
	07:07:30	1.0444	24282.3	81.7	79.9	1.2	164:
	07:08:10	1.0556	24362.9	80.6	81.3	1.3	168:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	07:08:50	1.0667	24449.8	86.9	82.7	1.4	172:
	07:09:30	1.0778	24524.0	74.3	84.3	1.6	176:
	07:11:50	1.1167	24591.3	67.3	89.5	5.2	180:
	07:15:50	1.1833	24599.6	8.3	95.0	5.5	184:
	07:19:50	1.2500	24592.4	-7.2	98.3	3.3	188:
	07:21:20	1.2750	24652.8	60.3	99.1	0.8	192:
	07:22:00	1.2861	24722.3	69.6	99.5	0.4	196:
	07:22:40	1.2972	24797.7	75.4	100.3	0.8	200:
	07:23:20	1.3083	24873.5	75.8	100.9	0.6	204:
	07:24:50	1.3333	24983.7	110.3	103.1	2.2	208:
	07:25:30	1.3444	25050.1	66.3	104.0	0.9	212:
	07:26:10	1.3556	25100.3	50.2	104.8	0.8	216:
	07:26:50	1.3667	25154.8	54.5	105.8	0.9	220:
	07:27:30	1.3778	25202.0	47.2	106.8	1.0	224:
	07:29:50	1.4167	25252.3	50.3	110.1	3.3	228:
	07:33:50	1.4833	25255.7	3.4	113.7	3.6	232:
	07:37:50	1.5500	25257.8	2.1	115.6	1.9	236:
	07:39:20	1.5750	25292.3	34.5	116.3	0.7	240:
	07:40:50	1.6000	25417.6	125.4	116.9	0.7	244:
	07:44:50	1.6667	25480.0	62.3	118.8	1.9	248:
	07:48:50	1.7333	25483.6	3.6	119.7	0.9	252:
	07:52:50	1.8000	25556.8	73.2	120.4	0.7	256:
	07:53:30	1.8111	25611.5	54.7	120.6	0.2	260:
	07:55:50	1.8500	25703.2	91.7	122.2	1.6	264:
	07:59:50	1.9167	25709.6	6.3	124.2	2.0	268:
	08:03:50	1.9833	25712.0	2.4	125.2	1.1	272:
	08:07:00	2.0361	25781.7	69.7	125.9	0.7	276:
	08:07:40	2.0472	25837.5	55.8	126.1	0.2	280:
	08:10:50	2.1000	25932.8	95.3	128.0	1.9	284:
	08:14:50	2.1667	25938.4	5.6	129.7	1.7	288:
	08:18:50	2.2333	25944.2	5.8	130.7	1.0	292:
	08:22:50	2.3000	26165.7	221.5	132.1	1.4	296:
	08:26:50	2.3667	26173.7	7.9	134.4	2.3	300:
	08:30:50	2.4333	26178.9	5.2	135.2	0.8	304:
	08:33:10	2.4722	26204.2	25.3	135.9	0.7	308:
	08:33:50	2.4833	26260.8	56.5	136.2	0.2	312:
	08:34:30	2.4944	26320.4	59.6	136.3	0.1	316:
	08:36:50	2.5333	26401.6	81.2	137.8	1.5	320:
	08:40:50	2.6000	26408.4	6.8	139.5	1.7	324:
	08:44:50	2.6667	26410.8	2.4	140.6	1.1	328:
	08:48:50	2.7333	26483.5	72.7	141.7	1.1	332:
	08:52:50	2.8000	26486.4	2.8	142.4	0.7	336:
	08:56:50	2.8667	26480.1	-6.3	142.8	0.4	340:
	09:00:50	2.9333	26542.7	62.6	144.1	1.3	344:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	09:04:50	3.0000	26545.8	3.1	144.8	0.7	348:
	09:08:50	3.0667	26545.6	-0.2	145.6	0.8	352:
	09:12:50	3.1333	26598.6	53.0	146.2	0.7	356:
	09:16:50	3.2000	26602.2	3.6	147.6	1.4	360:
	09:20:50	3.2667	26602.6	0.4	148.3	0.7	364:
	09:24:50	3.3333	26659.9	57.3	148.8	0.6	368:
	09:28:50	3.4000	26662.9	3.0	149.2	0.3	372:
	09:32:50	3.4667	26658.9	-4.1	149.6	0.4	376:
	09:36:50	3.5333	26712.9	54.0	150.3	0.7	380:
	09:40:50	3.6000	26713.2	0.3	150.3	0.1	384:
	09:44:50	3.6667	26721.2	8.0	150.9	0.6	388:
	09:48:50	3.7333	26747.8	26.5	151.0	0.1	392:
	09:52:50	3.8000	26747.3	-0.5	150.9	-0.1	396:
	09:56:50	3.8667	26745.1	-2.2	150.9	0.1	400:
	10:00:50	3.9333	26746.2	1.1	150.9	0.0	404:
	10:04:50	4.0000	26746.3	0.1	150.9	0.0	408:
	10:08:50	4.0667	26746.8	0.5	150.9	0.0	412:
	10:12:50	4.1333	26747.1	0.3	150.9	0.0	416:
	10:16:50	4.2000	26747.4	0.3	150.9	0.0	420:
	10:20:50	4.2667	26747.8	0.3	150.9	0.0	424:
	10:24:50	4.3333	26747.9	0.1	150.9	0.0	428:
	10:28:50	4.4000	26748.2	0.3	150.9	0.0	432:
	10:32:50	4.4667	26748.4	0.2	150.9	0.0	436:
	10:36:50	4.5333	26748.6	0.3	150.9	0.0	440:
	10:40:50	4.6000	26748.8	0.1	150.9	0.0	444:
	10:44:50	4.6667	26749.0	0.2	150.9	0.0	448:
	10:48:50	4.7333	26749.3	0.3	150.9	0.0	452:
	10:52:50	4.8000	26749.6	0.3	150.9	0.0	456:
	10:56:50	4.8667	26749.8	0.1	150.9	0.0	460:
	11:00:50	4.9333	26750.1	0.3	150.9	0.0	464:
	11:04:50	5.0000	26750.2	0.1	150.9	0.0	468:
	11:08:50	5.0667	26750.6	0.3	150.9	0.0	472:
	11:12:50	5.1333	26750.7	0.1	150.9	0.0	476:
	11:16:50	5.2000	26750.9	0.1	150.9	0.0	480:
	11:20:50	5.2667	26751.2	0.3	150.9	0.0	484:
	11:24:50	5.3333	26751.3	0.1	150.9	0.0	488:
	11:28:50	5.4000	26751.5	0.1	150.9	0.0	492:
	11:32:50	5.4667	26751.8	0.3	150.9	0.0	496:
	11:36:50	5.5333	26752.0	0.1	150.9	0.0	500:
	11:40:50	5.6000	26752.1	0.1	150.9	0.0	504:
	11:44:50	5.6667	26752.3	0.2	150.9	0.0	508:
	11:48:50	5.7333	26752.4	0.1	150.9	-0.1	512:
	11:52:50	5.8000	26752.6	0.1	150.9	0.0	516:
	11:56:50	5.8667	26752.6	0.0	150.9	0.0	520:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	12:00:50	5.9333	26752.7	0.1	150.9	0.0	524:
	12:04:50	6.0000	26752.9	0.2	150.9	0.0	528:
	12:08:50	6.0667	26752.9	0.0	150.9	0.0	532:
	12:12:50	6.1333	26753.1	0.1	150.9	0.0	536:
	12:16:50	6.2000	26753.2	0.1	150.9	0.0	540:
	12:20:50	6.2667	26753.3	0.1	150.9	0.0	544:
	12:24:50	6.3333	26753.5	0.2	150.9	0.0	548:
	12:28:50	6.4000	26753.5	0.0	150.9	0.0	552:
	12:32:50	6.4667	26753.5	0.0	150.9	0.0	556:
	12:36:50	6.5333	26753.7	0.1	150.9	0.0	560:
	12:40:50	6.6000	26753.7	0.0	150.9	0.0	564:
	12:44:50	6.6667	26753.7	0.0	150.9	0.0	568:
	12:48:50	6.7333	26753.7	0.0	150.8	-0.1	572:
	12:52:50	6.8000	26753.8	0.1	150.8	0.0	576:
	12:56:50	6.8667	26754.0	0.1	150.8	0.0	580:
	13:00:50	6.9333	26754.2	0.2	150.8	0.0	584:
	13:04:50	7.0000	26754.2	0.0	150.8	0.0	588:
	13:08:50	7.0667	26754.3	0.1	150.8	0.0	592:
	13:12:50	7.1333	26754.4	0.1	150.8	0.0	596:
	13:16:50	7.2000	26754.6	0.2	150.8	0.0	600:
	13:20:50	7.2667	26754.8	0.1	150.8	0.0	604:
	13:24:50	7.3333	26754.9	0.1	150.8	0.0	608:
	13:28:50	7.4000	26755.5	0.6	150.8	-0.1	612:
	13:32:50	7.4667	26756.0	0.5	150.8	0.0	616:
	13:36:50	7.5333	26756.8	0.8	150.8	0.0	620:
	13:40:50	7.6000	26759.5	2.7	150.8	0.1	624:
	13:44:50	7.6667	26755.9	-3.6	150.8	-0.1	628:
	13:48:50	7.7333	26761.3	5.4	150.3	-0.4	632:
	13:50:20	7.7583	26770.1	8.8	150.3	0.0	636:
	13:51:50	7.7833	26912.5	142.4	150.3	0.0	640:
	13:55:50	7.8500	26988.8	76.3	151.5	1.2	644:
	13:59:50	7.9167	26993.0	4.2	151.7	0.2	648:
	14:03:50	7.9833	26993.4	0.3	151.7	0.0	652:
	14:07:50	8.0500	27036.4	43.0	151.8	0.1	656:
	14:11:50	8.1167	27043.4	7.0	152.9	1.2	660:
	14:15:50	8.1833	27043.1	-0.3	153.1	0.1	664:
	14:19:50	8.2500	27044.4	1.4	153.1	0.0	668:
	14:23:50	8.3167	27072.6	28.2	153.1	0.0	672:
	14:27:50	8.3833	27102.5	29.9	153.4	0.4	676:
	14:31:50	8.4500	27133.0	30.5	153.6	0.2	680:
	14:35:50	8.5167	27176.2	43.2	153.8	0.2	684:
	14:39:50	8.5833	27166.5	-9.7	154.0	0.2	688:
	14:43:50	8.6500	27166.6	0.1	154.3	0.3	692:
	14:45:20	8.6750	27116.4	-50.3	154.3	0.0	696:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	14:46:50	8.7000	26721.4	-394.9	153.8	-0.5	700:
	14:50:50	8.7667	26715.3	-6.1	151.7	-2.1	704:
	14:54:50	8.8333	26521.3	-194.1	151.0	-0.7	708:
	14:58:50	8.9000	26338.9	-182.4	147.2	-3.8	712:
	15:02:50	8.9667	26110.2	-228.6	142.6	-4.6	716:
	15:06:50	9.0333	25887.9	-222.4	137.3	-5.3	720:
	15:10:50	9.1000	25651.2	-236.7	131.8	-5.4	724:
	15:11:30	9.1111	25596.8	-54.4	130.8	-1.0	728:
	15:12:10	9.1222	25538.5	-58.3	129.8	-1.1	732:
	15:12:50	9.1333	25482.0	-56.5	128.8	-0.9	736:
	15:13:30	9.1444	25425.0	-57.0	127.8	-1.0	740:
	15:14:10	9.1556	25367.1	-57.9	126.8	-1.1	744:
	15:14:50	9.1667	25314.5	-52.6	125.7	-1.1	748:
	15:15:30	9.1778	25248.5	-66.0	124.7	-1.0	752:
	15:16:10	9.1889	25186.3	-62.2	123.6	-1.1	756:
	15:16:50	9.2000	25129.4	-57.0	122.6	-1.1	760:
	15:17:30	9.2111	25061.6	-67.8	121.4	-1.2	764:
	15:18:10	9.2222	24984.4	-77.2	120.3	-1.1	768:
	15:18:50	9.2333	24891.8	-92.6	119.1	-1.2	772:
	15:19:30	9.2444	24787.0	-104.7	117.9	-1.2	776:
	15:20:10	9.2556	24680.8	-106.2	116.9	-1.0	780:
	15:20:50	9.2667	24566.5	-114.3	115.6	-1.3	784:
	15:21:30	9.2778	24454.4	-112.1	114.2	-1.4	788:
	15:22:10	9.2889	24341.3	-113.1	112.3	-1.8	792:
	15:22:50	9.3000	24228.5	-112.7	111.0	-1.3	796:
	15:23:30	9.3111	24109.2	-119.3	109.2	-1.8	800:
	15:24:10	9.3222	24001.5	-107.7	107.1	-2.2	804:
	15:24:50	9.3333	23887.5	-114.0	104.8	-2.3	808:
	15:25:30	9.3444	23776.5	-111.0	102.7	-2.1	812:
	15:26:10	9.3556	23661.6	-114.9	100.4	-2.2	816:
	15:26:50	9.3667	23542.1	-119.4	98.3	-2.2	820:
	15:27:30	9.3778	23409.1	-133.0	96.0	-2.3	824:
	15:28:10	9.3889	23273.8	-135.3	94.0	-2.0	828:
	15:28:50	9.4000	23128.6	-145.2	91.8	-2.2	832:
	15:29:30	9.4111	22973.6	-155.0	89.8	-2.1	836:
	15:30:10	9.4222	22821.1	-152.5	87.6	-2.2	840:
	15:30:50	9.4333	22659.0	-162.0	85.0	-2.6	844:
	15:31:30	9.4444	22502.8	-156.2	82.2	-2.8	848:
	15:32:10	9.4556	22353.4	-149.5	79.4	-2.8	852:
	15:32:50	9.4667	22212.1	-141.3	76.4	-2.9	856:
	15:33:30	9.4778	22064.1	-148.0	73.3	-3.2	860:
	15:34:10	9.4889	21956.3	-107.8	70.3	-2.9	864:
	15:34:50	9.5000	21854.0	-102.4	67.2	-3.1	868:
	15:35:30	9.5111	21783.8	-70.2	64.4	-2.8	872:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	15:38:50	9.5667	21703.2	-80.6	51.4	-12.9	876:
	15:42:50	9.6333	21693.6	-9.6	41.1	-10.3	880:
	15:46:50	9.7000	21675.7	-17.9	34.3	-6.8	884:
	15:50:50	9.7667	21673.2	-2.4	29.9	-4.4	888:
	15:54:50	9.8333	21668.8	-4.5	27.1	-2.8	892:
	15:59:00	9.9028	21355.1	-313.7	22.0	-5.1	896:
1998/03/02	15:59:40	9.9139	96.4	-21258.7	21.1	-0.9	899:
				End Data Acquisition:			

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

(403) 250-3800

GENCO Pressure Control Limited

SUBSURFACE PRESSURE MEASUREMENTS

CALGARY, AB.

Basic Data:

Company Ranger Oil Limited

Address 1600, 321 - 6 Avenue S.W.
Calgary, Alberta

Gentronics Electronic Gauge
c/w Memory Recorder

S/N: GSB-20880

Well Name Ranger Fort Liard	Field & Pool TIGHT HOLE
Well Identifier P-66-A	Type of Test Static Gradient
Status Gas	Date of Test Mar 02, 1998
DWG Tubing Pressure _____ kPa	DWG Casing Pressure _____ kPa
Tubing _____ mm @ _____ m KB	Casing _____ mm @ _____ m KB
Producing Interval _____	Producing Through _____
Elevation _____ m CF, _____ m KB	MPP Interval _____ m CF
Datum Depth of Well _____ m CF	Run Depth 3276.4 m CF
Temperature at Run Depth 150.9 °C	Pool Datum _____ m (subsea)
Pressure at Run Depth 26749.6 kPaG	Gradient at Run Depth 1.38 kPa/m
MPP Pressure _____ kPaG	Datum Depth Pressure _____ kPaG
Final Buildup Pressure _____ kPaG	Date on Bottom Mar 2, 1998 @ 09:58
Date off Bottom Mar 2, 1998 @ 14:45	Shut in Date _____

Summary:

Gentronic Strain Recorder. Recorder Ran Within Specification.

*Note: Tight Hole.

Preparation Data:

Tested By GENCO Computed By L. Champagne Report Date Mar 05, 1998

BOTTOM GAUGE

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 — Calgary, AB.

OPERATIONS SUMMARY

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/03/02	06:04:50	0.0000	7.5	9.9	1	Begin Data Acquisition
	06:13:50	0.1500	21729.6	12.9	14	@ surface
	06:42:50	0.6333	22749.3	47.5	71	@ 500.0 mCF
	07:01:50	0.9500	23693.7	74.3	135	@ 1000.0 mCF
	07:19:50	1.2500	24592.4	98.3	188	@ 1500.0 mCF
	07:36:50	1.5333	25257.1	115.2	235	@ 2000.0 mCF
	07:51:50	1.7833	25483.1	120.4	255	@ 2200.0 mCF
	08:05:50	2.0167	25713.5	125.7	274	@ 2400.0 mCF
	08:18:50	2.2333	25944.2	130.7	292	@ 2600.0 mCF
	08:31:50	2.4500	26177.3	135.6	305	@ 2800.0 mCF
	08:43:50	2.6500	26411.1	140.4	327	@ 3000.0 mCF
	08:50:50	2.7667	26486.2	142.0	334	@ 3050.0 mCF
	09:04:50	3.0000	26545.8	144.8	348	@ 3100.0 mCF
	09:20:50	3.2667	26602.6	148.3	364	@ 3150.0 mCF
	09:31:50	3.4500	26659.5	149.4	375	@ 3200.0 mCF
	09:38:50	3.5667	26713.2	150.3	382	@ 3250.0 mCF
	09:58:50	3.9000	26746.2	150.9	402	Recorder On Bottom
	10:53:50	4.8167	26749.6	150.9	457	@ 3276.4 mCF
						Gradient Pressure
	14:45:00	8.6694	27193.1	154.3	694	Recorder Off Bottom
	15:59:40	9.9139	96.4	21.1	899	End Data Acquisition

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 — Calgary, AB.

STATIC GRADIENT SURVEY

Company: Ranger Oil Limited
Ranger Fort Liard

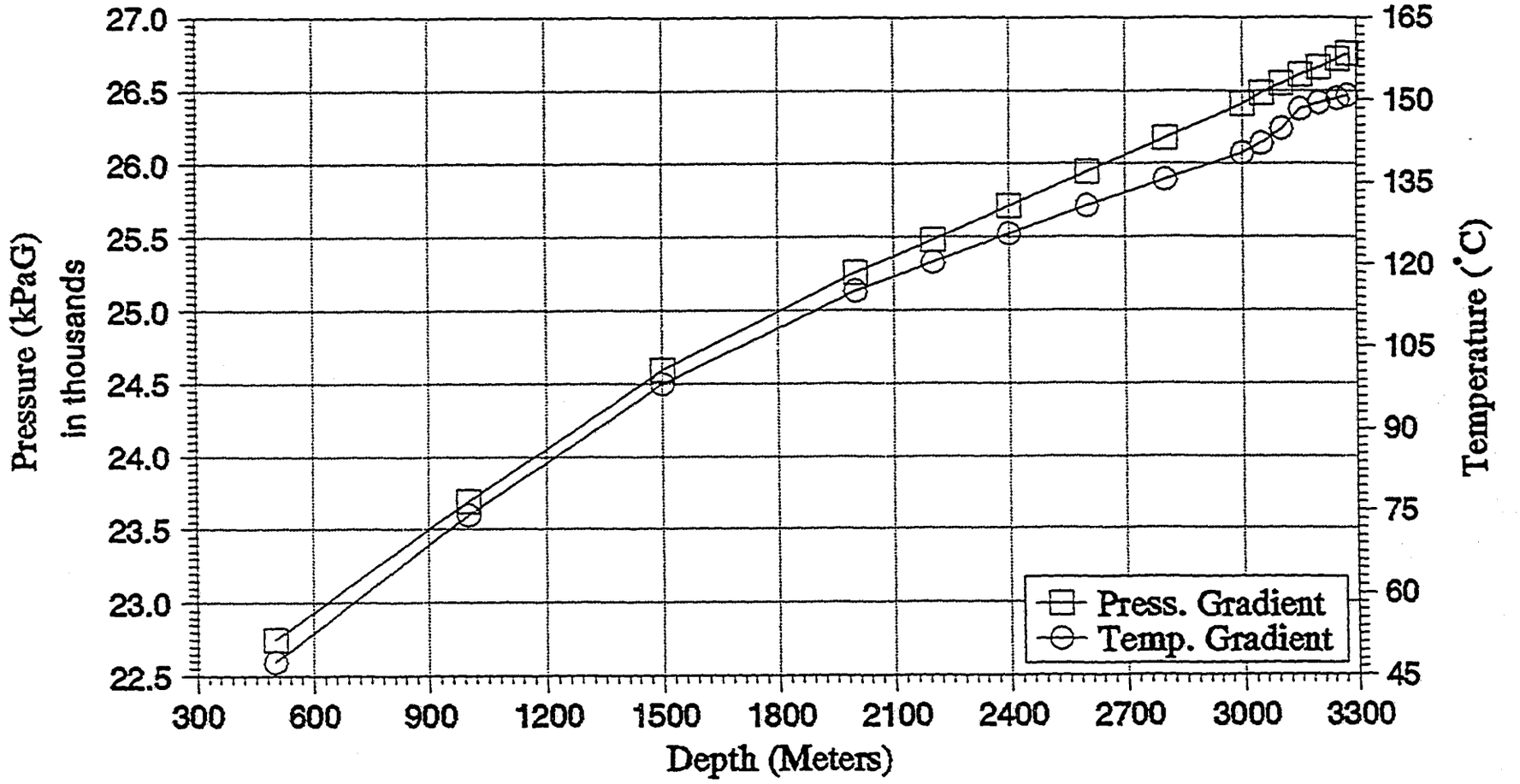
LSD: P-66-A

Bottom Gauge

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Gradient (°C/m)
At Surface: 1998/03/02 06:13:50 (Running In)				
000	21730	-----	12.9	-----
500	22749	2.04	47.5	0.069
1000	23694	1.89	74.3	0.054
1500	24592	1.80	98.3	0.048
2000	25257	1.33	115.2	0.034
2200	25483	1.13	120.4	0.026
2400	25714	1.15	125.7	0.027
2600	25944	1.15	130.7	0.025
2800	26177	1.17	135.6	0.025
3000	26411	1.17	140.4	0.024
3050	26486	1.50	142.0	0.032
3100	26546	1.19	144.8	0.056
3150	26603	1.14	148.3	0.070
3200	26660	1.14	149.4	0.022
3250	26713	1.07	150.3	0.018
3276	26750	1.38	150.9	0.023

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

Ranger Oil Limited
P-66-A
Gentronics ES Static Gradient Survey



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/03/02 06:04:50
End Aquisition: 1998/03/02 15:59:40

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 — Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
				Begin Data Acquisition:			
1998/03/02	06:04:50	0.0000	7.5	7.5	9.9	9.9	0:
	06:05:20	0.0083	6341.8	6334.3	9.8	-0.1	4:
	06:07:50	0.0500	21727.6	15385.8	11.0	1.1	8:
	06:11:50	0.1167	21729.7	2.1	12.6	1.6	12:
	06:15:50	0.1833	21731.3	1.6	13.3	0.8	16:
	06:19:50	0.2500	21724.7	-6.6	13.7	0.3	20:
	06:23:50	0.3167	21714.1	-10.6	15.1	1.4	24:
	06:27:10	0.3722	21872.4	158.2	18.5	3.4	28:
	06:27:50	0.3833	21945.0	72.7	19.8	1.3	32:
	06:28:30	0.3944	22033.6	88.6	20.9	1.1	36:
	06:29:10	0.4056	22144.4	110.8	22.3	1.4	40:
	06:29:50	0.4167	22243.3	98.9	24.1	1.8	44:
	06:30:30	0.4278	22350.8	107.5	25.6	1.5	48:
	06:31:10	0.4389	22450.8	100.0	27.1	1.5	52:
	06:31:50	0.4500	22547.3	96.5	28.9	1.8	56:
	06:32:30	0.4611	22646.3	99.1	30.4	1.5	60:
	06:35:50	0.5167	22750.4	104.1	38.5	8.1	64:
	06:39:50	0.5833	22751.8	1.3	44.6	6.1	68:
	06:43:50	0.6500	22751.6	-0.1	48.3	3.8	72:
	06:44:30	0.6611	22812.2	60.5	48.7	0.4	76:
	06:45:10	0.6722	22887.2	75.1	49.3	0.6	80:
	06:45:50	0.6833	22959.4	72.2	49.8	0.5	84:
	06:46:30	0.6944	23029.6	70.1	50.6	0.7	88:
	06:47:10	0.7056	23099.8	70.3	51.3	0.7	92:
	06:47:50	0.7167	23170.1	70.3	52.2	0.9	96:
	06:48:30	0.7278	23240.5	70.3	53.5	1.3	100:
	06:49:10	0.7389	23309.1	68.6	54.6	1.1	104:
	06:49:50	0.7500	23376.9	67.8	55.6	1.0	108:
	06:50:30	0.7611	23445.0	68.1	56.8	1.2	112:
	06:51:10	0.7722	23507.6	62.6	58.1	1.3	116:
	06:51:50	0.7833	23579.7	72.1	59.4	1.3	120:
	06:52:30	0.7944	23650.9	71.2	60.9	1.4	124:
	06:54:50	0.8333	23669.4	18.5	65.8	4.9	128:
	06:58:50	0.9000	23686.5	17.1	71.6	5.8	132:
	07:02:50	0.9667	23703.8	17.3	75.1	3.5	136:
	07:03:30	0.9778	23793.2	89.4	75.4	0.3	140:
	07:04:10	0.9889	23873.5	80.3	75.8	0.3	144:
	07:04:50	1.0000	23956.4	82.9	76.7	0.9	148:
	07:05:30	1.0111	24037.7	81.4	77.2	0.5	152:
	07:06:10	1.0222	24120.3	82.5	78.0	0.8	156:
	07:06:50	1.0333	24200.6	80.3	78.8	0.8	160:
	07:07:30	1.0444	24282.3	81.7	79.9	1.2	164:
	07:08:10	1.0556	24362.9	80.6	81.3	1.3	168:

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	07:08:50	1.0667	24449.8	86.9	82.7	1.4	172:
	07:09:30	1.0778	24524.0	74.3	84.3	1.6	176:
	07:11:50	1.1167	24591.3	67.3	89.5	5.2	180:
	07:15:50	1.1833	24599.6	8.3	95.0	5.5	184:
	07:19:50	1.2500	24592.4	-7.2	98.3	3.3	188:
	07:21:20	1.2750	24652.8	60.3	99.1	0.8	192:
	07:22:00	1.2861	24722.3	69.6	99.5	0.4	196:
	07:22:40	1.2972	24797.7	75.4	100.3	0.8	200:
	07:23:20	1.3083	24873.5	75.8	100.9	0.6	204:
	07:24:50	1.3333	24983.7	110.3	103.1	2.2	208:
	07:25:30	1.3444	25050.1	66.3	104.0	0.9	212:
	07:26:10	1.3556	25100.3	50.2	104.8	0.8	216:
	07:26:50	1.3667	25154.8	54.5	105.8	0.9	220:
	07:27:30	1.3778	25202.0	47.2	106.8	1.0	224:
	07:29:50	1.4167	25252.3	50.3	110.1	3.3	228:
	07:33:50	1.4833	25255.7	3.4	113.7	3.6	232:
	07:37:50	1.5500	25257.8	2.1	115.6	1.9	236:
	07:39:20	1.5750	25292.3	34.5	116.3	0.7	240:
	07:40:50	1.6000	25417.6	125.4	116.9	0.7	244:
	07:44:50	1.6667	25480.0	62.3	118.8	1.9	248:
	07:48:50	1.7333	25483.6	3.6	119.7	0.9	252:
	07:52:50	1.8000	25556.8	73.2	120.4	0.7	256:
	07:53:30	1.8111	25611.5	54.7	120.6	0.2	260:
	07:55:50	1.8500	25703.2	91.7	122.2	1.6	264:
	07:59:50	1.9167	25709.6	6.3	124.2	2.0	268:
	08:03:50	1.9833	25712.0	2.4	125.2	1.1	272:
	08:07:00	2.0361	25781.7	69.7	125.9	0.7	276:
	08:07:40	2.0472	25837.5	55.8	126.1	0.2	280:
	08:10:50	2.1000	25932.8	95.3	128.0	1.9	284:
	08:14:50	2.1667	25938.4	5.6	129.7	1.7	288:
	08:18:50	2.2333	25944.2	5.8	130.7	1.0	292:
	08:22:50	2.3000	26165.7	221.5	132.1	1.4	296:
	08:26:50	2.3667	26173.7	7.9	134.4	2.3	300:
	08:30:50	2.4333	26178.9	5.2	135.2	0.8	304:
	08:33:10	2.4722	26204.2	25.3	135.9	0.7	308:
	08:33:50	2.4833	26260.8	56.5	136.2	0.2	312:
	08:34:30	2.4944	26320.4	59.6	136.3	0.1	316:
	08:36:50	2.5333	26401.6	81.2	137.8	1.5	320:
	08:40:50	2.6000	26408.4	6.8	139.5	1.7	324:
	08:44:50	2.6667	26410.8	2.4	140.6	1.1	328:
	08:48:50	2.7333	26483.5	72.7	141.7	1.1	332:
	08:52:50	2.8000	26486.4	2.8	142.4	0.7	336:
	08:56:50	2.8667	26480.1	-6.3	142.8	0.4	340:
	09:00:50	2.9333	26542.7	62.6	144.1	1.3	344:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	09:04:50	3.0000	26545.8	3.1	144.8	0.7	348:
	09:08:50	3.0667	26545.6	-0.2	145.6	0.8	352:
	09:12:50	3.1333	26598.6	53.0	146.2	0.7	356:
	09:16:50	3.2000	26602.2	3.6	147.6	1.4	360:
	09:20:50	3.2667	26602.6	0.4	148.3	0.7	364:
	09:24:50	3.3333	26659.9	57.3	148.8	0.6	368:
	09:28:50	3.4000	26662.9	3.0	149.2	0.3	372:
	09:32:50	3.4667	26658.9	-4.1	149.6	0.4	376:
	09:36:50	3.5333	26712.9	54.0	150.3	0.7	380:
	09:40:50	3.6000	26713.2	0.3	150.3	0.1	384:
	09:44:50	3.6667	26721.2	8.0	150.9	0.6	388:
	09:48:50	3.7333	26747.8	26.5	151.0	0.1	392:
	09:52:50	3.8000	26747.3	-0.5	150.9	-0.1	396:
	09:56:50	3.8667	26745.1	-2.2	150.9	0.1	400:
	10:00:50	3.9333	26746.2	1.1	150.9	0.0	404:
	10:04:50	4.0000	26746.3	0.1	150.9	0.0	408:
	10:08:50	4.0667	26746.8	0.5	150.9	0.0	412:
	10:12:50	4.1333	26747.1	0.3	150.9	0.0	416:
	10:16:50	4.2000	26747.4	0.3	150.9	0.0	420:
	10:20:50	4.2667	26747.8	0.3	150.9	0.0	424:
	10:24:50	4.3333	26747.9	0.1	150.9	0.0	428:
	10:28:50	4.4000	26748.2	0.3	150.9	0.0	432:
	10:32:50	4.4667	26748.4	0.2	150.9	0.0	436:
	10:36:50	4.5333	26748.6	0.3	150.9	0.0	440:
	10:40:50	4.6000	26748.8	0.1	150.9	0.0	444:
	10:44:50	4.6667	26749.0	0.2	150.9	0.0	448:
	10:48:50	4.7333	26749.3	0.3	150.9	0.0	452:
	10:52:50	4.8000	26749.6	0.3	150.9	0.0	456:
	10:56:50	4.8667	26749.8	0.1	150.9	0.0	460:
	11:00:50	4.9333	26750.1	0.3	150.9	0.0	464:
	11:04:50	5.0000	26750.2	0.1	150.9	0.0	468:
	11:08:50	5.0667	26750.6	0.3	150.9	0.0	472:
	11:12:50	5.1333	26750.7	0.1	150.9	0.0	476:
	11:16:50	5.2000	26750.9	0.1	150.9	0.0	480:
	11:20:50	5.2667	26751.2	0.3	150.9	0.0	484:
	11:24:50	5.3333	26751.3	0.1	150.9	0.0	488:
	11:28:50	5.4000	26751.5	0.1	150.9	0.0	492:
	11:32:50	5.4667	26751.8	0.3	150.9	0.0	496:
	11:36:50	5.5333	26752.0	0.1	150.9	0.0	500:
	11:40:50	5.6000	26752.1	0.1	150.9	0.0	504:
	11:44:50	5.6667	26752.3	0.2	150.9	0.0	508:
	11:48:50	5.7333	26752.4	0.1	150.9	-0.1	512:
	11:52:50	5.8000	26752.6	0.1	150.9	0.0	516:
	11:56:50	5.8667	26752.6	0.0	150.9	0.0	520:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	12:00:50	5.9333	26752.7	0.1	150.9	0.0	524:
	12:04:50	6.0000	26752.9	0.2	150.9	0.0	528:
	12:08:50	6.0667	26752.9	0.0	150.9	0.0	532:
	12:12:50	6.1333	26753.1	0.1	150.9	0.0	536:
	12:16:50	6.2000	26753.2	0.1	150.9	0.0	540:
	12:20:50	6.2667	26753.3	0.1	150.9	0.0	544:
	12:24:50	6.3333	26753.5	0.2	150.9	0.0	548:
	12:28:50	6.4000	26753.5	0.0	150.9	0.0	552:
	12:32:50	6.4667	26753.5	0.0	150.9	0.0	556:
	12:36:50	6.5333	26753.7	0.1	150.9	0.0	560:
	12:40:50	6.6000	26753.7	0.0	150.9	0.0	564:
	12:44:50	6.6667	26753.7	0.0	150.9	0.0	568:
	12:48:50	6.7333	26753.7	0.0	150.8	-0.1	572:
	12:52:50	6.8000	26753.8	0.1	150.8	0.0	576:
	12:56:50	6.8667	26754.0	0.1	150.8	0.0	580:
	13:00:50	6.9333	26754.2	0.2	150.8	0.0	584:
	13:04:50	7.0000	26754.2	0.0	150.8	0.0	588:
	13:08:50	7.0667	26754.3	0.1	150.8	0.0	592:
	13:12:50	7.1333	26754.4	0.1	150.8	0.0	596:
	13:16:50	7.2000	26754.6	0.2	150.8	0.0	600:
	13:20:50	7.2667	26754.8	0.1	150.8	0.0	604:
	13:24:50	7.3333	26754.9	0.1	150.8	0.0	608:
	13:28:50	7.4000	26755.5	0.6	150.8	-0.1	612:
	13:32:50	7.4667	26756.0	0.5	150.8	0.0	616:
	13:36:50	7.5333	26756.8	0.8	150.8	0.0	620:
	13:40:50	7.6000	26759.5	2.7	150.8	0.1	624:
	13:44:50	7.6667	26755.9	-3.6	150.8	-0.1	628:
	13:48:50	7.7333	26761.3	5.4	150.3	-0.4	632:
	13:50:20	7.7583	26770.1	8.8	150.3	0.0	636:
	13:51:50	7.7833	26912.5	142.4	150.3	0.0	640:
	13:55:50	7.8500	26988.8	76.3	151.5	1.2	644:
	13:59:50	7.9167	26993.0	4.2	151.7	0.2	648:
	14:03:50	7.9833	26993.4	0.3	151.7	0.0	652:
	14:07:50	8.0500	27036.4	43.0	151.8	0.1	656:
	14:11:50	8.1167	27043.4	7.0	152.9	1.2	660:
	14:15:50	8.1833	27043.1	-0.3	153.1	0.1	664:
	14:19:50	8.2500	27044.4	1.4	153.1	0.0	668:
	14:23:50	8.3167	27072.6	28.2	153.1	0.0	672:
	14:27:50	8.3833	27102.5	29.9	153.4	0.4	676:
	14:31:50	8.4500	27133.0	30.5	153.6	0.2	680:
	14:35:50	8.5167	27176.2	43.2	153.8	0.2	684:
	14:39:50	8.5833	27166.5	-9.7	154.0	0.2	688:
	14:43:50	8.6500	27166.6	0.1	154.3	0.3	692:
	14:45:20	8.6750	27116.4	-50.3	154.3	0.0	696:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	14:46:50	8.7000	26721.4	-394.9	153.8	-0.5	700:
	14:50:50	8.7667	26715.3	-6.1	151.7	-2.1	704:
	14:54:50	8.8333	26521.3	-194.1	151.0	-0.7	708:
	14:58:50	8.9000	26338.9	-182.4	147.2	-3.8	712:
	15:02:50	8.9667	26110.2	-228.6	142.6	-4.6	716:
	15:06:50	9.0333	25887.9	-222.4	137.3	-5.3	720:
	15:10:50	9.1000	25651.2	-236.7	131.8	-5.4	724:
	15:11:30	9.1111	25596.8	-54.4	130.8	-1.0	728:
	15:12:10	9.1222	25538.5	-58.3	129.8	-1.1	732:
	15:12:50	9.1333	25482.0	-56.5	128.8	-0.9	736:
	15:13:30	9.1444	25425.0	-57.0	127.8	-1.0	740:
	15:14:10	9.1556	25367.1	-57.9	126.8	-1.1	744:
	15:14:50	9.1667	25314.5	-52.6	125.7	-1.1	748:
	15:15:30	9.1778	25248.5	-66.0	124.7	-1.0	752:
	15:16:10	9.1889	25186.3	-62.2	123.6	-1.1	756:
	15:16:50	9.2000	25129.4	-57.0	122.6	-1.1	760:
	15:17:30	9.2111	25061.6	-67.8	121.4	-1.2	764:
	15:18:10	9.2222	24984.4	-77.2	120.3	-1.1	768:
	15:18:50	9.2333	24891.8	-92.6	119.1	-1.2	772:
	15:19:30	9.2444	24787.0	-104.7	117.9	-1.2	776:
	15:20:10	9.2556	24680.8	-106.2	116.9	-1.0	780:
	15:20:50	9.2667	24566.5	-114.3	115.6	-1.3	784:
	15:21:30	9.2778	24454.4	-112.1	114.2	-1.4	788:
	15:22:10	9.2889	24341.3	-113.1	112.3	-1.8	792:
	15:22:50	9.3000	24228.5	-112.7	111.0	-1.3	796:
	15:23:30	9.3111	24109.2	-119.3	109.2	-1.8	800:
	15:24:10	9.3222	24001.5	-107.7	107.1	-2.2	804:
	15:24:50	9.3333	23887.5	-114.0	104.8	-2.3	808:
	15:25:30	9.3444	23776.5	-111.0	102.7	-2.1	812:
	15:26:10	9.3556	23661.6	-114.9	100.4	-2.2	816:
	15:26:50	9.3667	23542.1	-119.4	98.3	-2.2	820:
	15:27:30	9.3778	23409.1	-133.0	96.0	-2.3	824:
	15:28:10	9.3889	23273.8	-135.3	94.0	-2.0	828:
	15:28:50	9.4000	23128.6	-145.2	91.8	-2.2	832:
	15:29:30	9.4111	22973.6	-155.0	89.8	-2.1	836:
	15:30:10	9.4222	22821.1	-152.5	87.6	-2.2	840:
	15:30:50	9.4333	22659.0	-162.0	85.0	-2.6	844:
	15:31:30	9.4444	22502.8	-156.2	82.2	-2.8	848:
	15:32:10	9.4556	22353.4	-149.5	79.4	-2.8	852:
	15:32:50	9.4667	22212.1	-141.3	76.4	-2.9	856:
	15:33:30	9.4778	22064.1	-148.0	73.3	-3.2	860:
	15:34:10	9.4889	21956.3	-107.8	70.3	-2.9	864:
	15:34:50	9.5000	21854.0	-102.4	67.2	-3.1	868:
	15:35:30	9.5111	21783.8	-70.2	64.4	-2.8	872:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	15:38:50	9.5667	21703.2	-80.6	51.4	-12.9	876:
	15:42:50	9.6333	21693.6	-9.6	41.1	-10.3	880:
	15:46:50	9.7000	21675.7	-17.9	34.3	-6.8	884:
	15:50:50	9.7667	21673.2	-2.4	29.9	-4.4	888:
	15:54:50	9.8333	21668.8	-4.5	27.1	-2.8	892:
	15:59:00	9.9028	21355.1	-313.7	22.0	-5.1	896:
1998/03/02	15:59:40	9.9139	96.4	-21258.7	21.1	-0.9	899:
					End Data Acquisition:		

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

(403) 250-3800

GENCO Pressure Control Limited

SUBSURFACE PRESSURE MEASUREMENTS

CALGARY, AB.

Basic Data:

Company Ranger Oil Limited

Address 1600, 321 - 6 Avenue S.W.
Calgary, Alberta

Gentronics Electronic Gauge
c/w Memory Recorder

S/N: GSB-20880

Well Name Ranger Fort Liard	Field & Pool TIGHT HOLE
Well Identifier P-66-A	Type of Test Static Gradient
Status Gas	Date of Test Mar 02, 1998
DWG Tubing Pressure _____ kPa	DWG Casing Pressure _____ kPa
Tubing _____ mm @ _____ m KB	Casing _____ mm @ _____ m KB
Producing Interval _____	Producing Through _____
Elevation _____ m CF, _____ m KB	MPP Interval _____ m CF
Datum Depth of Well _____ m CF	Run Depth 3276.4 m CF
Temperature at Run Depth 150.9 °C	Pool Datum _____ m (subsea)
Pressure at Run Depth 26749.6 kPaG	Gradient at Run Depth 1.38 kPa/m
MPP Pressure _____ kPaG	Datum Depth Pressure _____ kPaG
Final Buildup Pressure _____ kPaG	Date on Bottom Mar 2, 1998 @ 09:58
Date off Bottom Mar 2, 1998 @ 14:45	Shut in Date _____

Summary:

Gentronic Strain Recorder. Recorder Ran Within Specification.

*Note: Tight Hole.

Preparation Data:

Tested By GENCO Computed By L. Champagne Report Date Mar 05, 1998

BOTTOM GAUGE

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 — Calgary, AB.

OPERATIONS SUMMARY

Company: **Ranger Oil Limited**
Ranger Fort Liard

LSD: **P-66-A**
Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/03/02	06:04:50	0.0000	7.5	9.9	1	Begin Data Acquisition
	06:13:50	0.1500	21729.6	12.9	14	@ surface
	06:42:50	0.6333	22749.3	47.5	71	@ 500.0 mCF
	07:01:50	0.9500	23693.7	74.3	135	@ 1000.0 mCF
	07:19:50	1.2500	24592.4	98.3	188	@ 1500.0 mCF
	07:36:50	1.5333	25257.1	115.2	235	@ 2000.0 mCF
	07:51:50	1.7833	25483.1	120.4	255	@ 2200.0 mCF
	08:05:50	2.0167	25713.5	125.7	274	@ 2400.0 mCF
	08:18:50	2.2333	25944.2	130.7	292	@ 2600.0 mCF
	08:31:50	2.4500	26177.3	135.6	305	@ 2800.0 mCF
	08:43:50	2.6500	26411.1	140.4	327	@ 3000.0 mCF
	08:50:50	2.7667	26486.2	142.0	334	@ 3050.0 mCF
	09:04:50	3.0000	26545.8	144.8	348	@ 3100.0 mCF
	09:20:50	3.2667	26602.6	148.3	364	@ 3150.0 mCF
	09:31:50	3.4500	26659.5	149.4	375	@ 3200.0 mCF
	09:38:50	3.5667	26713.2	150.3	382	@ 3250.0 mCF
	09:58:50	3.9000	26746.2	150.9	402	Recorder On Bottom
	10:53:50	4.8167	26749.6	150.9	457	@ 3276.4 mCF
						Gradient Pressure
	14:45:00	8.6694	27193.1	154.3	694	Recorder Off Bottom
	15:59:40	9.9139	96.4	21.1	899	End Data Acquisition

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 — Calgary, AB.

STATIC GRADIENT SURVEY

Company: **Ranger Oil Limited** — LSD: **P-66-A**

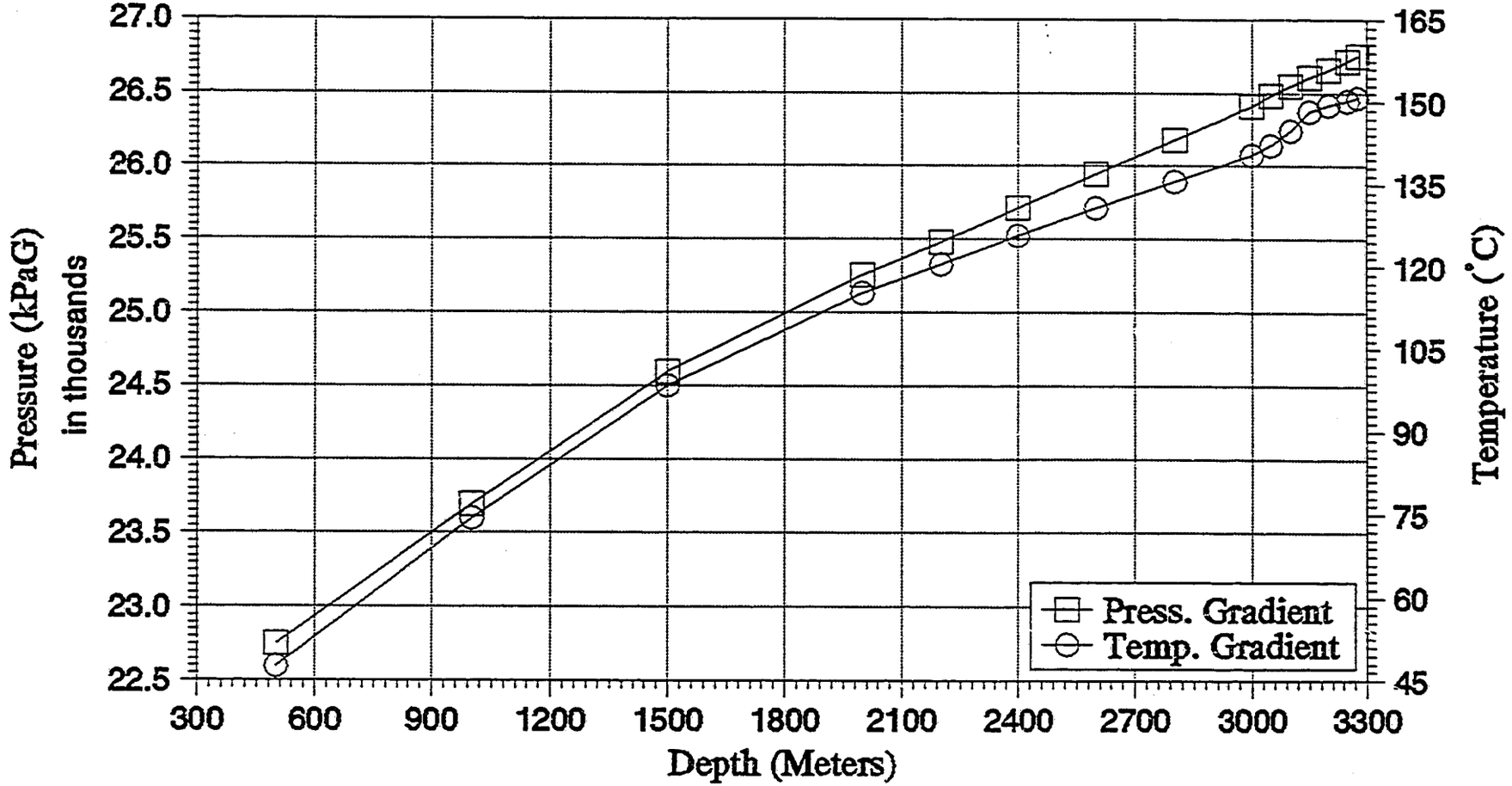
Ranger Fort Liard

Bottom Gauge

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Gradient (°C/m)
At Surface: 1998/03/02 06:13:50 (Running In)				
000	21730	-----	12.9	-----
500	22749	2.04	47.5	0.069
1000	23694	1.89	74.3	0.054
1500	24592	1.80	98.3	0.048
2000	25257	1.33	115.2	0.034
2200	25483	1.13	120.4	0.026
2400	25714	1.15	125.7	0.027
2600	25944	1.15	130.7	0.025
2800	26177	1.17	135.6	0.025
3000	26411	1.17	140.4	0.024
3050	26486	1.50	142.0	0.032
3100	26546	1.19	144.8	0.056
3150	26603	1.14	148.3	0.070
3200	26660	1.14	149.4	0.022
3250	26713	1.07	150.3	0.018
3276	26750	1.38	150.9	0.023

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

Ranger Oil Limited
P-66-A
Gentronics ES Static Gradient Survey



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/03/02 06:04:50
End Aquisition: 1998/03/02 15:59:40

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
			Begin Data Acquisition:				
1998/03/02	06:04:50	0.0000	7.5	7.5	9.9	9.9	0:
	06:05:20	0.0083	6341.8	6334.3	9.8	-0.1	4:
	06:07:50	0.0500	21727.6	15385.8	11.0	1.1	8:
	06:11:50	0.1167	21729.7	2.1	12.6	1.6	12:
	06:15:50	0.1833	21731.3	1.6	13.3	0.8	16:
	06:19:50	0.2500	21724.7	-6.6	13.7	0.3	20:
	06:23:50	0.3167	21714.1	-10.6	15.1	1.4	24:
	06:27:10	0.3722	21872.4	158.2	18.5	3.4	28:
	06:27:50	0.3833	21945.0	72.7	19.8	1.3	32:
	06:28:30	0.3944	22033.6	88.6	20.9	1.1	36:
	06:29:10	0.4056	22144.4	110.8	22.3	1.4	40:
	06:29:50	0.4167	22243.3	98.9	24.1	1.8	44:
	06:30:30	0.4278	22350.8	107.5	25.6	1.5	48:
	06:31:10	0.4389	22450.8	100.0	27.1	1.5	52:
	06:31:50	0.4500	22547.3	96.5	28.9	1.8	56:
	06:32:30	0.4611	22646.3	99.1	30.4	1.5	60:
	06:35:50	0.5167	22750.4	104.1	38.5	8.1	64:
	06:39:50	0.5833	22751.8	1.3	44.6	6.1	68:
	06:43:50	0.6500	22751.6	-0.1	48.3	3.8	72:
	06:44:30	0.6611	22812.2	60.5	48.7	0.4	76:
	06:45:10	0.6722	22887.2	75.1	49.3	0.6	80:
	06:45:50	0.6833	22959.4	72.2	49.8	0.5	84:
	06:46:30	0.6944	23029.6	70.1	50.6	0.7	88:
	06:47:10	0.7056	23099.8	70.3	51.3	0.7	92:
	06:47:50	0.7167	23170.1	70.3	52.2	0.9	96:
	06:48:30	0.7278	23240.5	70.3	53.5	1.3	100:
	06:49:10	0.7389	23309.1	68.6	54.6	1.1	104:
	06:49:50	0.7500	23376.9	67.8	55.6	1.0	108:
	06:50:30	0.7611	23445.0	68.1	56.8	1.2	112:
	06:51:10	0.7722	23507.6	62.6	58.1	1.3	116:
	06:51:50	0.7833	23579.7	72.1	59.4	1.3	120:
	06:52:30	0.7944	23650.9	71.2	60.9	1.4	124:
	06:54:50	0.8333	23669.4	18.5	65.8	4.9	128:
	06:58:50	0.9000	23686.5	17.1	71.6	5.8	132:
	07:02:50	0.9667	23703.8	17.3	75.1	3.5	136:
	07:03:30	0.9778	23793.2	89.4	75.4	0.3	140:
	07:04:10	0.9889	23873.5	80.3	75.8	0.3	144:
	07:04:50	1.0000	23956.4	82.9	76.7	0.9	148:
	07:05:30	1.0111	24037.7	81.4	77.2	0.5	152:
	07:06:10	1.0222	24120.3	82.5	78.0	0.8	156:
	07:06:50	1.0333	24200.6	80.3	78.8	0.8	160:
	07:07:30	1.0444	24282.3	81.7	79.9	1.2	164:
	07:08:10	1.0556	24362.9	80.6	81.3	1.3	168:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 — Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	07:08:50	1.0667	24449.8	86.9	82.7	1.4	172:
	07:09:30	1.0778	24524.0	74.3	84.3	1.6	176:
	07:11:50	1.1167	24591.3	67.3	89.5	5.2	180:
	07:15:50	1.1833	24599.6	8.3	95.0	5.5	184:
	07:19:50	1.2500	24592.4	-7.2	98.3	3.3	188:
	07:21:20	1.2750	24652.8	60.3	99.1	0.8	192:
	07:22:00	1.2861	24722.3	69.6	99.5	0.4	196:
	07:22:40	1.2972	24797.7	75.4	100.3	0.8	200:
	07:23:20	1.3083	24873.5	75.8	100.9	0.6	204:
	07:24:50	1.3333	24983.7	110.3	103.1	2.2	208:
	07:25:30	1.3444	25050.1	66.3	104.0	0.9	212:
	07:26:10	1.3556	25100.3	50.2	104.8	0.8	216:
	07:26:50	1.3667	25154.8	54.5	105.8	0.9	220:
	07:27:30	1.3778	25202.0	47.2	106.8	1.0	224:
	07:29:50	1.4167	25252.3	50.3	110.1	3.3	228:
	07:33:50	1.4833	25255.7	3.4	113.7	3.6	232:
	07:37:50	1.5500	25257.8	2.1	115.6	1.9	236:
	07:39:20	1.5750	25292.3	34.5	116.3	0.7	240:
	07:40:50	1.6000	25417.6	125.4	116.9	0.7	244:
	07:44:50	1.6667	25480.0	62.3	118.8	1.9	248:
	07:48:50	1.7333	25483.6	3.6	119.7	0.9	252:
	07:52:50	1.8000	25556.8	73.2	120.4	0.7	256:
	07:53:30	1.8111	25611.5	54.7	120.6	0.2	260:
	07:55:50	1.8500	25703.2	91.7	122.2	1.6	264:
	07:59:50	1.9167	25709.6	6.3	124.2	2.0	268:
	08:03:50	1.9833	25712.0	2.4	125.2	1.1	272:
	08:07:00	2.0361	25781.7	69.7	125.9	0.7	276:
	08:07:40	2.0472	25837.5	55.8	126.1	0.2	280:
	08:10:50	2.1000	25932.8	95.3	128.0	1.9	284:
	08:14:50	2.1667	25938.4	5.6	129.7	1.7	288:
	08:18:50	2.2333	25944.2	5.8	130.7	1.0	292:
	08:22:50	2.3000	26165.7	221.5	132.1	1.4	296:
	08:26:50	2.3667	26173.7	7.9	134.4	2.3	300:
	08:30:50	2.4333	26178.9	5.2	135.2	0.8	304:
	08:33:10	2.4722	26204.2	25.3	135.9	0.7	308:
	08:33:50	2.4833	26260.8	56.5	136.2	0.2	312:
	08:34:30	2.4944	26320.4	59.6	136.3	0.1	316:
	08:36:50	2.5333	26401.6	81.2	137.8	1.5	320:
	08:40:50	2.6000	26408.4	6.8	139.5	1.7	324:
	08:44:50	2.6667	26410.8	2.4	140.6	1.1	328:
	08:48:50	2.7333	26483.5	72.7	141.7	1.1	332:
	08:52:50	2.8000	26486.4	2.8	142.4	0.7	336:
	08:56:50	2.8667	26480.1	-6.3	142.8	0.4	340:
	09:00:50	2.9333	26542.7	62.6	144.1	1.3	344:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	09:04:50	3.0000	26545.8	3.1	144.8	0.7	348:
	09:08:50	3.0667	26545.6	-0.2	145.6	0.8	352:
	09:12:50	3.1333	26598.6	53.0	146.2	0.7	356:
	09:16:50	3.2000	26602.2	3.6	147.6	1.4	360:
	09:20:50	3.2667	26602.6	0.4	148.3	0.7	364:
	09:24:50	3.3333	26659.9	57.3	148.8	0.6	368:
	09:28:50	3.4000	26662.9	3.0	149.2	0.3	372:
	09:32:50	3.4667	26658.9	-4.1	149.6	0.4	376:
	09:36:50	3.5333	25712.9	54.0	150.3	0.7	380:
	09:40:50	3.6000	26713.2	0.3	150.3	0.1	384:
	09:44:50	3.6667	26721.2	8.0	150.9	0.6	388:
	09:48:50	3.7333	26747.8	26.5	151.0	0.1	392:
	09:52:50	3.8000	26747.3	-0.5	150.9	-0.1	396:
	09:56:50	3.8667	26745.1	-2.2	150.9	0.1	400:
	10:00:50	3.9333	26746.2	1.1	150.9	0.0	404:
	10:04:50	4.0000	26746.3	0.1	150.9	0.0	408:
	10:08:50	4.0667	26746.8	0.5	150.9	0.0	412:
	10:12:50	4.1333	26747.1	0.3	150.9	0.0	416:
	10:16:50	4.2000	26747.4	0.3	150.9	0.0	420:
	10:20:50	4.2667	26747.8	0.3	150.9	0.0	424:
	10:24:50	4.3333	26747.9	0.1	150.9	0.0	428:
	10:28:50	4.4000	26748.2	0.3	150.9	0.0	432:
	10:32:50	4.4667	26748.4	0.2	150.9	0.0	436:
	10:36:50	4.5333	26748.6	0.3	150.9	0.0	440:
	10:40:50	4.6000	26748.8	0.1	150.9	0.0	444:
	10:44:50	4.6667	26749.0	0.2	150.9	0.0	448:
	10:48:50	4.7333	26749.3	0.3	150.9	0.0	452:
	10:52:50	4.8000	26749.6	0.3	150.9	0.0	456:
	10:56:50	4.8667	26749.8	0.1	150.9	0.0	460:
	11:00:50	4.9333	26750.1	0.3	150.9	0.0	464:
	11:04:50	5.0000	26750.2	0.1	150.9	0.0	468:
	11:08:50	5.0667	26750.6	0.3	150.9	0.0	472:
	11:12:50	5.1333	26750.7	0.1	150.9	0.0	476:
	11:16:50	5.2000	26750.9	0.1	150.9	0.0	480:
	11:20:50	5.2667	26751.2	0.3	150.9	0.0	484:
	11:24:50	5.3333	26751.3	0.1	150.9	0.0	488:
	11:28:50	5.4000	26751.5	0.1	150.9	0.0	492:
	11:32:50	5.4667	26751.8	0.3	150.9	0.0	496:
	11:36:50	5.5333	26752.0	0.1	150.9	0.0	500:
	11:40:50	5.6000	26752.1	0.1	150.9	0.0	504:
	11:44:50	5.6667	26752.3	0.2	150.9	0.0	508:
	11:48:50	5.7333	26752.4	0.1	150.9	-0.1	512:
	11:52:50	5.8000	26752.6	0.1	150.9	0.0	516:
	11:56:50	5.8667	26752.6	0.0	150.9	0.0	520:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	12:00:50	5.9333	26752.7	0.1	150.9	0.0	524:
	12:04:50	6.0000	26752.9	0.2	150.9	0.0	528:
	12:08:50	6.0667	26752.9	0.0	150.9	0.0	532:
	12:12:50	6.1333	26753.1	0.1	150.9	0.0	536:
	12:16:50	6.2000	26753.2	0.1	150.9	0.0	540:
	12:20:50	6.2667	26753.3	0.1	150.9	0.0	544:
	12:24:50	6.3333	26753.5	0.2	150.9	0.0	548:
	12:28:50	6.4000	26753.5	0.0	150.9	0.0	552:
	12:32:50	6.4667	26753.5	0.0	150.9	0.0	556:
	12:36:50	6.5333	26753.7	0.1	150.9	0.0	560:
	12:40:50	6.6000	26753.7	0.0	150.9	0.0	564:
	12:44:50	6.6667	26753.7	0.0	150.9	0.0	568:
	12:48:50	6.7333	26753.7	0.0	150.8	-0.1	572:
	12:52:50	6.8000	26753.8	0.1	150.8	0.0	576:
	12:56:50	6.8667	26754.0	0.1	150.8	0.0	580:
	13:00:50	6.9333	26754.2	0.2	150.8	0.0	584:
	13:04:50	7.0000	26754.2	0.0	150.8	0.0	588:
	13:08:50	7.0667	26754.3	0.1	150.8	0.0	592:
	13:12:50	7.1333	26754.4	0.1	150.8	0.0	596:
	13:16:50	7.2000	26754.6	0.2	150.8	0.0	600:
	13:20:50	7.2667	26754.8	0.1	150.8	0.0	604:
	13:24:50	7.3333	26754.9	0.1	150.8	0.0	608:
	13:28:50	7.4000	26755.5	0.6	150.8	-0.1	612:
	13:32:50	7.4667	26756.0	0.5	150.8	0.0	616:
	13:36:50	7.5333	26756.8	0.8	150.8	0.0	620:
	13:40:50	7.6000	26759.5	2.7	150.8	0.1	624:
	13:44:50	7.6667	26755.9	-3.6	150.8	-0.1	628:
	13:48:50	7.7333	26761.3	5.4	150.3	-0.4	632:
	13:50:20	7.7583	26770.1	8.8	150.3	0.0	636:
	13:51:50	7.7833	26912.5	142.4	150.3	0.0	640:
	13:55:50	7.8500	26988.8	76.3	151.5	1.2	644:
	13:59:50	7.9167	26993.0	4.2	151.7	0.2	648:
	14:03:50	7.9833	26993.4	0.3	151.7	0.0	652:
	14:07:50	8.0500	27036.4	43.0	151.8	0.1	656:
	14:11:50	8.1167	27043.4	7.0	152.9	1.2	660:
	14:15:50	8.1833	27043.1	-0.3	153.1	0.1	664:
	14:19:50	8.2500	27044.4	1.4	153.1	0.0	668:
	14:23:50	8.3167	27072.6	28.2	153.1	0.0	672:
	14:27:50	8.3833	27102.5	29.9	153.4	0.4	676:
	14:31:50	8.4500	27133.0	30.5	153.6	0.2	680:
	14:35:50	8.5167	27176.2	43.2	153.8	0.2	684:
	14:39:50	8.5833	27166.5	-9.7	154.0	0.2	688:
	14:43:50	8.6500	27166.6	0.1	154.3	0.3	692:
	14:45:20	8.6750	27116.4	-50.3	154.3	0.0	696:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	14:46:50	8.7000	26721.4	-394.9	153.8	-0.5	700:
	14:50:50	8.7667	26715.3	-6.1	151.7	-2.1	704:
	14:54:50	8.8333	26521.3	-194.1	151.0	-0.7	708:
	14:58:50	8.9000	26338.9	-182.4	147.2	-3.8	712:
	15:02:50	8.9667	26110.2	-228.6	142.6	-4.6	716:
	15:06:50	9.0333	25887.9	-222.4	137.3	-5.3	720:
	15:10:50	9.1000	25651.2	-236.7	131.8	-5.4	724:
	15:11:30	9.1111	25596.8	-54.4	130.8	-1.0	728:
	15:12:10	9.1222	25538.5	-58.3	129.8	-1.1	732:
	15:12:50	9.1333	25482.0	-56.5	128.8	-0.9	736:
	15:13:30	9.1444	25425.0	-57.0	127.8	-1.0	740:
	15:14:10	9.1556	25367.1	-57.9	126.8	-1.1	744:
	15:14:50	9.1667	25314.5	-52.6	125.7	-1.1	748:
	15:15:30	9.1778	25248.5	-66.0	124.7	-1.0	752:
	15:16:10	9.1889	25186.3	-62.2	123.6	-1.1	756:
	15:16:50	9.2000	25129.4	-57.0	122.6	-1.1	760:
	15:17:30	9.2111	25061.6	-67.8	121.4	-1.2	764:
	15:18:10	9.2222	24984.4	-77.2	120.3	-1.1	768:
	15:18:50	9.2333	24891.8	-92.6	119.1	-1.2	772:
	15:19:30	9.2444	24787.0	-104.7	117.9	-1.2	776:
	15:20:10	9.2556	24680.8	-106.2	116.9	-1.0	780:
	15:20:50	9.2667	24566.5	-114.3	115.6	-1.3	784:
	15:21:30	9.2778	24454.4	-112.1	114.2	-1.4	788:
	15:22:10	9.2889	24341.3	-113.1	112.3	-1.8	792:
	15:22:50	9.3000	24228.5	-112.7	111.0	-1.3	796:
	15:23:30	9.3111	24109.2	-119.3	109.2	-1.8	800:
	15:24:10	9.3222	24001.5	-107.7	107.1	-2.2	804:
	15:24:50	9.3333	23887.5	-114.0	104.8	-2.3	808:
	15:25:30	9.3444	23776.5	-111.0	102.7	-2.1	812:
	15:26:10	9.3556	23661.6	-114.9	100.4	-2.2	816:
	15:26:50	9.3667	23542.1	-119.4	98.3	-2.2	820:
	15:27:30	9.3778	23409.1	-133.0	96.0	-2.3	824:
	15:28:10	9.3889	23273.8	-135.3	94.0	-2.0	828:
	15:28:50	9.4000	23128.6	-145.2	91.8	-2.2	832:
	15:29:30	9.4111	22973.6	-155.0	89.8	-2.1	836:
	15:30:10	9.4222	22821.1	-152.5	87.6	-2.2	840:
	15:30:50	9.4333	22659.0	-162.0	85.0	-2.6	844:
	15:31:30	9.4444	22502.8	-156.2	82.2	-2.8	848:
	15:32:10	9.4556	22353.4	-149.5	79.4	-2.8	852:
	15:32:50	9.4667	22212.1	-141.3	76.4	-2.9	856:
	15:33:30	9.4778	22064.1	-148.0	73.3	-3.2	860:
	15:34:10	9.4889	21956.3	-107.8	70.3	-2.9	864:
	15:34:50	9.5000	21854.0	-102.4	67.2	-3.1	868:
	15:35:30	9.5111	21783.8	-70.2	64.4	-2.8	872:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	15:38:50	9.5667	21703.2	-80.6	51.4	-12.9	876:
	15:42:50	9.6333	21693.6	-9.6	41.1	-10.3	880:
	15:46:50	9.7000	21675.7	-17.9	34.3	-6.8	884:
	15:50:50	9.7667	21673.2	-2.4	29.9	-4.4	888:
	15:54:50	9.8333	21668.8	-4.5	27.1	-2.8	892:
	15:59:00	9.9028	21355.1	-313.7	22.0	-5.1	896:
1998/03/02	15:59:40	9.9139	96.4	-21258.7	21.1	-0.9	899:
				End Data Acquisition:			

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 4 data points.

SRO
FLOW GRADIENT

N.E.B. COPY

RANGER OIL LIMITED

RANGER NORTH ~~FORT~~ LIARD

P-66-A

SRO FLOWING GRADIENT

July 15 - 16, 1998

(403) 250-3800

GENCO Pressure Control Limited

SUBSURFACE PRESSURE MEASUREMENTS

CALGARY, AB.

Basic Data:

Company Ranger Oil Limited
Address #1600, 321 - 6Th. Ave. S.W.
Calgary, AB.
T2P 3H3

Gentronics Electronic Gauge
c/w SRO System
S/N: GMQ-9812

Well Name	Ranger Fort Liard	Field & Pool	Liard / Nihanni
Well Identifier	P-66-A	Type of Test	Flowing Gradient
Status	Shut in Gas	Date of Test	Jul 15 - Jul 16, 1998
DWG Tubing Pressure	N/A kPa	DWG Casing Pressure	N/A kPa
Tubing	88.9 mm @ 3082.4 m KB	Casing	177.8 mm @ 3499.0 m KB
Producing Interval	3115 - 3334 m KB	Producing Through	Tubing
Elevation	449.54 m CF, 459.89 m KB	MPP Interval	3214.2 m CF
Datum Depth of Well	m CF	Run Depth	3347 m CF
Temperature at Run Depth	157.6 °C	Pool Datum	m (subsea)
Pressure at Run Depth	27262 kPaG	Gradient at Run Depth	kPa/m
MPP Pressure	kPaG	Datum Depth Pressure	kPaG
Final Buildup Pressure	kPaG	Date on Bottom	July 15, 1998
Date off Bottom	July 20, 1998	Shut in Date	July 16, 1998

Summary:

Single LMR Quartz SRO Recorder ran within specifiactions.

Recorder shut down when wireline parted near surface while attempting to pull tools off bottom on July 16, 1998.

Preparation Data:

Tested By GENCO Computed By P. Mulgrew Report Date Aug 04, 1998

SRO Recorder

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800

Calgary, AB.

OPERATIONS SUMMARY

Company: Ranger Oil Limited
Ranger Fort Liard

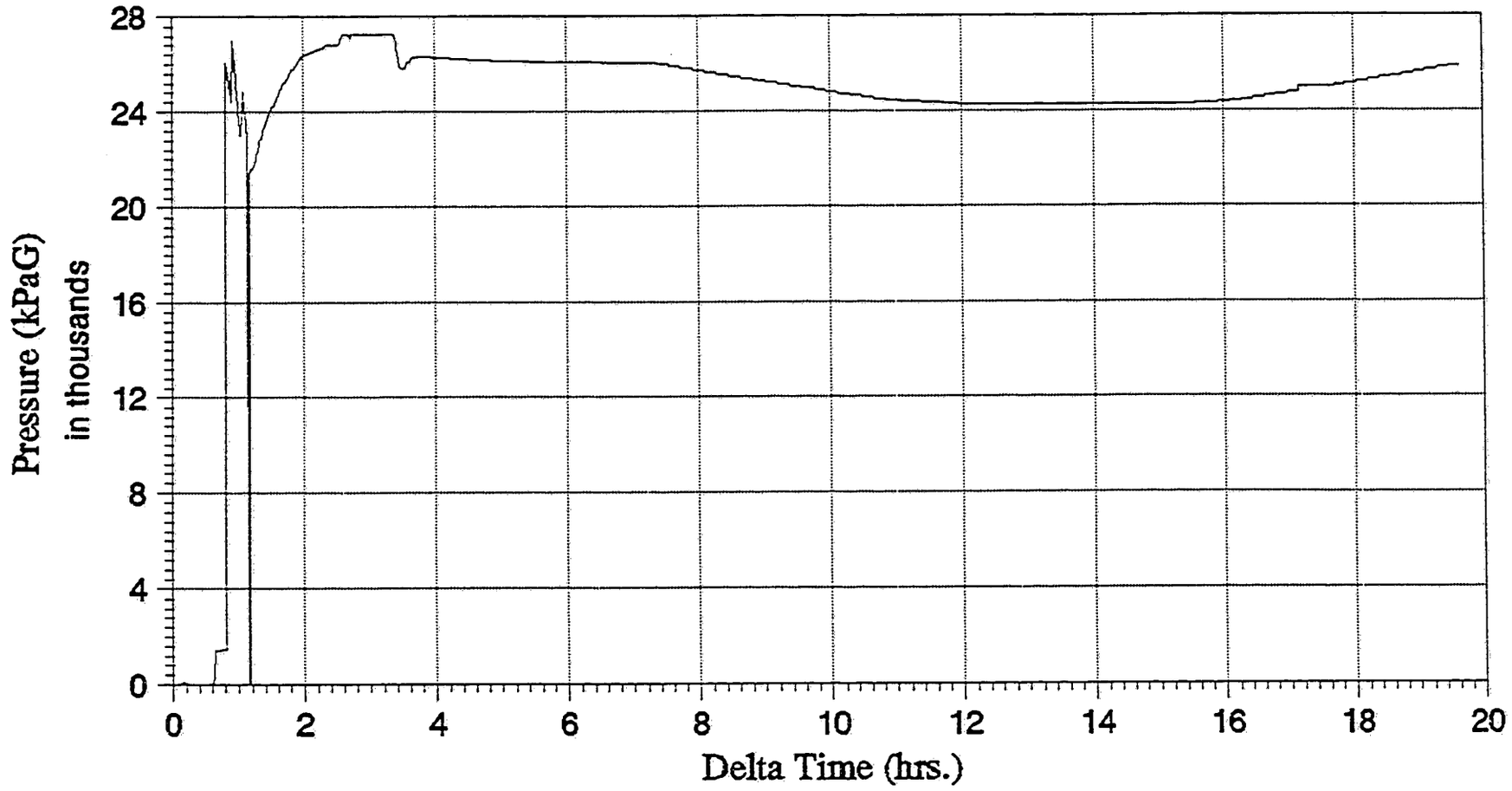
LSD: P-66-A

Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/07/15	18:58:36	0.0000	21.7	24.6	1	Begin Data Acquisition
	19:37:36	0.6500	1445.2	24.5	74	Pressure Test Lubricator
	21:41:48	2.7200	27261.6	157.6	319	Recorder on Bottom.
	22:20:12	3.3600	27265.0	158.1	395	Well Open to Flow.
1998/07/16	07:08:12	12.1600	24273.5	154.4	1452	Lost about 3 Hours of readings due to power failure.
	14:37:00	19.6400	25843.0	157.9	1937	End Data Acquisition

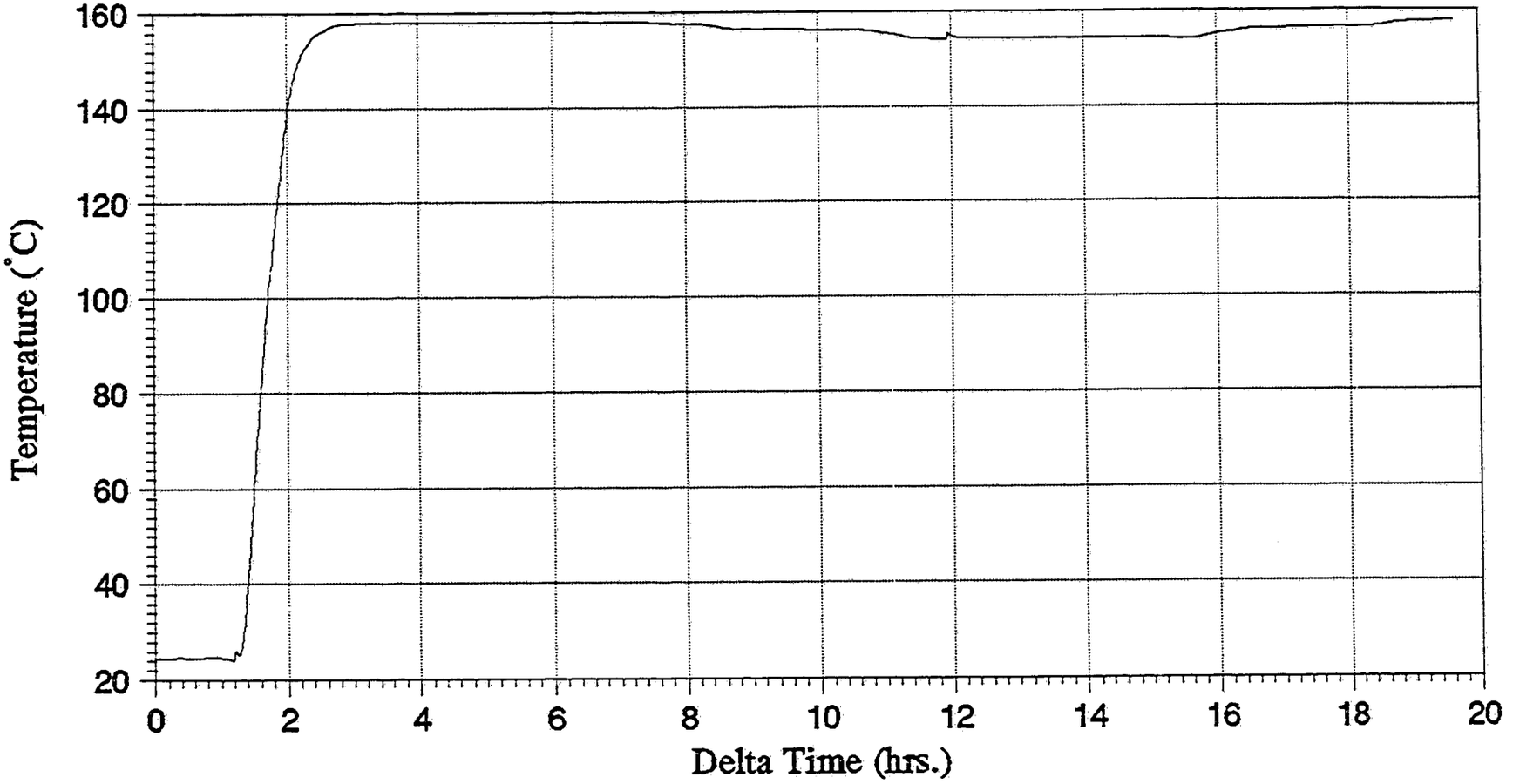
Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Pressures

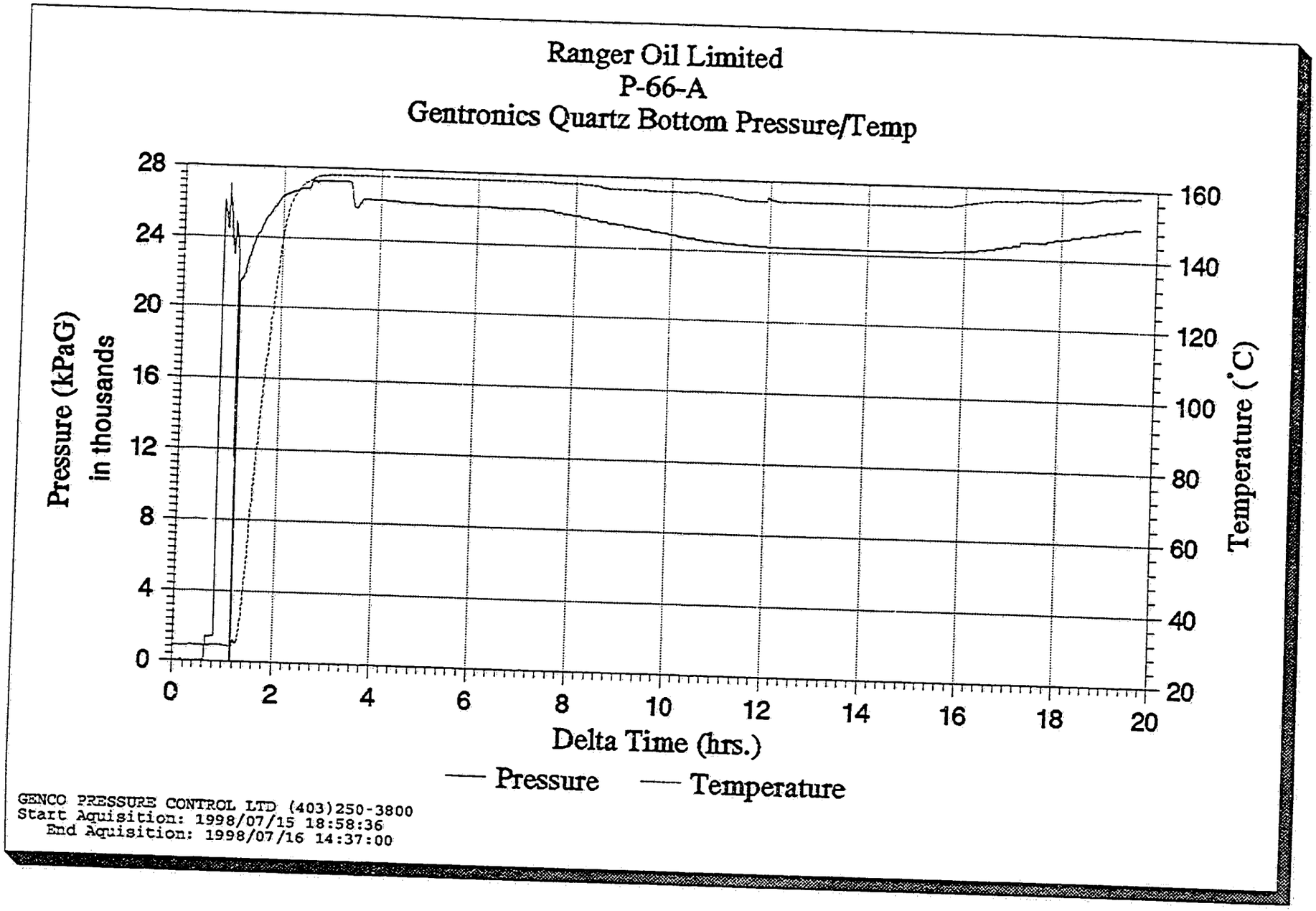


GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/15 18:58:36
End Aquisition: 1998/07/16 14:37:00

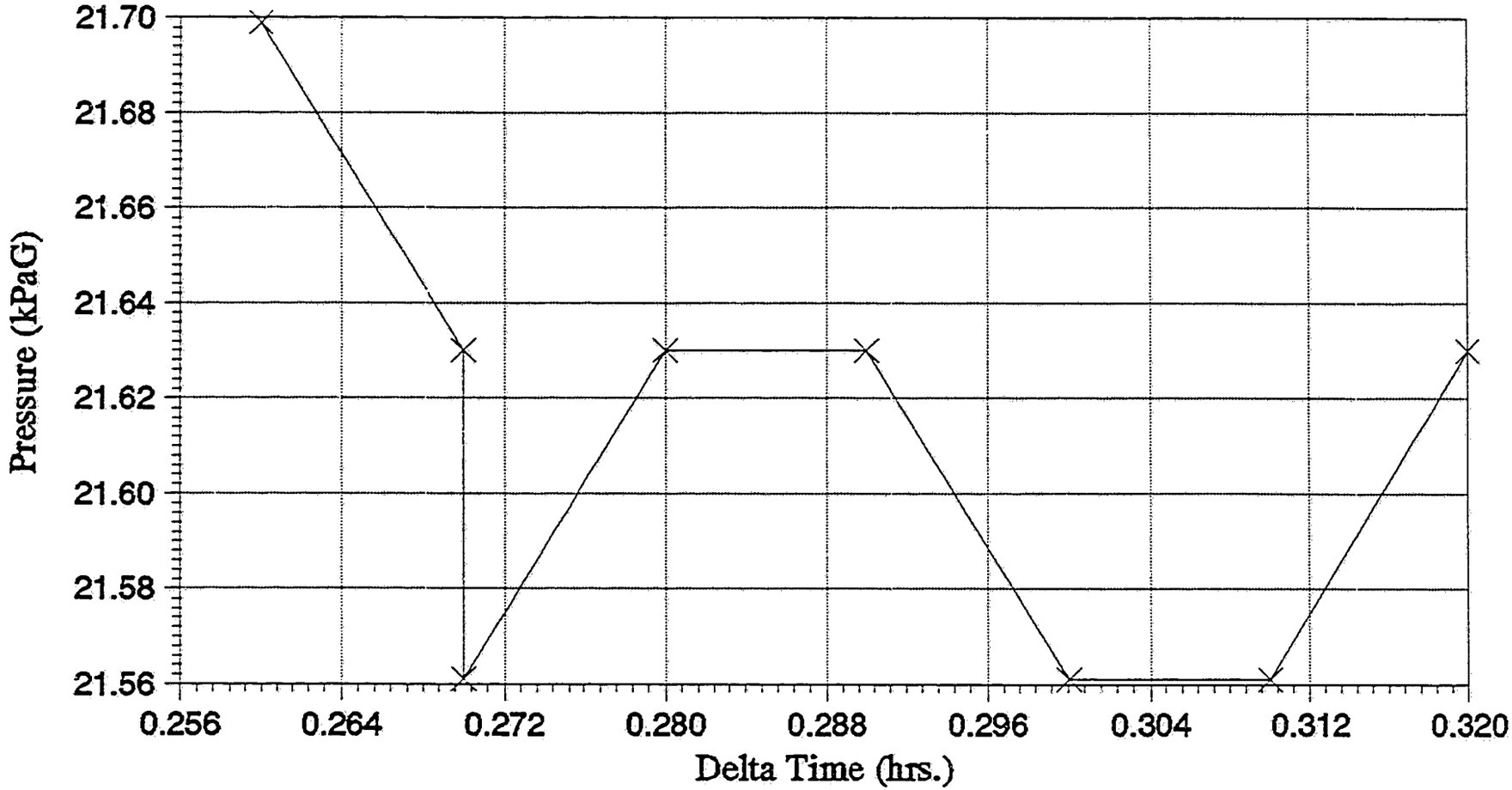
Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Temp.



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/15 18:58:36
End Aquisition: 1998/07/16 14:37:00


Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Pressure/Temp
Pressure (kPaG)
in thousands
28
24
20
16
12
8
4
0
Temperature (°C)
160
140
120
100
80
60
40
20
0
2
4
6
8
10
12
14
16
18
20
Delta Time (hrs.)
Pressure
Temperature
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/15 18:58:36
End Aquisition: 1998/07/16 14:37:00

Ranger Oil Limited
P-66-A
Bottom Gauge Apparent Resolution



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/15 18:58:36
End Aquisition: 1998/07/16 14:37:00

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800

Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A

Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
				Begin Data Acquisition:			
1998/07/15	18:58:36	0.0000	21.7	21.7	24.6	24.6	0:
	19:02:48	0.0700	22.3	0.6	24.6	0.0	9:
	19:08:48	0.1700	105.7	83.5	24.6	0.0	18:
	19:13:00	0.2400	21.8	-83.9	24.6	0.0	27:
	19:17:48	0.3200	21.6	-0.2	24.6	0.0	36:
	19:22:00	0.3900	21.7	0.1	24.7	0.0	45:
	19:26:48	0.4700	21.6	-0.1	24.6	-0.0	54:
	19:31:00	0.5400	21.7	0.1	24.5	-0.1	63:
	19:35:48	0.6200	71.2	49.5	24.5	-0.1	72:
	19:41:12	0.7100	1414.0	1342.8	24.6	0.1	81:
	19:45:24	0.7800	1446.6	32.5	24.7	0.1	90:
	19:50:48	0.8700	25150.4	23703.8	24.9	0.2	99:
	19:55:36	0.9500	25817.8	667.4	24.8	-0.1	108:
	19:59:48	1.0200	23013.5	-2804.3	24.6	-0.2	117:
	20:05:12	1.1100	23842.8	829.3	24.4	-0.2	126:
	20:10:00	1.1900	21567.1	-2275.8	24.9	0.5	135:
	20:14:48	1.2700	21970.1	403.0	25.4	0.5	144:
	20:19:00	1.3400	22839.0	869.0	30.9	5.5	153:
	20:23:48	1.4200	23544.5	705.4	44.1	13.2	162:
	20:28:00	1.4900	24066.4	522.0	60.5	16.4	171:
	20:32:48	1.5700	24415.5	349.1	75.1	14.6	180:
	20:37:00	1.6400	24923.9	508.4	88.6	13.5	189:
	20:41:48	1.7200	25216.3	292.4	100.6	12.0	198:
	20:46:00	1.7900	25579.5	363.2	111.2	10.6	207:
	20:50:12	1.8600	25829.8	250.2	121.3	10.1	216:
	20:55:00	1.9400	26172.1	342.3	131.1	9.8	225:
	20:59:12	2.0100	26379.5	207.4	140.2	9.1	234:
	21:04:00	2.0900	26465.9	86.4	145.9	5.7	243:
	21:08:12	2.1600	26552.0	86.1	149.5	3.6	252:
	21:13:00	2.2400	26628.5	76.5	151.9	2.4	261:
	21:17:12	2.3100	26704.2	75.8	153.6	1.7	270:
	21:22:00	2.3900	26800.4	96.2	154.9	1.4	279:
	21:26:12	2.4600	26812.6	12.2	155.8	0.8	288:
	21:31:00	2.5400	26868.1	55.5	156.2	0.4	297:
	21:35:12	2.6100	27238.0	369.8	156.9	0.7	306:
	21:40:00	2.6900	27256.2	18.2	157.4	0.5	315:
	21:44:12	2.7600	27259.4	3.2	157.7	0.3	324:
	21:49:00	2.8400	27261.6	2.3	157.8	0.2	333:
	21:53:12	2.9100	27263.0	1.4	157.9	0.1	342:
	21:58:00	2.9900	27263.7	0.7	157.9	0.1	351:
	22:02:12	3.0600	27264.3	0.6	158.0	0.1	360:
	22:07:00	3.1400	27264.5	0.2	158.0	0.0	369:
	22:11:12	3.2100	27264.8	0.3	158.0	0.0	378:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 9 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	22:16:00	3.2900	27266.2	1.4	158.1	0.1	387:
	22:20:12	3.3600	27260.8	-5.4	158.1	0.0	396:
	22:25:00	3.4400	26136.4	-1124.4	158.1	0.0	405:
	22:29:12	3.5100	25790.9	-345.6	158.0	-0.1	414:
	22:34:00	3.5900	26067.8	277.0	158.1	0.1	423:
	22:38:12	3.6600	26289.5	221.7	158.1	0.0	432:
	22:43:00	3.7400	26298.0	8.5	158.1	0.0	441:
	22:47:12	3.8100	26289.8	-8.2	158.1	0.0	450:
	22:52:00	3.8900	26292.3	2.5	158.1	0.0	459:
	22:56:12	3.9600	26281.7	-10.6	158.1	0.0	468:
	23:01:00	4.0400	26270.1	-11.6	158.1	0.0	477:
	23:05:12	4.1100	26255.9	-14.1	158.1	0.0	486:
	23:10:00	4.1900	26247.4	-8.5	158.1	0.0	495:
	23:14:12	4.2600	26233.7	-13.7	158.1	0.0	504:
	23:19:00	4.3400	26218.5	-15.2	158.1	0.0	513:
	23:23:12	4.4100	26205.3	-13.2	158.1	0.0	522:
	23:28:00	4.4900	26192.4	-12.9	158.1	0.0	531:
	23:32:12	4.5600	26182.6	-9.9	158.1	0.0	540:
	23:37:00	4.6400	26166.6	-16.0	158.1	0.0	549:
	23:41:12	4.7100	26161.5	-5.0	158.1	0.0	558:
	23:46:00	4.7900	26150.9	-10.7	158.1	0.0	567:
	23:50:12	4.8600	26144.3	-6.6	158.1	0.0	576:
	23:55:00	4.9400	26137.4	-6.9	158.1	0.0	585:
	23:59:12	5.0100	26125.8	-11.7	158.1	0.0	594:
1998/07/16	00:04:00	5.0900	26116.0	-9.7	158.1	0.0	603:
	00:08:12	5.1600	26111.3	-4.7	158.1	0.0	612:
	00:13:00	5.2400	26109.6	-1.7	158.1	0.0	621:
	00:17:12	5.3100	26105.8	-3.8	158.1	0.0	630:
	00:22:00	5.3900	26102.0	-3.9	158.1	0.0	639:
	00:26:12	5.4600	26099.1	-2.8	158.1	0.0	648:
	00:31:00	5.5400	26095.1	-4.1	158.1	0.0	657:
	00:35:12	5.6100	26089.1	-6.0	158.1	0.0	666:
	00:40:00	5.6900	26083.8	-5.3	158.1	0.0	675:
	00:44:12	5.7600	26079.5	-4.3	158.1	0.0	684:
	00:49:00	5.8400	26078.2	-1.2	158.1	0.0	693:
	00:53:12	5.9100	26070.9	-7.4	158.1	0.0	702:
	00:58:00	5.9900	26074.7	3.8	158.1	0.0	711:
	01:02:12	6.0600	26072.0	-2.7	158.1	0.0	720:
	01:07:00	6.1400	26073.1	1.1	158.1	0.0	729:
	01:11:12	6.2100	26069.1	-3.9	158.1	0.0	738:
	01:16:00	6.2900	26063.4	-5.8	158.1	0.0	747:
	01:20:12	6.3600	26064.0	0.6	158.1	0.0	756:
	01:25:00	6.4400	26062.5	-1.5	158.1	0.0	765:
	01:29:12	6.5100	26060.0	-2.5	158.1	0.0	774:

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 9 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	01:34:00	6.5900	26059.0	-1.0	158.1	0.0	783:
	01:38:12	6.6600	26051.8	-7.2	158.1	0.0	792:
	01:43:00	6.7400	26052.3	0.6	158.1	0.0	801:
	01:47:12	6.8100	26044.4	-7.9	158.1	0.0	810:
	01:52:00	6.8900	26044.9	0.6	158.1	0.0	819:
	01:56:12	6.9600	26038.7	-6.3	158.1	0.0	828:
	02:01:00	7.0400	26036.3	-2.4	158.1	0.0	837:
	02:05:12	7.1100	26036.3	0.1	158.1	0.0	846:
	02:10:00	7.1900	26033.4	-2.9	158.1	0.0	855:
	02:14:12	7.2600	26030.3	-3.1	158.1	0.0	864:
	02:19:00	7.3400	26026.3	-4.1	158.1	0.0	873:
	02:23:12	7.4100	25994.6	-31.6	158.0	-0.1	882:
	02:28:00	7.4900	25996.0	1.4	157.9	-0.1	891:
	02:32:12	7.5600	25908.1	-87.8	157.9	-0.1	900:
	02:37:00	7.6400	25904.5	-3.7	157.8	-0.1	909:
	02:41:12	7.7100	25903.0	-1.4	157.8	-0.1	918:
	02:46:00	7.7900	25819.1	-84.0	157.8	0.0	927:
	02:50:12	7.8600	25814.9	-4.2	157.7	-0.1	936:
	02:55:00	7.9400	25726.4	-88.5	157.7	0.0	945:
	02:59:12	8.0100	25724.9	-1.5	157.7	-0.1	954:
	03:04:00	8.0900	25725.2	0.3	157.7	0.0	963:
	03:08:12	8.1600	25639.8	-85.4	157.6	-0.1	972:
	03:13:00	8.2400	25638.2	-1.6	157.6	-0.1	981:
	03:17:12	8.3100	25552.5	-85.7	157.5	-0.1	990:
	03:22:00	8.3900	25551.7	-0.8	157.3	-0.2	999:
	03:26:12	8.4600	25505.8	-45.9	157.3	-0.1	1008:
	03:31:00	8.5400	25465.0	-40.7	156.9	-0.3	1017:
	03:35:12	8.6100	25460.6	-4.4	156.8	-0.2	1026:
	03:40:00	8.6900	25375.2	-85.4	156.7	-0.1	1035:
	03:44:12	8.7600	25371.3	-3.9	156.6	-0.1	1044:
	03:49:00	8.8400	25303.5	-67.8	156.6	0.0	1053:
	03:53:12	8.9100	25287.3	-16.3	156.5	-0.1	1062:
	03:58:00	8.9900	25288.6	1.4	156.5	0.0	1071:
	04:02:12	9.0600	25210.0	-78.7	156.5	0.0	1080:
	04:07:00	9.1400	25210.1	0.1	156.4	-0.1	1089:
	04:11:12	9.2100	25136.0	-74.1	156.4	0.0	1098:
	04:16:00	9.2900	25132.3	-3.7	156.4	0.0	1107:
	04:20:12	9.3600	25130.8	-1.4	156.4	0.0	1116:
	04:25:00	9.4400	25057.2	-73.6	156.4	0.0	1125:
	04:29:12	9.5100	25055.9	-1.3	156.4	-0.1	1134:
	04:34:00	9.5900	24974.2	-81.8	156.4	0.0	1143:
	04:38:12	9.6600	24973.5	-0.7	156.4	0.0	1152:
	04:43:00	9.7400	24972.6	-0.9	156.4	0.0	1161:
	04:47:12	9.8100	24897.3	-75.3	156.3	-0.1	1170:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 9 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	04:52:00	9.8900	24894.0	-3.3	156.3	0.0	1179:
	04:56:12	9.9600	24821.7	-72.3	156.3	0.0	1188:
	05:01:00	10.0400	24817.3	-4.4	156.3	0.0	1197:
	05:05:12	10.1100	24779.1	-38.2	156.3	0.0	1206:
	05:10:00	10.1900	24743.0	-36.1	156.3	-0.1	1215:
	05:14:12	10.2600	24740.8	-2.2	156.3	0.0	1224:
	05:19:00	10.3400	24664.8	-76.0	156.3	0.0	1233:
	05:23:12	10.4100	24664.2	-0.6	156.2	-0.1	1242:
	05:28:00	10.4900	24585.1	-79.2	156.2	0.0	1251:
	05:32:12	10.5600	24584.9	-0.2	156.2	0.0	1260:
	05:37:00	10.6400	24585.1	0.3	156.2	-0.1	1269:
	05:41:12	10.7100	24513.3	-71.8	156.1	-0.1	1278:
	05:46:00	10.7900	24508.2	-5.1	156.0	-0.1	1287:
	05:50:12	10.8600	24463.1	-45.1	155.9	-0.1	1296:
	05:55:00	10.9400	24467.2	4.1	155.7	-0.2	1305:
	05:59:12	11.0100	24462.6	-4.6	155.6	-0.1	1314:
	06:04:00	11.0900	24429.0	-33.6	155.4	-0.2	1323:
	06:08:12	11.1600	24428.3	-0.6	155.3	-0.1	1332:
	06:13:00	11.2400	24401.7	-26.6	155.1	-0.2	1341:
	06:17:12	11.3100	24399.1	-2.6	154.8	-0.3	1350:
	06:22:00	11.3900	24392.7	-6.4	154.6	-0.2	1359:
	06:26:12	11.4600	24368.6	-24.1	154.5	-0.1	1368:
	06:31:00	11.5400	24362.1	-6.6	154.4	-0.1	1377:
	06:35:12	11.6100	24343.1	-19.0	154.4	-0.1	1386:
	06:40:00	11.6900	24339.8	-3.2	154.4	0.0	1395:
	06:44:12	11.7600	24321.2	-18.6	154.3	-0.1	1404:
	06:49:00	11.8400	24316.6	-4.6	154.3	0.0	1413:
	06:53:12	11.9100	24314.4	-2.1	154.3	0.0	1422:
	06:58:00	11.9900	24278.2	-36.2	155.1	0.8	1431:
	07:02:12	12.0600	24267.7	-10.5	154.7	-0.4	1440:
	07:07:00	12.1400	24278.6	10.9	154.4	-0.2	1449:
	10:16:00	15.2900	24272.4	-6.2	154.4	-0.1	1458:
	10:20:12	15.3600	24270.4	-2.0	154.3	-0.1	1467:
	10:25:00	15.4400	24289.8	19.4	154.3	0.0	1476:
	10:29:12	15.5100	24288.0	-1.8	154.3	0.0	1485:
	10:34:00	15.5900	24306.2	18.2	154.3	0.0	1494:
	10:38:12	15.6600	24308.0	1.7	154.3	0.0	1503:
	10:43:00	15.7400	24317.9	9.9	154.3	0.0	1512:
	10:47:12	15.8100	24325.1	7.2	154.7	0.3	1521:
	10:52:00	15.8900	24324.7	-0.3	154.8	0.2	1530:
	10:56:12	15.9600	24355.7	31.0	155.1	0.3	1539:
	11:01:00	16.0400	24358.6	2.9	155.3	0.2	1548:
	11:05:12	16.1100	24400.4	41.8	155.4	0.1	1557:
	11:10:00	16.1900	24398.4	-1.9	155.6	0.2	1566:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 9 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	11:14:12	16.2600	24397.7	-0.8	155.7	0.1	1575:
	11:19:00	16.3400	24470.1	72.5	155.9	0.2	1584:
	11:23:12	16.4100	24471.9	1.8	156.1	0.2	1593:
	11:28:00	16.4900	24544.7	72.8	156.2	0.1	1602:
	11:32:12	16.5600	24543.6	-1.2	156.2	0.1	1611:
	11:37:00	16.6400	24620.0	76.5	156.2	0.0	1620:
	11:41:12	16.7100	24618.4	-1.7	156.3	0.1	1629:
	11:46:00	16.7900	24618.9	0.5	156.3	0.0	1638:
	11:50:12	16.8600	24695.9	77.0	156.3	0.1	1647:
	11:55:00	16.9400	24692.7	-3.2	156.3	0.0	1656:
	11:59:12	17.0100	24763.8	71.1	156.3	0.0	1665:
	12:04:00	17.0900	24761.6	-2.1	156.4	0.1	1674:
	12:08:12	17.1600	24983.1	221.5	156.5	0.1	1683:
	12:13:00	17.2400	24986.3	3.2	156.5	0.0	1692:
	12:38:48	17.6700	24982.6	-3.7	156.5	0.0	1701:
	12:43:00	17.7400	25060.8	78.1	156.5	0.0	1710:
	12:47:48	17.8200	25063.6	2.8	156.5	0.0	1719:
	12:52:00	17.8900	25137.3	73.7	156.5	0.0	1728:
	12:56:48	17.9700	25139.1	1.8	156.6	0.1	1737:
	13:01:00	18.0400	25218.2	79.1	156.6	0.0	1746:
	13:05:48	18.1200	25217.3	-0.9	156.6	0.0	1755:
	13:10:00	18.1900	25218.2	1.0	156.6	0.0	1764:
	13:14:48	18.2700	25301.8	83.6	156.6	0.0	1773:
	13:19:00	18.3400	25300.6	-1.2	156.6	0.1	1782:
	13:23:48	18.4200	25384.1	83.6	156.7	0.1	1791:
	13:28:00	18.4900	25381.4	-2.7	156.8	0.1	1800:
	13:32:48	18.5700	25381.6	0.1	156.9	0.1	1809:
	13:37:00	18.6400	25460.8	79.2	157.2	0.3	1818:
	13:41:48	18.7200	25461.4	0.6	157.3	0.2	1827:
	13:46:00	18.7900	25551.9	90.5	157.4	0.1	1836:
	13:50:48	18.8700	25551.3	-0.6	157.5	0.1	1845:
	13:55:00	18.9400	25634.6	83.3	157.6	0.1	1854:
	13:59:48	19.0200	25638.6	3.9	157.6	0.1	1863:
	14:04:00	19.0900	25632.4	-6.1	157.6	0.0	1872:
	14:08:48	19.1700	25717.2	84.7	157.7	0.1	1881:
	14:13:00	19.2400	25719.7	2.6	157.7	0.1	1890:
	14:17:48	19.3200	25802.4	82.7	157.7	0.0	1899:
	14:22:00	19.3900	25800.4	-2.0	157.8	0.1	1908:
	14:26:48	19.4700	25847.1	46.6	157.8	0.1	1917:
	14:31:00	19.5400	25843.3	-3.8	157.9	0.1	1926:
	14:35:48	19.6200	25843.7	0.4	157.9	0.1	1935:
1998/07/16	14:37:00	19.6400	25843.0	-0.7	157.9	0.0	1937:
					End Data Acquisition:		

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 9 data points.

STATIC GRADIENT (JULY 9, JULY 14/98

N.E.B. COPY

RANGER OIL LIMITED

RANGER ~~PORT~~ NORTH LIARD
P-66-A

STATIC GRADIENT

JULY 9, 1998

(403) 250-3800

GENCO Pressure Control Limited

SUBSURFACE PRESSURE MEASUREMENTS

CALGARY, AB.

Basic Data:

Company Ranger Oil Limited
Address #1600, 321 - 6Th. Ave. S.W.
Calgary, AB.
T2P 3H3

Gentronics Electronic Gauge
c/w Memory Recorder
S/N: GMQ-9804

Well Name Ranger Fort Liard	Field & Pool Liard / Nihanni
Well Identifier P-66-A	Type of Test Static Gradient
Status Shut in Gas	Date of Test Jul 09, 1998
DWG Tubing Pressure 21550 kPa	DWG Casing Pressure N/A kPa
Tubing 88.9 mm @ 3082.4 m KB	Casing 177.8 mm @ 3499.0 m KB
Producing Interval 3115 - 3334	Producing Through Tubing
Elevation 449.54 m CF, 459.89 m KB	MPP Interval 3214.2 m CF
Datum Depth of Well ____ m CF	Run Depth 3276.4 m CF
Temperature at Run Depth 155.3 °C	Pool Datum ____ m (subsea)
Pressure at Run Depth 26781 kPaG	Gradient at Run Depth 1.40 kPa/m
MPP Pressure 26696 kPaG	Datum Depth Pressure ____ kPaG
Final Buildup Pressure ____ kPaG	Date on Bottom July 09, 1998
Date off Bottom July 09, 1998	Shut in Date July 09, 1998

Summary:

Tandem LMR Quartz Recorders ran within Specifications.

Pulled 58 mm PX plug July 8 - 9, 1998.

Preparation Data:

Tested By GENCO Computed By P. Mulgrew Report Date Jul 30, 1998

BOTTOM GAUGE

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

OPERATIONS SUMMARY

Company: **Ranger Oil Limited** LSD: **P-66-A**
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/07/09	18:15:01	0.0000	0.0	21.6	1	Begin Data Acquisition
	18:16:10	0.0192	26537.9	21.7	8	Pressure Test Lubricator
	18:27:08	0.2019	21545.9	22.2	73	@ surface
	18:45:19	0.5050	22690.5	24.6	182	@ 500 mCF
	19:01:49	0.7800	23692.4	47.5	281	@ 1000 mCF
	19:18:01	1.0500	24554.3	78.5	378	@ 1500 mCF
	19:34:10	1.3192	25244.2	104.7	475	@ 2000 mCF
	19:46:31	1.5250	25507.0	116.4	549	@ 2200 mCF
	19:59:11	1.7361	25739.4	122.6	625	@ 2400 mCF
	20:11:40	1.9442	25958.5	129.3	700	@ 2600 mCF
	20:24:52	2.1642	26172.0	135.9	779	@ 2800 mCF
	20:37:10	2.3692	26396.7	143.1	853	@ 3000 mCF
	20:47:50	2.5469	26483.1	147.7	917	@ 3050 mCF
	20:58:20	2.7219	26553.0	149.6	980	@ 3100 mCF
	21:10:20	2.9219	26615.4	151.4	1052	@ 3150 mCF
	21:21:19	3.1050	26678.3	153.1	1118	@ 3200 mCF
	21:32:40	3.2942	26744.7	154.2	1186	@ 3250 mCF
	21:43:38	3.4769	26781.1	155.3	1252	@ 3276 mCF (run depth)
	22:43:38	4.4769	26791.6	155.8	1612	Recorders Off Bottom.
	23:09:08	4.9019	15714.2	51.0	1764	End Data Acquisition

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

STATIC GRADIENT SURVEY

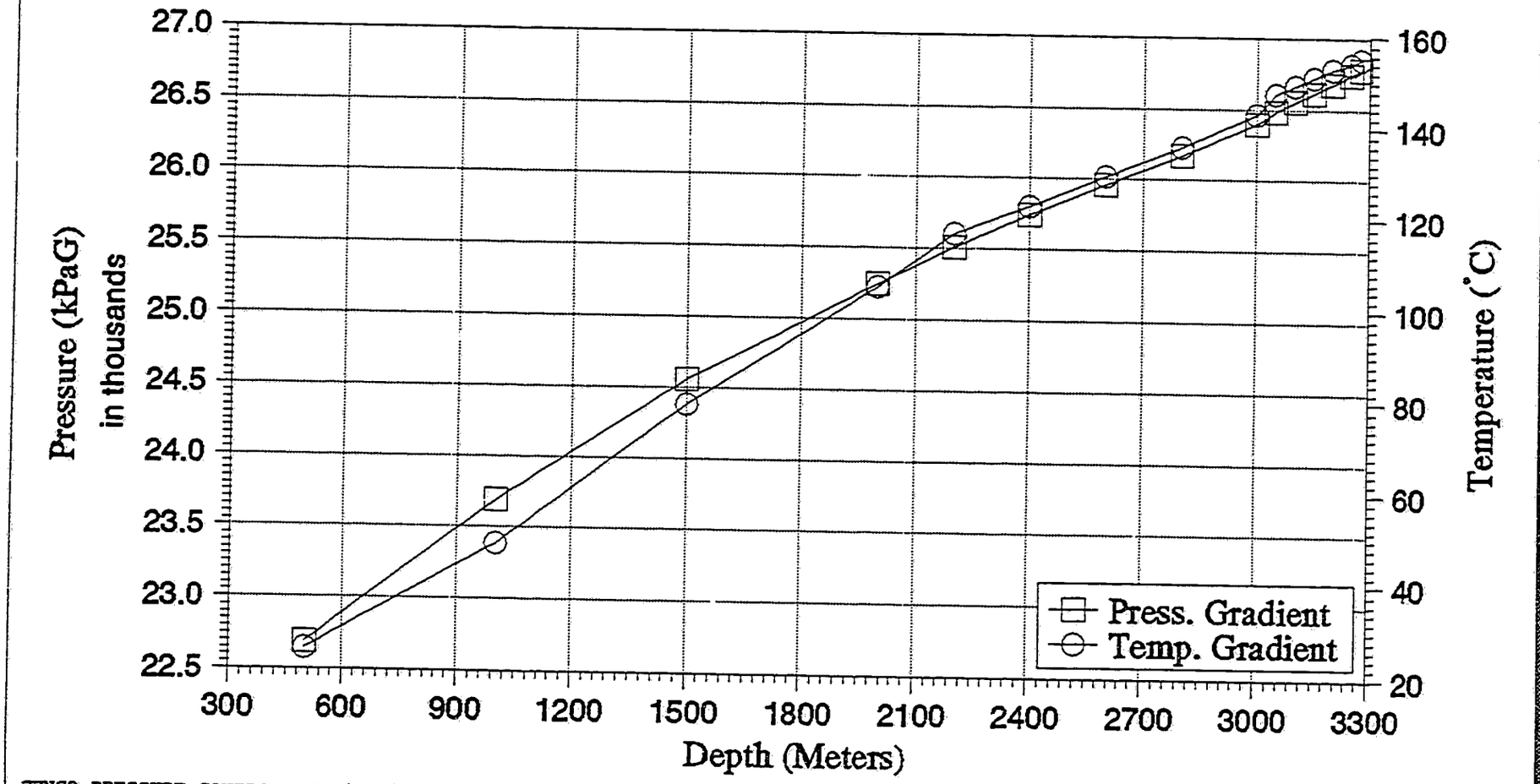
Company: **Ranger Oil Limited** LSD: **P-66-A**
Ranger Fort Liard

Bottom Gauge

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Gradient (°C/m)
At Surface: 1998/07/09 18:27:08 (Running In)				
000	21546	-----	22.2	-----
500	22691	2.29	24.6	0.005
1000	23692	2.00	47.5	0.046
1500	24554	1.72	78.5	0.062
2000	25244	1.38	104.7	0.052
2200	25507	1.31	116.4	0.059
2400	25739	1.16	122.6	0.031
2600	25959	1.10	129.3	0.034
2800	26172	1.07	135.9	0.033
3000	26397	1.12	143.1	0.036
3050	26483	1.73	147.7	0.092
3100	26553	1.40	149.6	0.038
3150	26615	1.25	151.4	0.036
3200	26678	1.26	153.1	0.034
3250	26745	1.33	154.2	0.022
3276	26781	1.40	155.3	0.042

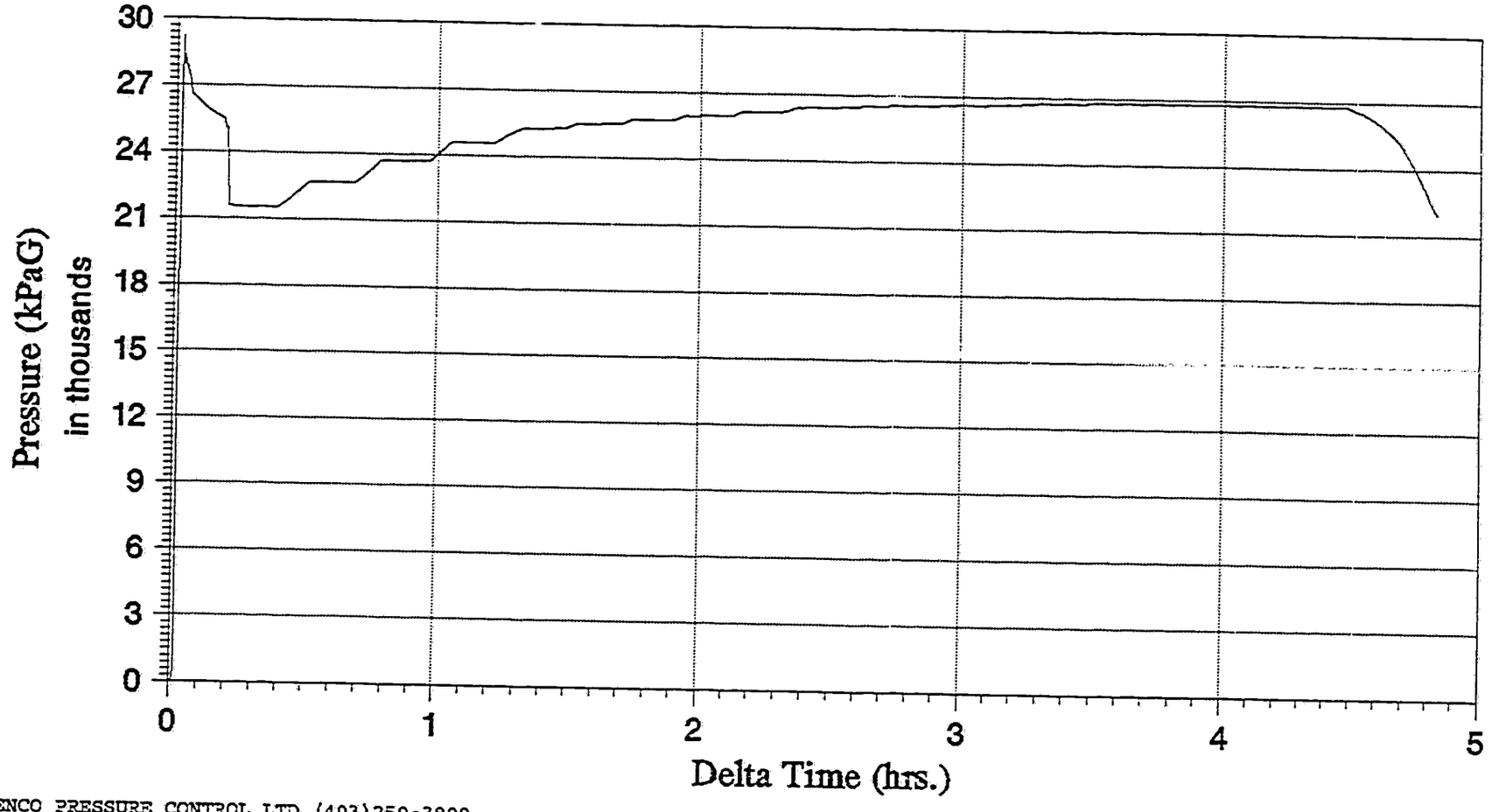
Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

Ranger Oil Limited
P-66-A
Gentronics Quartz Static Gradient Survey



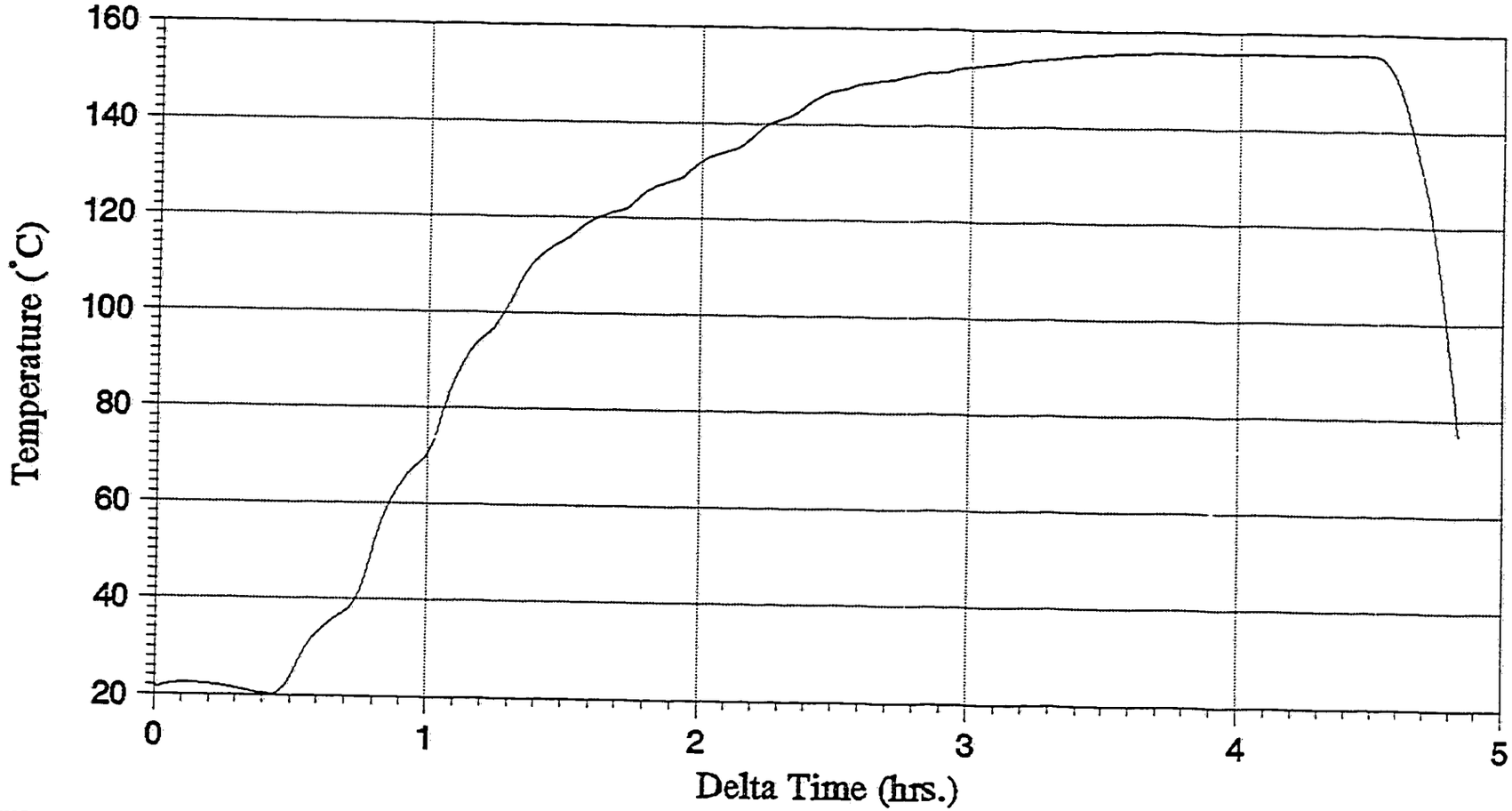
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/09 18:15:01
End Aquisition: 1998/07/09 23:09:08

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Pressures

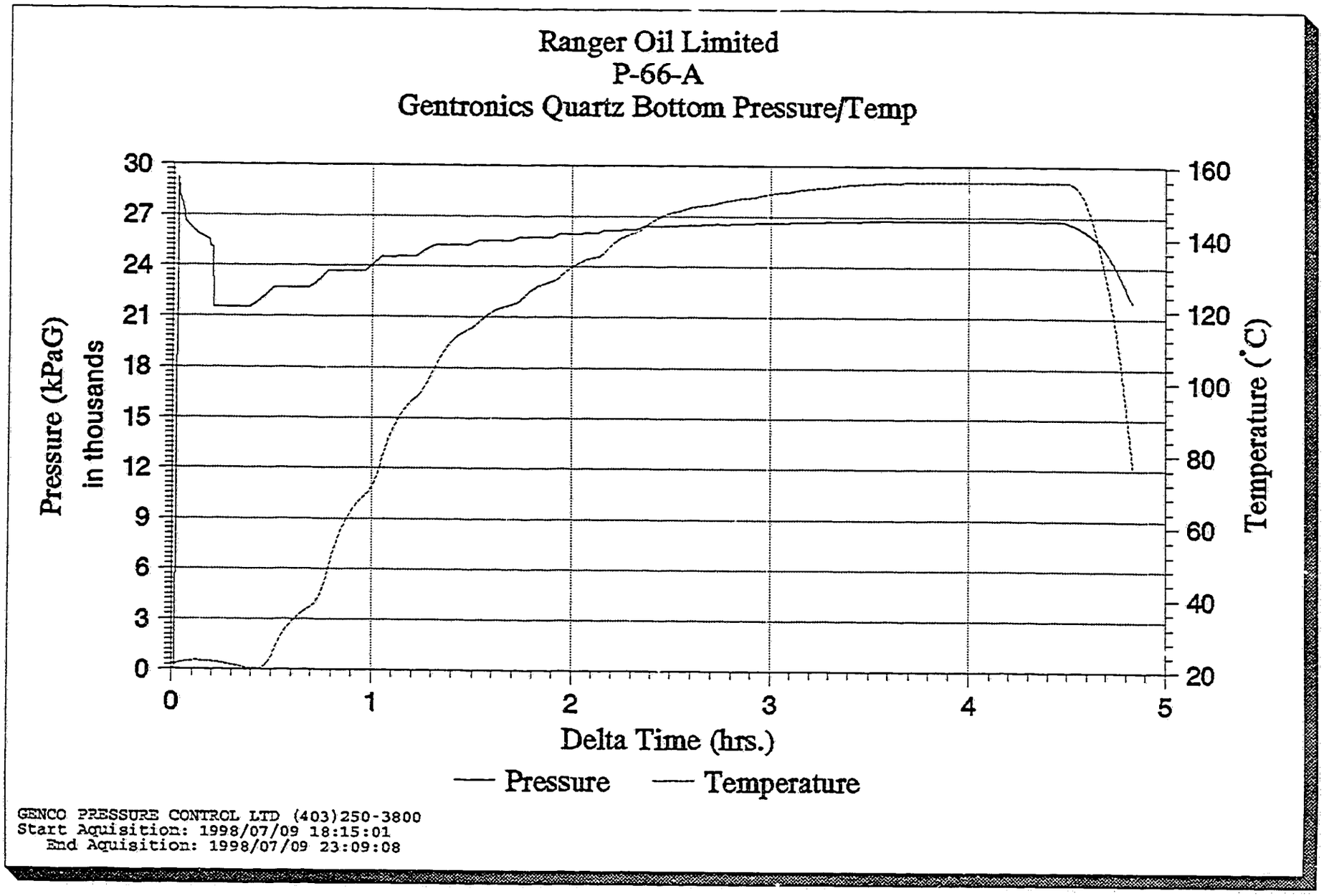


GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/09 18:15:01
End Aquisition: 1998/07/09 23:09:08

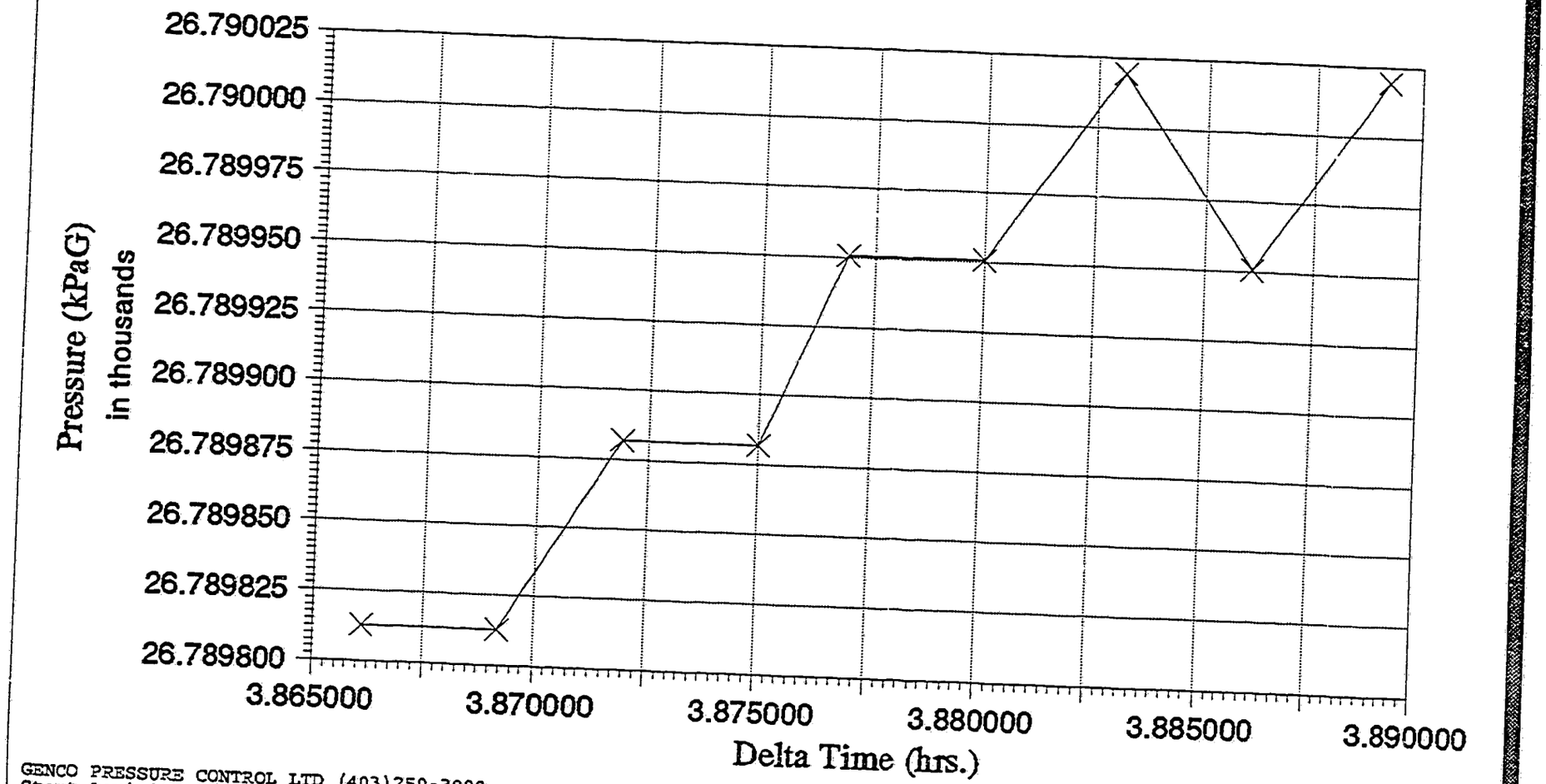
Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Temp.



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/09 18:15:01
End Aquisition: 1998/07/09 23:09:08

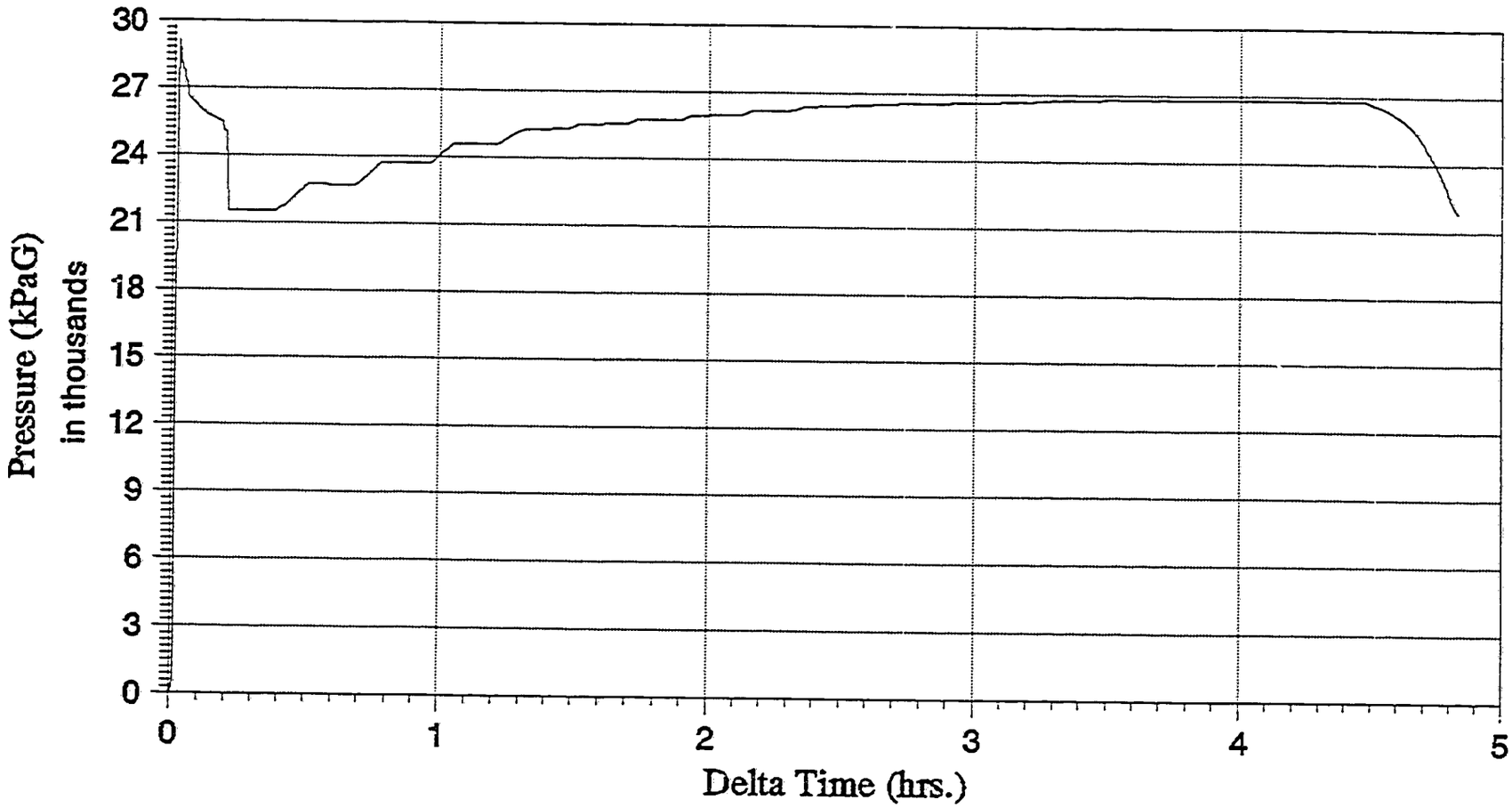

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Pressure/Temp
Pressure (kPaG)
in thousands
30
27
24
21
18
15
12
9
6
3
0
160
140
120
100
80
60
40
20
Temperature (°C)
0
1
2
3
4
5
Delta Time (hrs.)
— Pressure — Temperature
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/09 18:15:01
End Aquisition: 1998/07/09 23:09:08

Ranger Oil Limited
P-66-A
Bottom Gauge Apparent Resolution



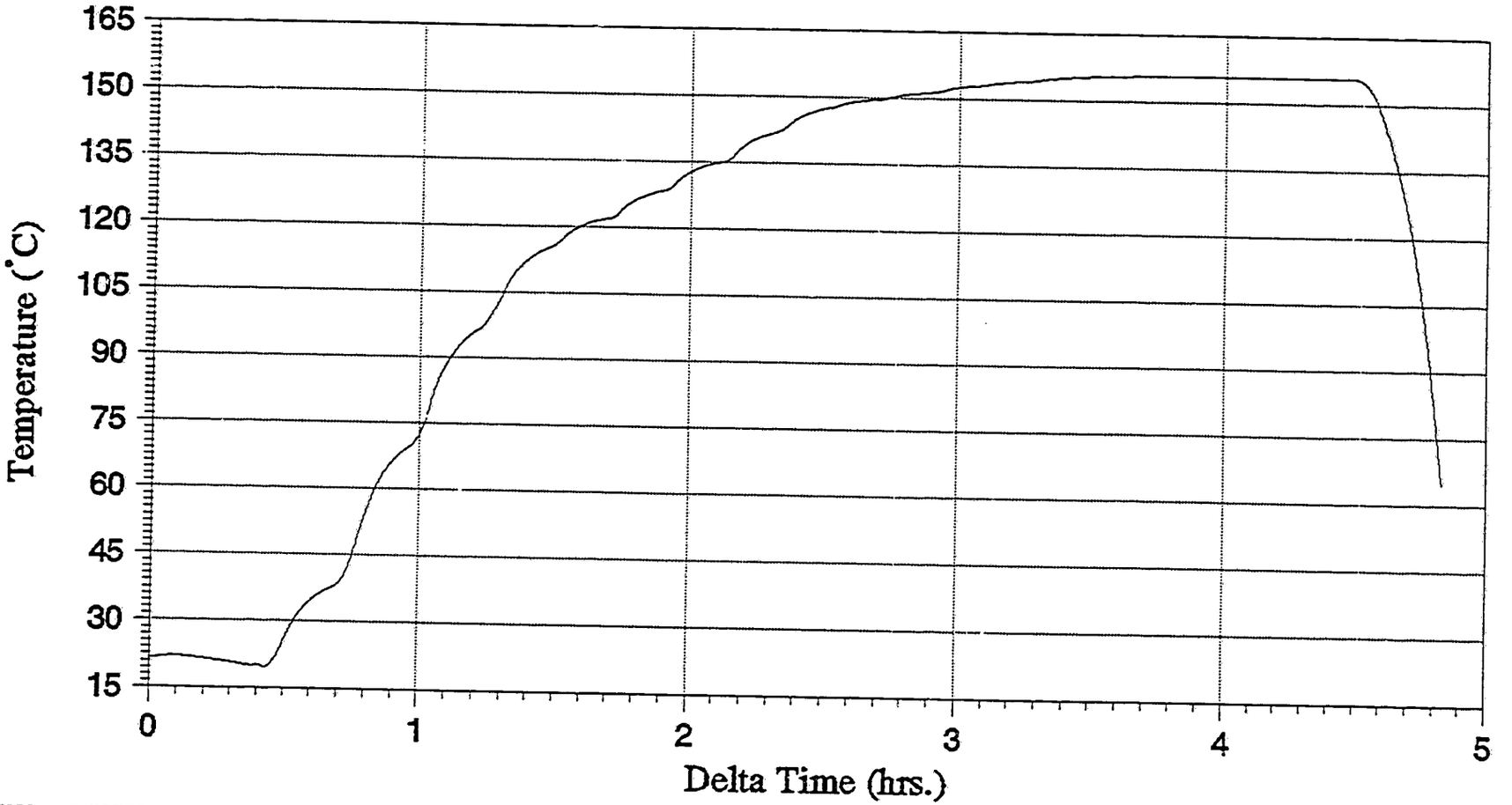
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/09 18:15:01
End Aquisition: 1998/07/09 23:09:08

Ranger Oil Limited
P-66-A
Gentronics Quartz Top Gauge Pressures



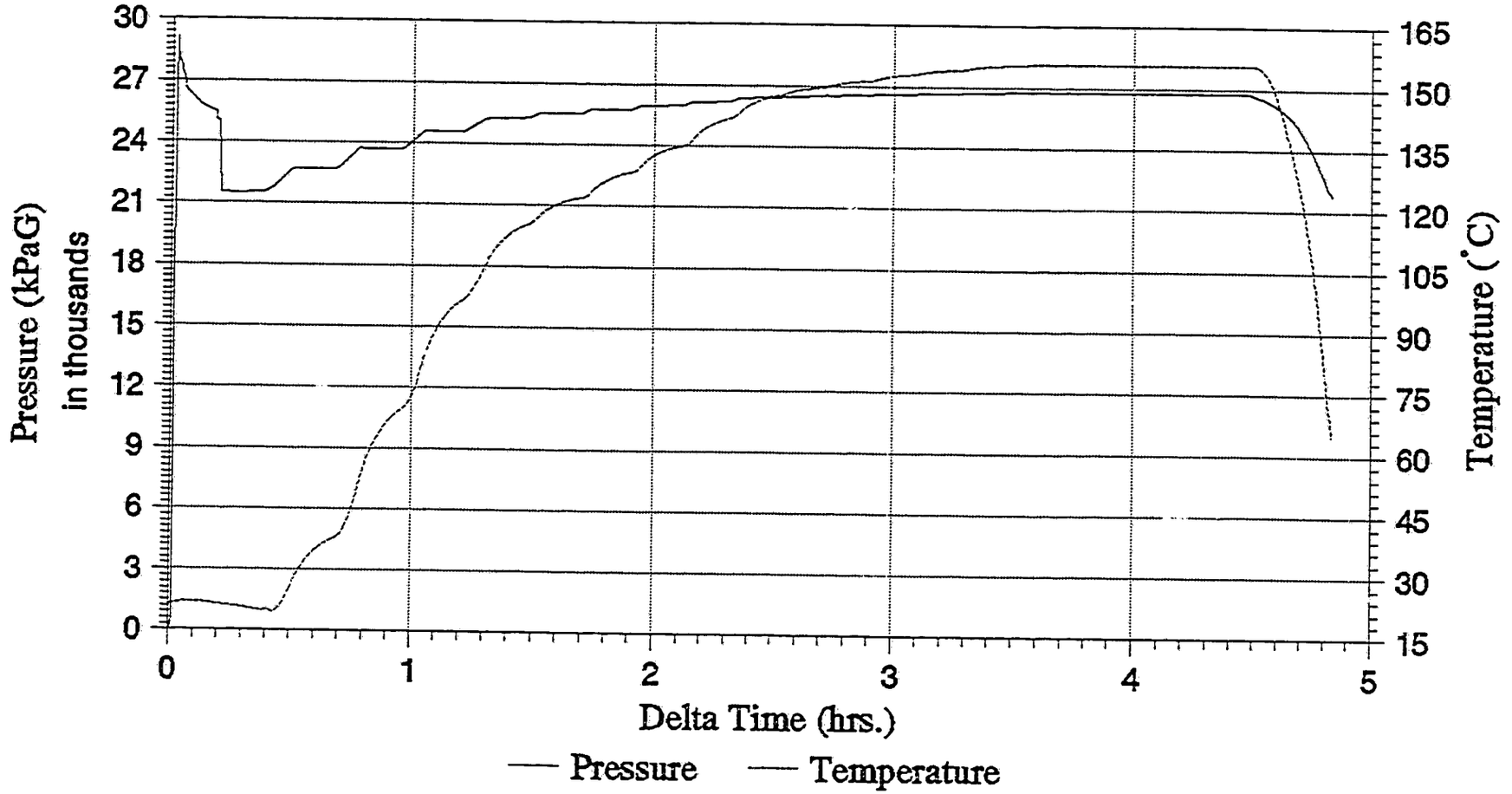
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/09 18:15:01
End Aquisition: 1998/07/09 23:09:08

Ranger Oil Limited
P-66-A
Gentronics Quartz Top Gauge Temp.



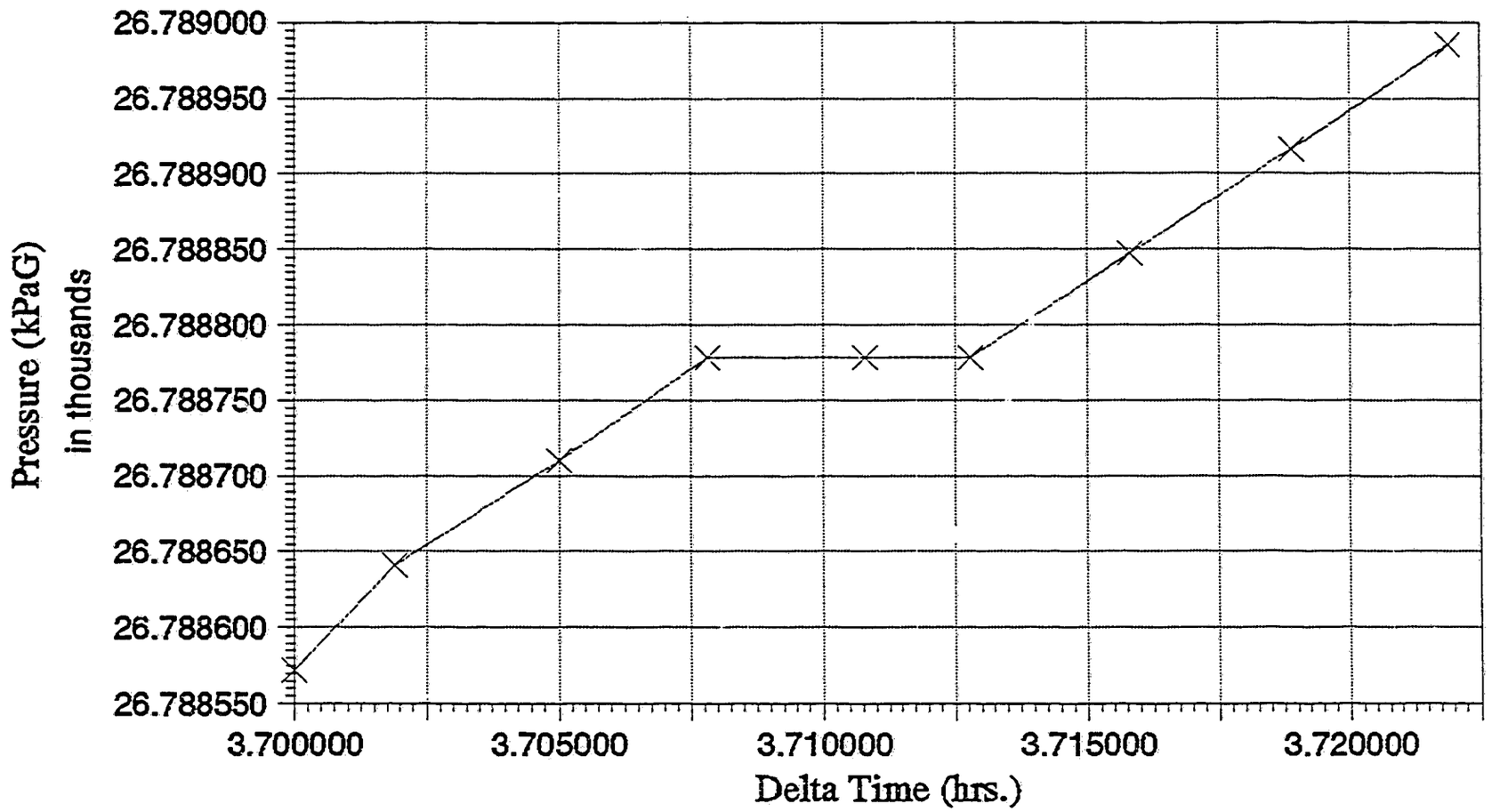
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/09 18:15:01
End Aquisition: 1998/07/09 23:09:08

Ranger Oil Limited
P-66-A
Gentronic Quartz Top Pressure/Temp



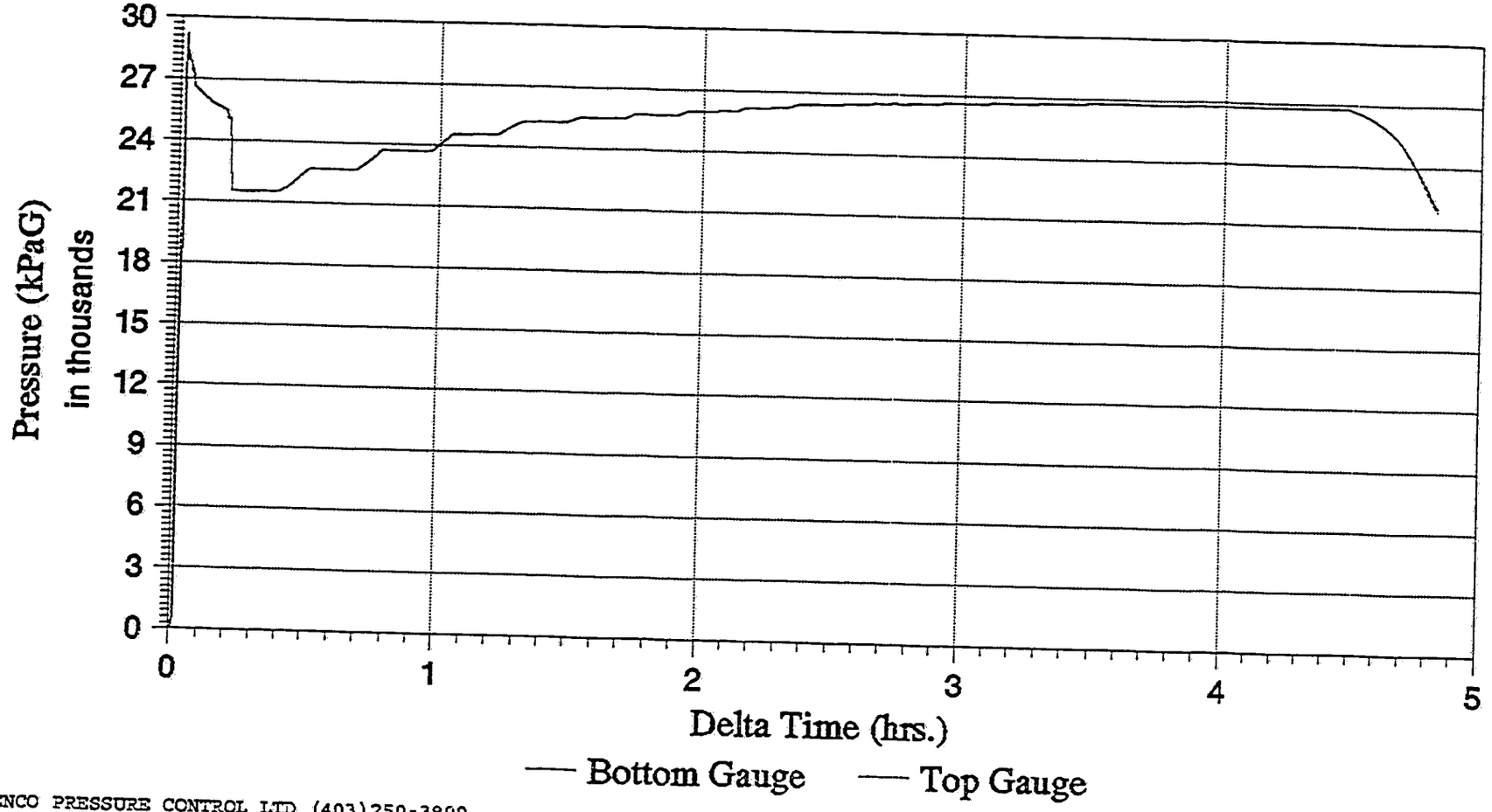
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/09 18:15:01
End Aquisition: 1998/07/09 23:09:08

Ranger Oil Limited
P-66-A
Top Gauge Apparent Resolution



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/09 18:15:01
End Aquisition: 1998/07/09 23:09:08

Ranger Oil Limited
P-66-A
Gentronics Quartz Gauge Press. Tracking



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/09 18:15:01
End Aquisition: 1998/07/09 23:09:08

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
				Begin Data Acquisition:			
1998/07/09	18:15:01	0.0000	0.0	0.0	21.6	21.6	0:
	18:16:10	0.0192	26537.9	26537.9	21.7	0.0	8:
	18:17:29	0.0411	27743.7	1205.8	22.0	0.4	16:
	18:18:52	0.0642	26546.5	-1197.2	22.3	0.2	24:
	18:20:11	0.0861	26280.7	-265.8	22.4	0.1	32:
	18:21:30	0.1081	26026.9	-253.8	22.5	0.1	40:
	18:22:49	0.1300	25815.1	-211.8	22.5	0.0	48:
	18:24:08	0.1519	25675.2	-139.8	22.4	-0.1	56:
	18:25:31	0.1750	25543.6	-131.6	22.3	-0.1	64:
	18:26:50	0.1969	25071.2	-472.4	22.2	-0.1	72:
	18:28:20	0.2219	21542.3	-3528.9	22.1	-0.2	80:
	18:29:40	0.2442	21530.0	-12.3	21.9	-0.1	88:
	18:30:59	0.2661	21526.2	-3.9	21.7	-0.2	96:
	18:32:22	0.2892	21527.4	1.2	21.5	-0.2	104:
	18:33:41	0.3111	21527.7	0.3	21.3	-0.2	112:
	18:35:00	0.3331	21529.2	1.5	21.0	-0.2	120:
	18:36:19	0.3550	21531.1	1.9	20.8	-0.2	128:
	18:37:38	0.3769	21532.3	1.2	20.5	-0.2	136:
	18:39:01	0.4000	21642.9	110.6	20.5	-0.1	144:
	18:40:20	0.4219	21812.6	169.7	20.3	-0.2	152:
	18:41:40	0.4442	22046.7	234.2	20.3	-0.1	160:
	18:42:59	0.4661	22287.6	240.8	21.2	0.9	168:
	18:44:22	0.4892	22530.3	242.7	22.8	1.6	176:
	18:45:41	0.5111	22689.8	159.5	25.2	2.4	184:
	18:47:00	0.5331	22690.8	1.0	27.8	2.5	192:
	18:48:19	0.5550	22692.9	2.1	29.9	2.1	200:
	18:49:38	0.5769	22694.5	1.6	31.7	1.8	208:
	18:51:01	0.6000	22695.7	1.2	33.2	1.5	216:
	18:52:20	0.6219	22696.9	1.2	34.5	1.3	224:
	18:53:40	0.6442	22697.1	0.1	35.5	1.1	232:
	18:54:59	0.6661	22696.5	-0.6	36.4	0.9	240:
	18:56:22	0.6892	22743.9	47.4	37.1	0.7	248:
	18:57:41	0.7111	22947.7	203.8	38.1	1.0	256:
	18:59:00	0.7331	23186.1	238.4	40.0	1.9	264:
	19:00:19	0.7550	23430.4	244.4	42.9	2.9	272:
	19:01:38	0.7769	23679.8	249.3	46.9	4.0	280:
	19:03:01	0.8000	23690.2	10.5	51.4	4.4	288:
	19:04:20	0.8219	23689.5	-0.8	55.2	3.8	296:
	19:05:40	0.8442	23688.2	-1.2	58.3	3.2	304:
	19:06:59	0.8661	23686.8	-1.4	61.0	2.7	312:
	19:08:22	0.8892	23686.3	-0.5	63.2	2.2	320:
	19:09:41	0.9111	23686.8	0.5	65.1	1.8	328:
	19:11:00	0.9331	23688.4	1.7	66.6	1.5	336:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 8 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	19:12:19	0.9550	23690.4	2.0	67.8	1.3	344:
	19:13:38	0.9769	23815.5	125.1	68.9	1.1	352:
	19:15:01	1.0000	24051.8	236.3	70.7	1.8	360:
	19:16:20	1.0219	24283.8	232.0	73.6	2.8	368:
	19:17:40	1.0442	24506.9	223.1	77.5	3.9	376:
	19:18:59	1.0661	24552.9	46.0	81.6	4.1	384:
	19:20:22	1.0892	24552.2	-0.7	84.9	3.4	392:
	19:21:41	1.1111	24554.4	2.2	87.8	2.8	400:
	19:23:00	1.1331	24557.8	3.4	90.1	2.3	408:
	19:24:19	1.1550	24563.2	5.4	92.0	1.9	416:
	19:25:38	1.1769	24568.1	4.9	93.6	1.6	424:
	19:27:01	1.2000	24573.5	5.4	94.8	1.3	432:
	19:28:20	1.2219	24616.6	43.2	95.9	1.1	440:
	19:29:40	1.2442	24785.3	168.7	97.2	1.3	448:
	19:30:59	1.2661	24958.0	172.7	99.1	1.8	456:
	19:32:22	1.2892	25109.7	151.7	101.2	2.2	464:
	19:33:41	1.3111	25217.5	107.8	103.7	2.5	472:
	19:35:00	1.3331	25242.7	25.2	106.3	2.6	480:
	19:36:19	1.3550	25247.3	4.6	108.4	2.1	488:
	19:37:38	1.3769	25254.5	7.2	110.1	1.7	496:
	19:39:01	1.4000	25262.4	7.9	111.5	1.4	504:
	19:40:20	1.4219	25270.1	7.7	112.6	1.1	512:
	19:41:40	1.4442	25277.2	7.1	113.6	0.9	520:
	19:42:59	1.4661	25283.7	6.5	114.3	0.8	528:
	19:44:22	1.4892	25321.7	38.0	114.9	0.6	536:
	19:45:41	1.5111	25435.3	113.6	115.8	0.8	544:
	19:47:00	1.5331	25504.2	68.9	116.8	1.1	552:
	19:48:19	1.5550	25504.9	0.7	117.9	1.1	560:
	19:49:38	1.5769	25508.3	3.4	118.8	0.9	568:
	19:51:01	1.6000	25513.0	4.7	119.6	0.8	576:
	19:52:20	1.6219	25517.8	4.8	120.2	0.6	584:
	19:53:40	1.6442	25522.5	4.7	120.7	0.5	592:
	19:54:59	1.6661	25526.6	4.1	121.1	0.4	600:
	19:56:22	1.6892	25530.1	3.5	121.4	0.3	608:
	19:57:41	1.7111	25591.4	61.3	121.7	0.3	616:
	19:59:00	1.7331	25726.9	135.6	122.4	0.7	624:
	20:00:19	1.7550	25730.5	3.5	123.7	1.3	632:
	20:01:38	1.7769	25730.2	-0.3	124.8	1.1	640:
	20:03:01	1.8000	25733.8	3.6	125.7	0.9	648:
	20:04:20	1.8219	25738.8	5.0	126.4	0.7	656:
	20:05:40	1.8442	25744.0	5.2	126.9	0.6	664:
	20:06:59	1.8661	25749.1	5.0	127.4	0.5	672:
	20:08:22	1.8892	25753.5	4.4	127.8	0.4	680:
	20:09:41	1.9111	25778.2	24.7	128.2	0.3	688:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 8 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	20:11:00	1.9331	25910.0	131.8	128.6	0.6	696:
	20:12:19	1.9550	25950.5	40.5	130.0	1.2	704:
	20:13:38	1.9769	25949.5	-1.0	131.1	1.1	712:
	20:15:01	2.0000	25953.4	3.9	131.9	0.8	720:
	20:16:20	2.0219	25959.3	5.9	132.7	0.7	728:
	20:17:40	2.0442	25965.7	6.3	133.3	0.6	736:
	20:18:59	2.0661	25971.1	5.4	133.8	0.5	744:
	20:20:22	2.0892	25976.1	5.0	134.2	0.4	752:
	20:21:41	2.1111	25980.5	4.4	134.5	0.3	760:
	20:23:00	2.1331	26013.1	32.5	134.8	0.3	768:
	20:24:19	2.1550	26131.3	118.2	135.5	0.7	776:
	20:25:38	2.1769	26163.5	32.1	136.8	1.3	784:
	20:27:01	2.2000	26161.5	-2.0	138.0	1.2	792:
	20:28:20	2.2219	26166.1	4.6	138.9	0.9	800:
	20:29:40	2.2442	26173.4	7.3	139.7	0.8	808:
	20:30:59	2.2661	26181.0	7.6	140.3	0.6	816:
	20:32:22	2.2892	26188.1	7.1	140.9	0.6	824:
	20:33:41	2.3111	26194.4	6.3	141.3	0.4	832:
	20:35:00	2.3331	26242.7	48.3	141.8	0.4	840:
	20:36:19	2.3550	26341.6	98.9	142.4	0.7	848:
	20:37:38	2.3769	26390.2	48.6	143.5	1.1	856:
	20:39:01	2.4000	26389.5	-0.8	144.4	0.9	864:
	20:40:20	2.4219	26395.1	5.7	145.2	0.8	872:
	20:41:40	2.4442	26402.7	7.5	145.9	0.7	880:
	20:42:59	2.4661	26410.4	7.7	146.4	0.5	888:
	20:44:22	2.4892	26417.4	7.0	146.8	0.4	896:
	20:45:41	2.5111	26423.6	6.1	147.2	0.3	904:
	20:47:00	2.5331	26432.0	8.4	147.4	0.3	912:
	20:48:19	2.5550	26480.0	48.1	147.8	0.4	920:
	20:49:38	2.5769	26481.0	1.0	148.2	0.4	928:
	20:51:01	2.6000	26484.5	3.5	148.6	0.3	936:
	20:52:20	2.6219	26488.1	3.6	148.8	0.2	944:
	20:53:40	2.6442	26491.5	3.4	149.0	0.2	952:
	20:54:59	2.6661	26494.4	2.9	149.2	0.2	960:
	20:56:22	2.6892	26497.1	2.7	149.3	0.2	968:
	20:57:41	2.7111	26508.3	11.2	149.4	0.1	976:
	20:59:00	2.7331	26546.6	38.3	149.7	0.3	984:
	21:00:19	2.7550	26542.4	-4.2	150.1	0.4	992:
	21:01:38	2.7769	26543.0	0.6	150.4	0.3	1000:
	21:03:01	2.8000	26545.2	2.2	150.7	0.3	1008:
	21:04:20	2.8219	26548.2	3.0	150.8	0.2	1016:
	21:05:40	2.8442	26551.2	3.0	151.0	0.2	1024:
	21:06:59	2.8661	26553.8	2.6	151.2	0.2	1032:
	21:08:22	2.8892	26556.3	2.5	151.3	0.1	1040:

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 8 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	21:09:41	2.9111	26572.6	16.3	151.4	0.1	1048:
	21:11:00	2.9331	26608.6	36.0	151.6	0.2	1056:
	21:12:19	2.9550	26605.6	-3.0	151.9	0.3	1064:
	21:13:38	2.9769	26606.6	1.0	152.2	0.3	1072:
	21:15:01	3.0000	26609.0	2.4	152.4	0.2	1080:
	21:16:20	3.0219	26611.6	2.6	152.6	0.2	1088:
	21:17:40	3.0442	26614.2	2.6	152.7	0.1	1096:
	21:18:59	3.0661	26616.5	2.3	152.8	0.1	1104:
	21:20:22	3.0892	26618.5	2.0	152.9	0.1	1112:
	21:21:41	3.1111	26676.1	57.6	153.1	0.2	1120:
	21:23:00	3.1331	26673.7	-2.4	153.3	0.2	1128:
	21:24:19	3.1550	26674.5	0.8	153.6	0.2	1136:
	21:25:38	3.1769	26676.2	1.7	153.7	0.2	1144:
	21:27:01	3.2000	26678.2	2.0	153.8	0.1	1152:
	21:28:20	3.2219	26679.8	1.6	153.9	0.1	1160:
	21:29:40	3.2442	26681.8	2.0	154.1	0.1	1168:
	21:30:59	3.2661	26683.4	1.6	154.1	0.1	1176:
	21:32:22	3.2892	26723.4	40.1	154.2	0.1	1184:
	21:33:41	3.3111	26739.2	15.8	154.4	0.2	1192:
	21:35:00	3.3331	26738.0	-1.2	154.6	0.2	1200:
	21:36:19	3.3550	26739.1	1.1	154.8	0.2	1208:
	21:37:38	3.3769	26740.6	1.4	154.9	0.1	1216:
	21:39:01	3.4000	26742.3	1.7	155.0	0.1	1224:
	21:40:20	3.4219	26744.3	2.0	155.1	0.1	1232:
	21:41:40	3.4442	26745.8	1.5	155.2	0.1	1240:
	21:42:59	3.4661	26752.7	6.9	155.3	0.1	1248:
	21:44:22	3.4892	26780.7	28.0	155.3	0.1	1256:
	21:45:41	3.5111	26781.7	1.0	155.4	0.1	1264:
	21:47:00	3.5331	26782.9	1.2	155.5	0.1	1272:
	21:48:19	3.5550	26784.1	1.2	155.6	0.1	1280:
	21:49:38	3.5769	26784.9	0.8	155.6	0.0	1288:
	21:51:01	3.6000	26785.7	0.8	155.6	0.1	1296:
	21:52:20	3.6219	26786.4	0.7	155.7	0.1	1304:
	21:53:40	3.6442	26787.0	0.6	155.7	0.0	1312:
	21:54:59	3.6661	26787.4	0.4	155.7	0.0	1320:
	21:56:22	3.6892	26787.8	0.4	155.7	0.1	1328:
	21:57:41	3.7111	26788.3	0.5	155.7	0.0	1336:
	21:59:00	3.7331	26788.6	0.3	155.7	0.0	1344:
	22:00:19	3.7550	26788.8	0.2	155.8	0.1	1352:
	22:01:38	3.7769	26789.1	0.3	155.8	0.0	1360:
	22:03:01	3.8000	26789.3	0.3	155.8	0.0	1368:
	22:04:20	3.8219	26789.3	0.0	155.8	0.0	1376:
	22:05:40	3.8442	26789.7	0.3	155.8	0.0	1384:
	22:06:59	3.8661	26789.8	0.1	155.8	0.0	1392:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 8 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	22:08:22	3.8892	26790.0	0.2	155.8	0.0	1400:
	22:09:41	3.9111	26790.1	0.1	155.8	0.0	1408:
	22:11:00	3.9331	26790.2	0.1	155.8	0.1	1416:
	22:12:19	3.9550	26790.2	0.0	155.8	0.0	1424:
	22:13:38	3.9769	26790.4	0.2	155.8	0.0	1432:
	22:15:01	4.0000	26790.5	0.1	155.8	0.0	1440:
	22:16:20	4.0219	26790.4	-0.1	155.8	0.0	1448:
	22:17:40	4.0442	26790.5	0.1	155.8	0.0	1456:
	22:18:59	4.0661	26790.7	0.2	155.8	0.0	1464:
	22:20:22	4.0892	26790.8	0.1	155.8	0.0	1472:
	22:21:41	4.1111	26790.8	0.0	155.8	0.0	1480:
	22:23:00	4.1331	26790.8	0.1	155.8	0.0	1488:
	22:24:19	4.1550	26791.1	0.2	155.8	0.0	1496:
	22:25:38	4.1769	26790.9	-0.1	155.8	0.0	1504:
	22:27:01	4.2000	26791.0	0.1	155.8	0.0	1512:
	22:28:20	4.2219	26791.0	0.0	155.8	0.0	1520:
	22:29:40	4.2442	26791.1	0.1	155.8	0.0	1528:
	22:30:59	4.2661	26791.1	0.0	155.8	0.0	1536:
	22:32:22	4.2892	26791.3	0.1	155.8	0.0	1544:
	22:33:41	4.3111	26791.3	0.1	155.8	0.0	1552:
	22:35:00	4.3331	26791.4	0.1	155.8	0.0	1560:
	22:36:19	4.3550	26791.3	-0.1	155.8	0.0	1568:
	22:37:38	4.3769	26791.4	0.1	155.8	0.0	1576:
	22:39:01	4.4000	26791.5	0.1	155.8	0.0	1584:
	22:40:20	4.4219	26791.4	-0.1	155.8	0.0	1592:
	22:41:40	4.4442	26791.6	0.2	155.8	0.0	1600:
	22:42:59	4.4661	26791.6	0.0	155.8	0.0	1608:
	22:44:22	4.4892	26749.8	-41.9	155.8	0.0	1616:
	22:45:41	4.5111	26639.8	-110.0	155.7	-0.1	1624:
	22:47:00	4.5331	26549.7	-90.0	155.2	-0.6	1632:
	22:48:19	4.5550	26419.3	-130.5	154.0	-1.2	1640:
	22:49:38	4.5769	26267.4	-151.9	152.2	-1.8	1648:
	22:51:01	4.6000	26096.7	-170.7	149.6	-2.7	1656:
	22:52:20	4.6219	25908.7	-188.0	146.0	-3.6	1664:
	22:53:40	4.6442	25697.2	-211.5	141.7	-4.3	1672:
	22:54:59	4.6661	25452.0	-245.3	137.1	-4.7	1680:
	22:56:22	4.6892	25134.5	-317.4	132.1	-5.0	1688:
	22:57:41	4.7111	24731.5	-403.0	126.6	-5.5	1696:
	22:59:00	4.7331	24299.3	-432.2	120.2	-6.3	1704:
	23:00:19	4.7550	23829.0	-470.3	112.4	-7.8	1712:
	23:01:38	4.7769	23303.7	-525.3	103.4	-9.1	1720:
	23:03:01	4.8000	22736.7	-567.0	93.1	-10.3	1728:
	23:04:20	4.8219	22176.9	-559.7	82.3	-10.8	1736:
	23:05:40	4.8442	21799.4	-377.5	71.6	-10.7	1744:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 8 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	23:06:59	4.8661	21618.9	-180.5	62.5	-9.1	1752:
	23:08:22	4.8892	21587.7	-31.2	55.1	-7.4	1760:
1998/07/09	23:09:08	4.9019	15714.2	-5873.4	51.0	-4.1	1764:
				End Data Acquisition:			

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 3 data points.

WELL COPY

RANGER OIL LIMITED

RANGER ~~FORT~~ NORTH LIARD
P-66-A

STATIC GRADIENT

JULY 14, 1998

(403) 250-3800

GENCO Pressure Control Limited

SUBSURFACE PRESSURE MEASUREMENTS

CALGARY, AB.

Basic Data:

Company Ranger Oil Limited
Address #1600, 321 - 6Th. Ave. S.W.
Calgary, AB.
T2P 3H3

Gentronics Electronic Gauge
c/w Memory Recorder
S/N: GMQ-9804

Well Name	Ranger Fort Liard	Field & Pool	Liard / Nihanni
Well Identifier	P-66-A	Type of Test	Static Gradient
Status	Shut in Gas	Date of Test	Jul 14, 1998
DWG Tubing Pressure	21570 kPa	DWG Casing Pressure	N/A kPa
Tubing	88.9 mm @ 3082.4 m KB	Casing	177.8 mm @ 3499.0 m KB
Producing Interval	3115 - 3334 m KB	Producing Through	Tubing
Elevation	449.54 m CF, 459.89 m KB	MPP Interval	3214.2 m CF
Datum Depth of Well	m CF	Run Depth	3347 m CF
Temperature at Run Depth	157.7 °C	Pool Datum	m (subsea)
Pressure at Run Depth	27285 kPaG	Gradient at Run Depth	9.99 kPa/m
MPP Pressure	26654 kPaG	Datum Depth Pressure	kPaG
Final Buildup Pressure	27285 kPaG	Date on Bottom	July 14, 1998
Date off Bottom	July 14, 1998	Shut in Date	July 12, 1998

Summary:

Tandem LMR Quartz Recorders ran within specifications.

Preparation Data:

Tested By GENCO Computed By P. Mulgrew Report Date Jul 31, 1998

BOTTOM GAUGE

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800

Calgary, AB.

OPERATIONS SUMMARY

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A

Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/07/14	14:38:01	0.0000	23.4	21.5	1	Begin Data Acquisition
	14:56:30	0.3081	1450.4	20.6	571	Pressure Test Lubricator
	15:19:20	0.6886	21572.3	21.3	706	@ surface
	15:37:40	0.9942	23675.2	42.1	816	@ 1000 mCF
	15:53:20	1.2553	24521.2	81.4	910	@ 1500 mCF
	16:09:10	1.5192	25193.8	104.4	1005	@ 2000 mCF
	16:23:50	1.7636	25737.9	120.6	1093	@ 2500 mCF
	16:39:20	2.0219	26252.0	137.7	1186	@ 3000 mCF
	16:50:30	2.2081	26438.2	147.3	1253	@ 3080 mCF
	17:01:30	2.3914	26498.4	150.6	1319	@ 3100 mCF
	17:12:40	2.5775	26533.3	151.8	1386	@ 3120 mCF
	17:23:30	2.7581	26560.8	152.5	1451	@ 3140 mCF
	17:34:40	2.9442	26586.5	153.2	1518	@ 3160 mCF
	17:45:30	3.1247	26612.5	153.7	1583	@ 3180 mCF
	17:56:40	3.3108	26636.2	154.2	1650	@ 3200 mCF
	18:07:40	3.4942	26661.6	154.6	1716	@ 3220 mCF
	18:18:40	3.6775	26686.8	155.1	1782	@ 3240 mCF
	18:29:30	3.8581	26712.5	155.5	1847	@ 3260 mCF
	18:40:40	4.0442	26738.9	155.9	1914	@ 3280 mCF
	18:51:40	4.2275	26878.8	155.9	1980	@ 3300 mCF
	19:02:40	4.4108	27044.4	156.8	2046	@ 3320 mCF
	19:13:40	4.5942	27215.3	157.3	2112	@ 3340 mCF
	19:24:00	4.7664	27285.2	157.7	2174	@ 3347 mCF (run depth)

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

OPERATIONS SUMMARY

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/07/14	19:36:40	4.9775	27276.6	157.9	2250	Recorders Off Bottom
	20:12:40	5.5775	23.2	32.4	2462	End Data Acquisition

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

STATIC GRADIENT SURVEY

Company: **Ranger Oil Limited** LSD: **P-66-A**
Ranger Fort Liard

Bottom Gauge

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Gradient (°C/m)
At Surface: 1998/07/14 15:19:20 (Running In)				
000	21572	-----	21.3	-----
1000	23675	2.10	42.1	0.021
1500	24521	1.69	81.4	0.079
2000	25194	1.35	104.4	0.046
2500	25738	1.09	120.6	0.032
3000	26252	1.03	137.7	0.034
3080	26438	2.33	147.3	0.120
3100	26498	3.01	150.6	0.165
3120	26533	1.74	151.8	0.060
3140	26561	1.38	152.5	0.035
3160	26587	1.29	153.2	0.035
3180	26613	1.30	153.7	0.025
3200	26636	1.19	154.2	0.025
3220	26662	1.27	154.6	0.020
3240	26687	1.26	155.1	0.025
3260	26713	1.29	155.5	0.020
3280	26739	1.32	155.9	0.020
3300	26879	6.99	155.9	-----
3320	27044	8.28	156.8	0.045
3340	27215	8.54	157.3	0.025

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

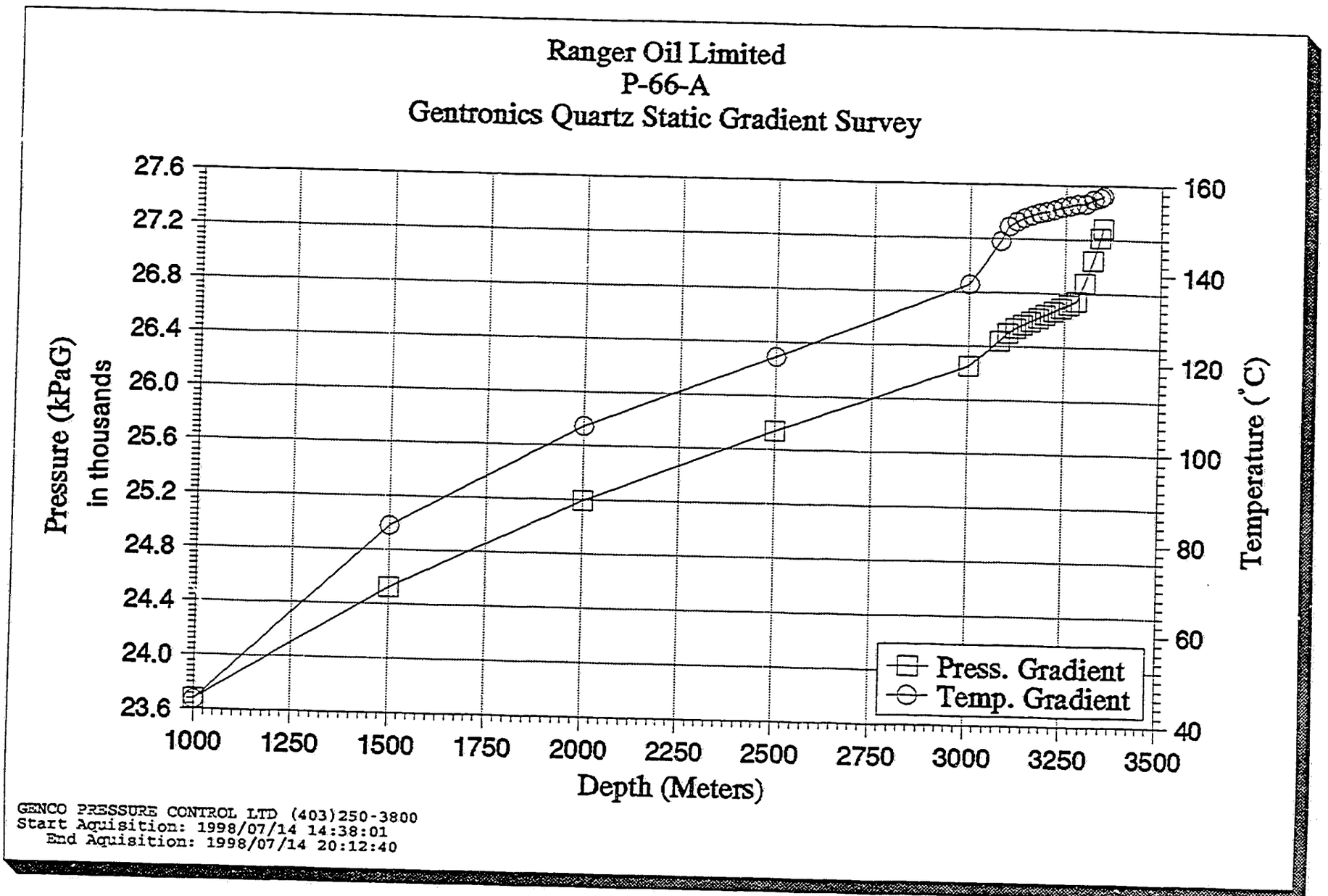
STATIC GRADIENT SURVEY

Company: **Ranger Oil Limited**
Ranger Fort Liard

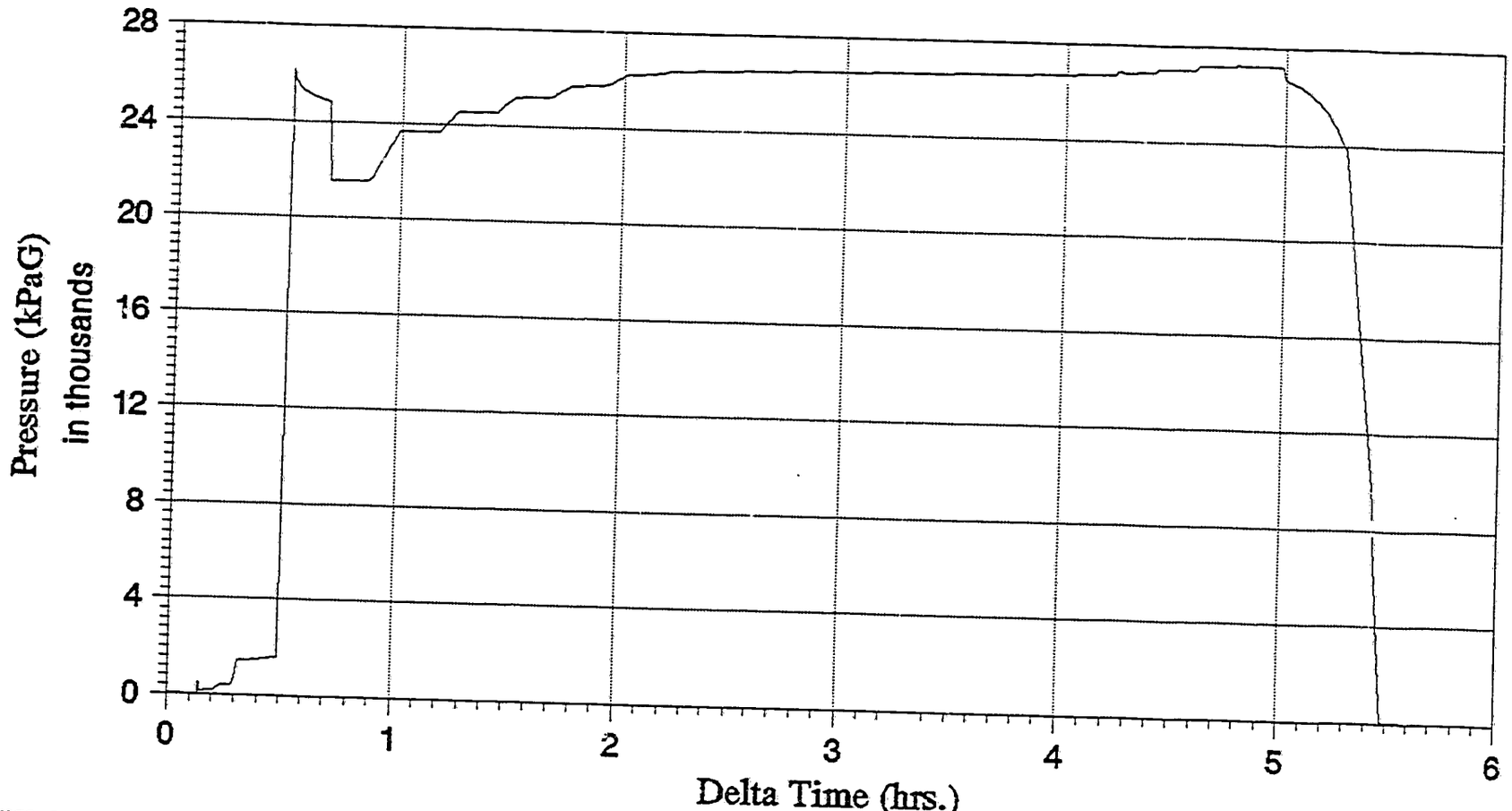
LSD: P-66-A

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Bottom Gauge Gradient (°C/m)
At Surface: 1998/07/14 15:19:20 (Running In)				
3347	27285	9.99	157.7	0.057

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

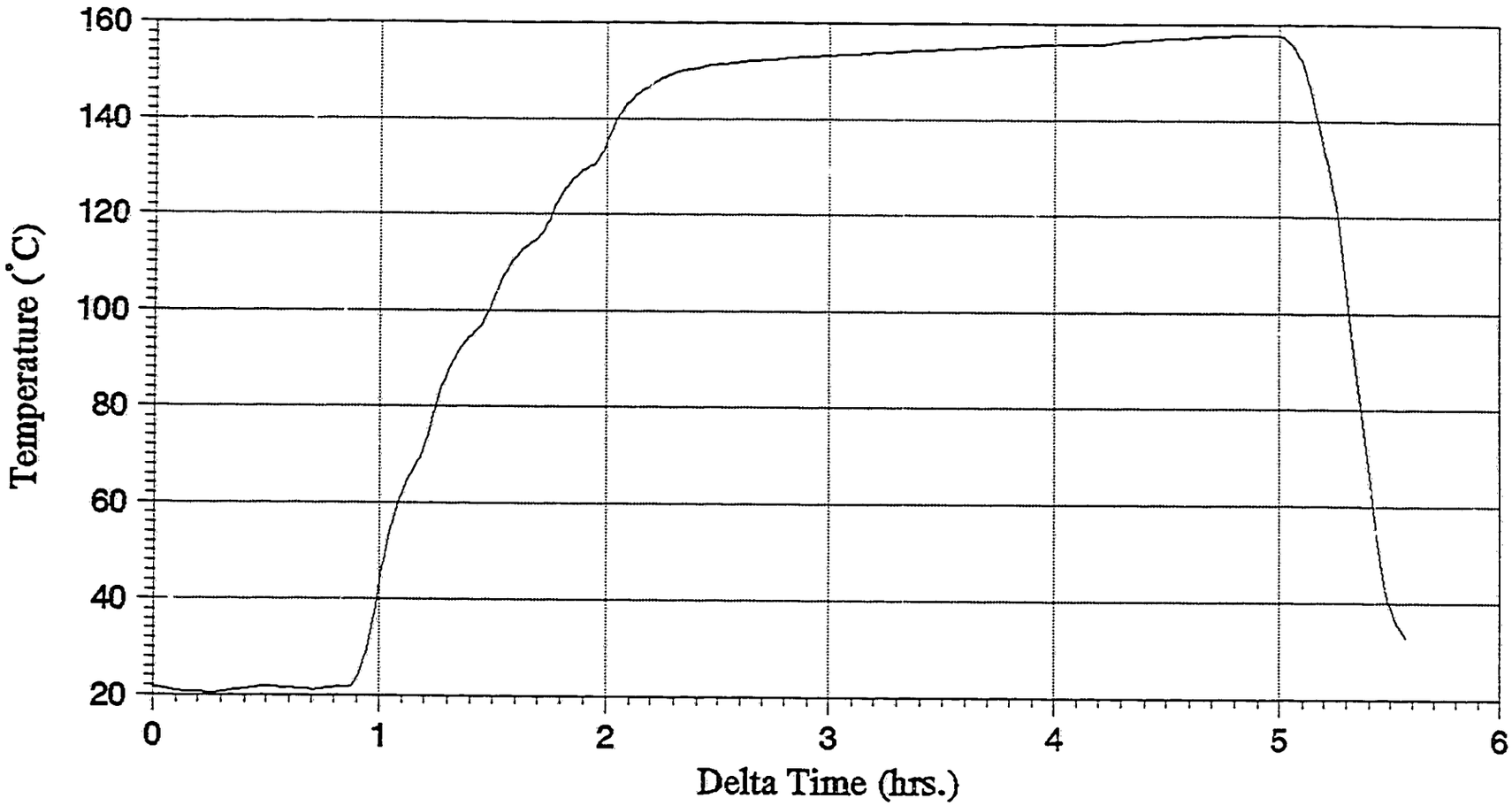

Ranger Oil Limited
P-66-A
Gentronics Quartz Static Gradient Survey
Pressure (kPaG)
in thousands
27.6
27.2
26.8
26.4
26.0
25.6
25.2
24.8
24.4
24.0
23.6
Temperature (°C)
160
140
120
100
80
60
40
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
Depth (Meters)
Press. Gradient
Temp. Gradient
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/14 14:38:01
End Aquisition: 1998/07/14 20:12:40

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Pressures

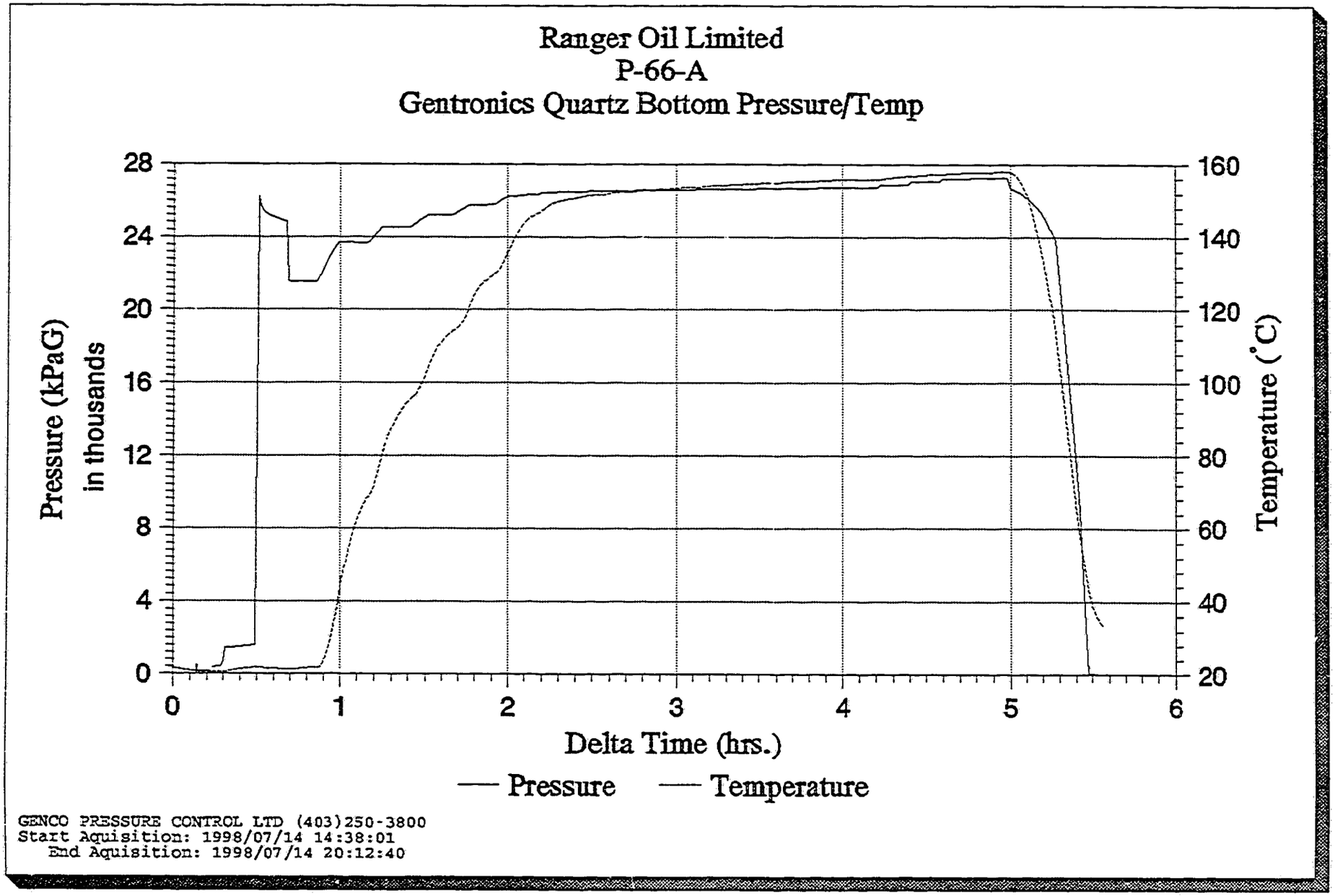


GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/14 14:38:01
End Aquisition: 1998/07/14 20:12:40

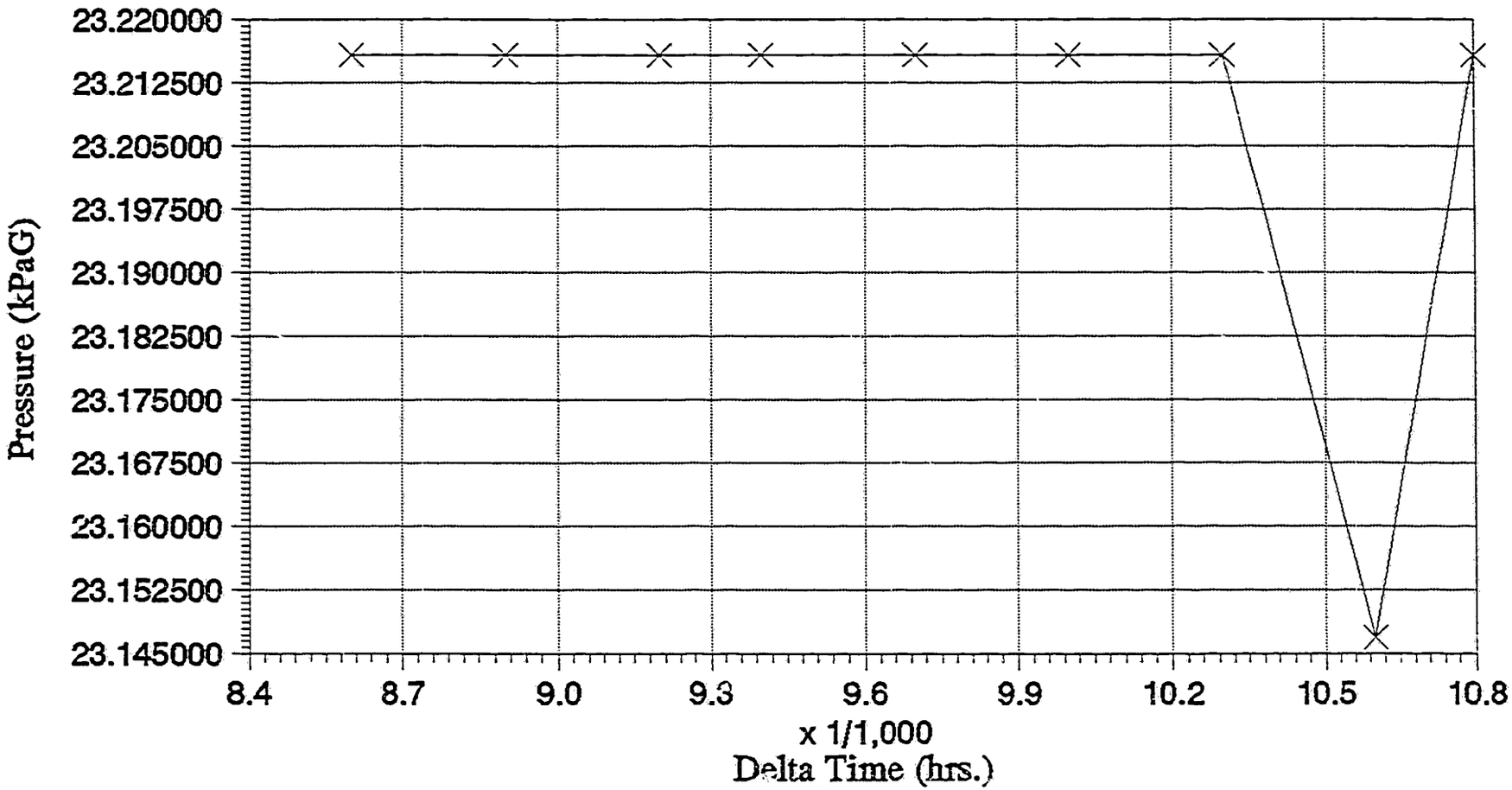
Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Temp.



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/14 14:38:01
End Aquisition: 1998/07/14 20:12:40

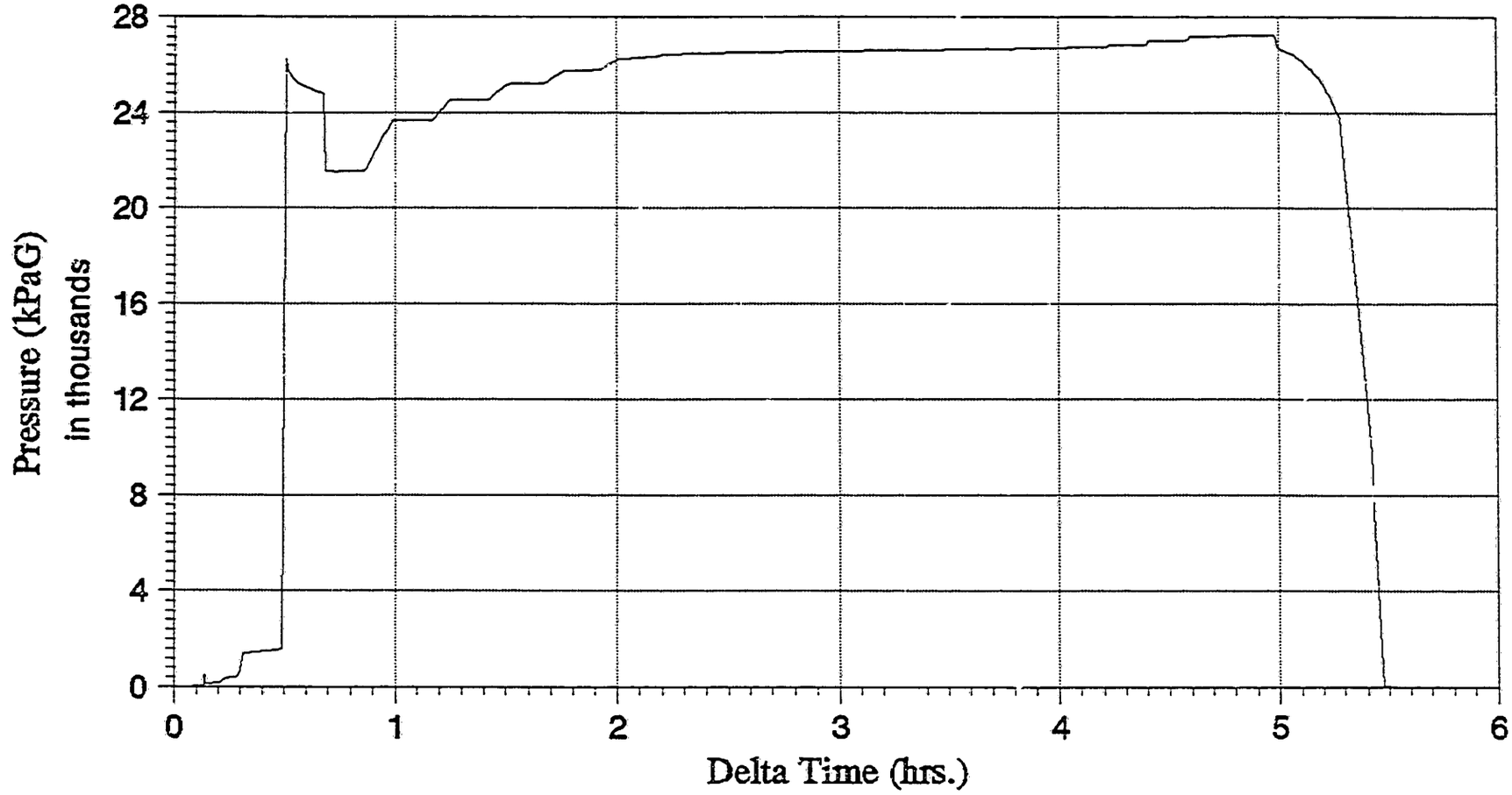

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Pressure/Temp
Pressure (kPaG)
in thousands
28
24
20
16
12
8
4
0
160
140
120
100
80
60
40
20
Temperature (°C)
0
1
2
3
4
5
6
Delta Time (hrs.)
— Pressure — Temperature
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/14 14:38:01
End Aquisition: 1998/07/14 20:12:40

Ranger Oil Limited
P-66-A
Bottom Gauge Apparent Resolution



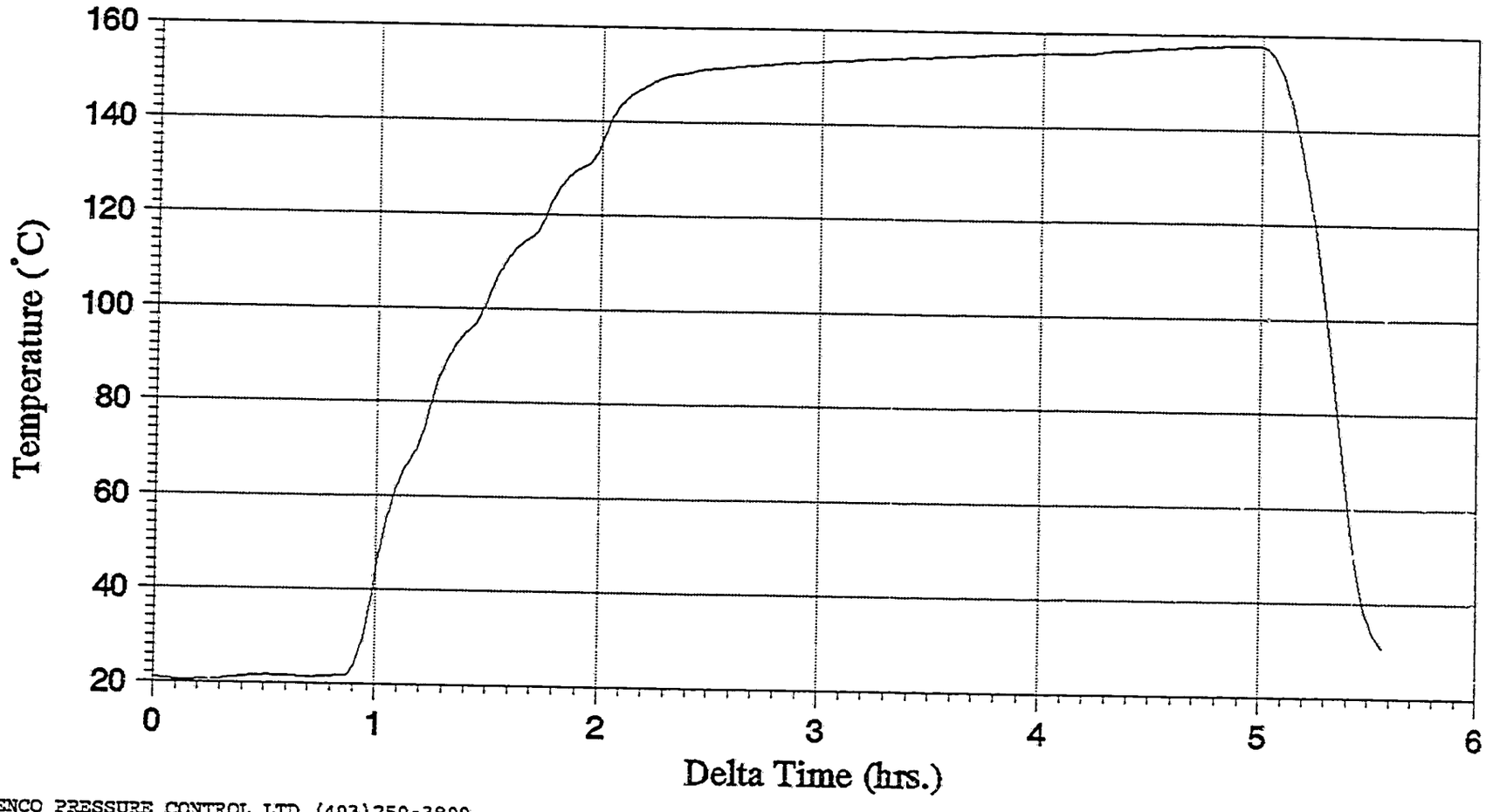
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/14 14:38:01
End Aquisition: 1998/07/14 20:12:40

Ranger Oil Limited
P-66-A
Gentronics Quartz Top Gauge Pressures



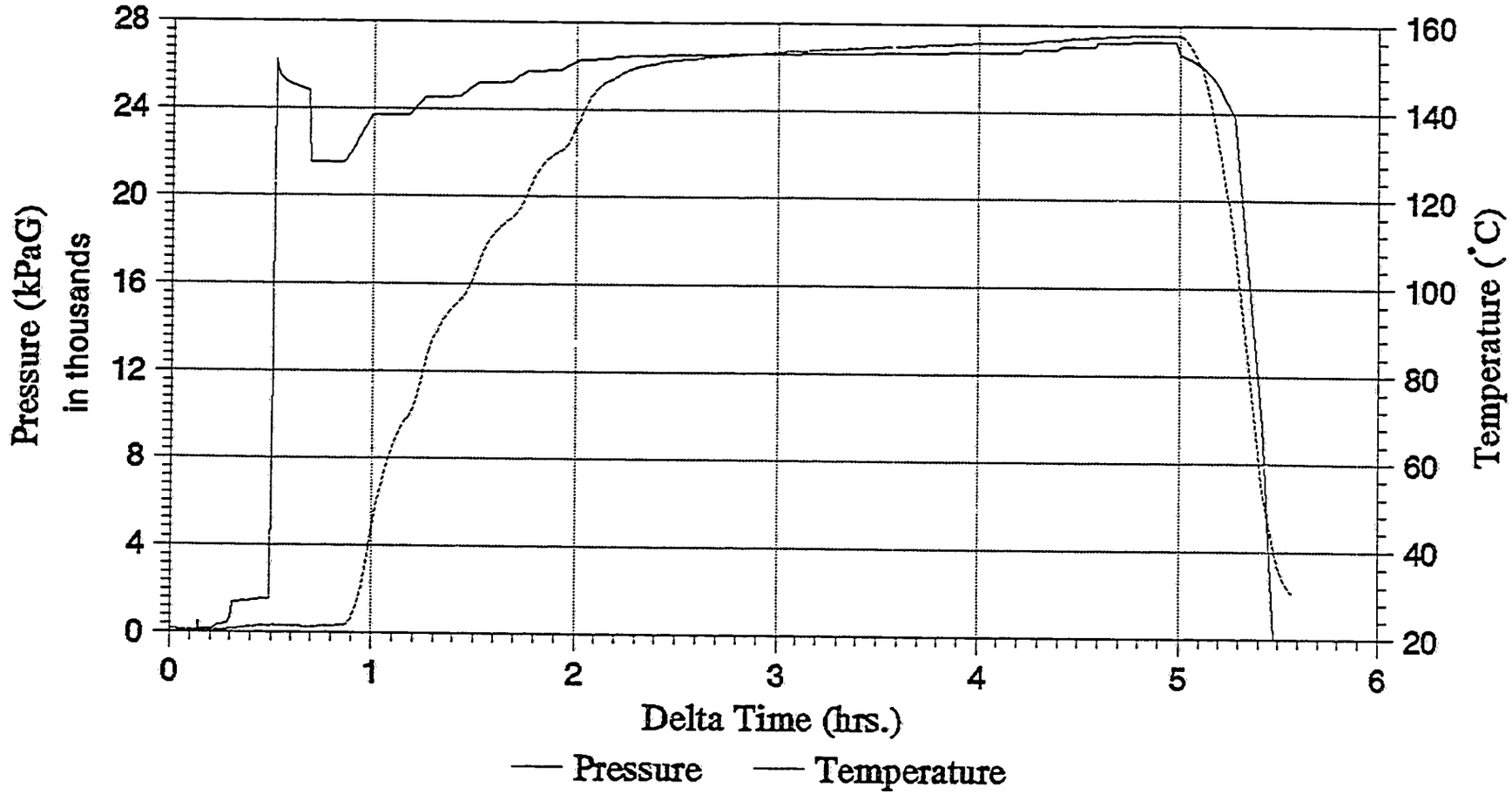
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/14 14:38:01
End Aquisition: 1998/07/14 20:12:30

Ranger Oil Limited
P-66-A
Gentronics Quartz Top Gauge Temp.



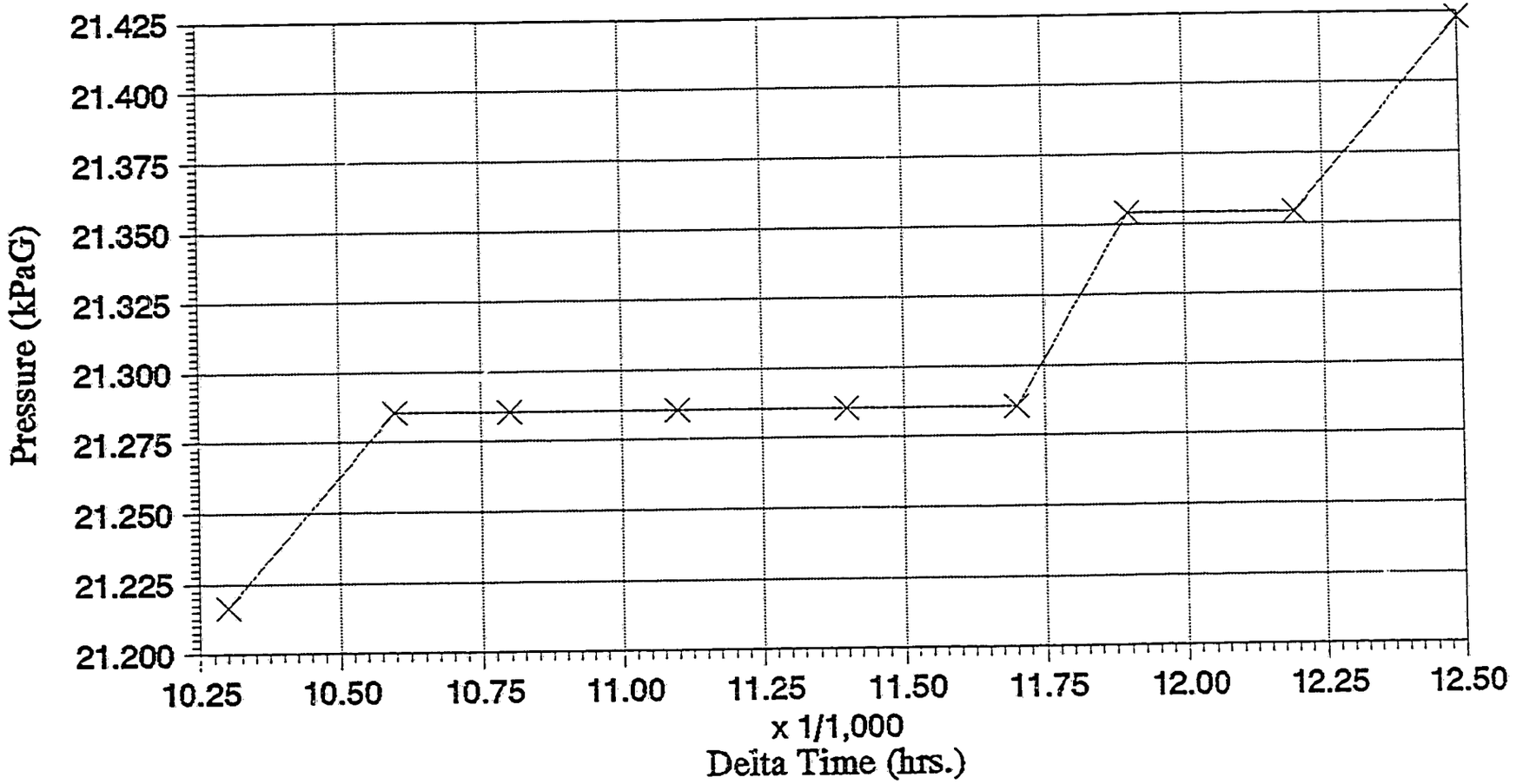
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/14 14:38:01
End Aquisition: 1998/07/14 20:12:30

Ranger Oil Limited
P-66-A
Gentronic Quartz Top Pressure/Temp



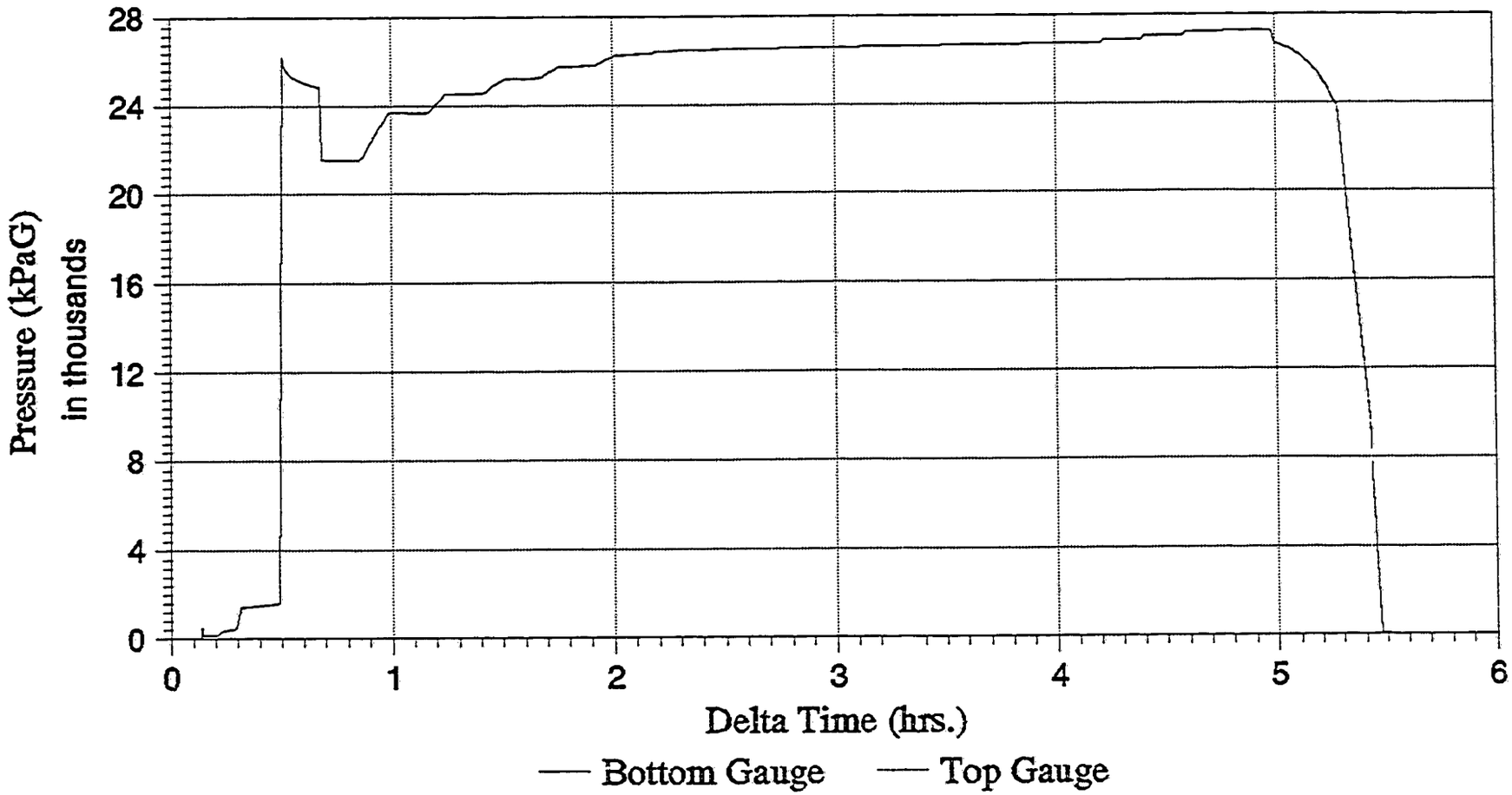
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/14 14:38:01
End Aquisition: 1998/07/14 20:12:30

Ranger Oil Limited
P-66-A
Top Gauge Apparent Resolution



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/14 14:38:01
End Aquisition: 1998/07/14 20:12:30

Ranger Oil Limited
P-66-A
Gentronics Quartz Gauge Press. Tracking



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/14 14:38:01
End Aquisition: 1998/07/14 20:12:30

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
				Begin Data Acquisition:			
1998/07/14	14:38:01	0.0000	23.4	23.4	21.5	21.5	0:
	14:38:11	0.0028	23.8	0.3	21.5	0.0	11:
	14:38:22	0.0058	23.6	-0.2	21.5	0.0	22:
	14:38:33	0.0089	23.2	-0.3	21.5	0.0	33:
	14:38:44	0.0119	23.2	0.0	21.5	-0.0	44:
	14:38:55	0.0150	23.3	0.1	21.5	0.0	55:
	14:39:06	0.0181	23.3	0.0	21.5	-0.0	66:
	14:39:17	0.0211	23.4	0.1	21.5	0.0	77:
	14:39:28	0.0242	23.5	0.1	21.5	-0.0	88:
	14:39:39	0.0272	23.6	0.1	21.5	-0.0	99:
	14:39:50	0.0303	23.6	0.1	21.5	-0.0	110:
	14:40:01	0.0333	23.6	0.0	21.5	-0.0	121:
	14:40:12	0.0364	23.7	0.1	21.5	-0.0	132:
	14:40:23	0.0394	23.8	0.1	21.4	-0.0	143:
	14:40:34	0.0425	23.8	0.0	21.4	-0.0	154:
	14:40:45	0.0456	23.8	0.1	21.4	-0.0	165:
	14:40:56	0.0486	24.0	0.2	21.4	-0.0	176:
	14:41:07	0.0517	24.1	0.1	21.3	-0.0	187:
	14:41:18	0.0547	24.3	0.1	21.3	-0.0	198:
	14:41:29	0.0578	24.3	0.1	21.3	-0.0	209:
	14:41:40	0.0608	24.0	-0.3	21.3	-0.0	220:
	14:41:51	0.0639	18.3	-5.7	21.2	-0.0	231:
	14:42:02	0.0669	14.0	-4.3	21.2	-0.0	242:
	14:42:13	0.0700	11.1	-2.8	21.2	-0.0	253:
	14:42:24	0.0731	9.4	-1.8	21.1	-0.0	264:
	14:42:35	0.0761	8.0	-1.4	21.1	-0.0	275:
	14:42:46	0.0792	6.8	-1.2	21.1	-0.0	286:
	14:42:57	0.0822	5.8	-1.0	21.1	-0.0	297:
	14:43:08	0.0853	4.9	-0.9	21.0	-0.0	308:
	14:43:19	0.0883	4.0	-0.8	21.0	-0.0	319:
	14:43:30	0.0914	3.3	-0.8	21.0	-0.0	330:
	14:43:41	0.0944	2.7	-0.6	21.0	-0.0	341:
	14:43:52	0.0975	2.1	-0.6	21.0	-0.0	352:
	14:44:03	0.1006	1.7	-0.4	20.9	-0.0	363:
	14:44:15	0.1039	1.2	-0.5	20.9	-0.0	374:
	14:44:28	0.1075	0.7	-0.5	20.9	-0.0	385:
	14:44:42	0.1114	0.4	-0.3	20.9	-0.0	396:
	14:44:54	0.1147	0.0	-0.4	20.9	-0.0	407:
	14:46:15	0.1372	489.9	489.9	20.8	-0.1	418:
	14:46:26	0.1403	499.9	10.0	20.8	-0.0	429:
	14:46:38	0.1436	150.5	-349.4	20.8	-0.0	440:
	14:46:49	0.1467	150.4	-0.1	20.7	-0.0	451:
	14:47:00	0.1497	151.4	1.0	20.7	-0.0	462:

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	14:47:11	0.1528	152.4	1.0	20.7	-0.0	473:
	14:47:22	0.1558	153.9	1.5	20.7	-0.0	484:
	14:47:33	0.1589	155.5	1.6	20.7	-0.0	495:
	14:47:44	0.1619	157.0	1.5	20.7	-0.0	506:
	14:47:55	0.1650	158.7	1.7	20.7	-0.0	517:
	14:49:00	0.1831	167.7	9.0	20.6	-0.0	528:
	14:51:00	0.2164	224.1	56.5	20.6	-0.1	539:
	14:52:50	0.2469	388.4	164.3	20.6	-0.0	550:
	14:54:40	0.2775	405.2	16.8	20.6	0.0	561:
	14:56:40	0.3108	1427.9	1022.7	20.7	0.1	572:
	14:58:30	0.3414	1442.9	15.0	20.9	0.3	583:
	15:00:20	0.3719	1470.1	27.2	21.2	0.2	594:
	15:02:10	0.4025	1501.0	31.0	21.4	0.2	605:
	15:04:00	0.4331	1532.3	31.3	21.6	0.2	616:
	15:05:50	0.4636	1565.5	33.2	21.7	0.1	627:
	15:07:50	0.4969	3988.9	2423.5	21.8	0.1	638:
	15:09:40	0.5275	25619.0	21630.0	21.8	-0.0	649:
	15:11:30	0.5581	25301.3	-317.7	21.7	-0.1	660:
	15:13:20	0.5886	25138.5	-162.8	21.6	-0.1	671:
	15:15:10	0.6192	25022.2	-116.3	21.5	-0.1	682:
	15:17:00	0.6497	24918.0	-104.3	21.4	-0.1	693:
	15:18:50	0.6803	24834.4	-83.6	21.3	-0.1	704:
	15:20:50	0.7136	21558.0	-3276.4	21.3	-0.0	715:
	15:22:40	0.7442	21551.6	-6.3	21.4	0.2	726:
	15:24:30	0.7747	21554.2	2.6	21.6	0.2	737:
	15:26:20	0.8053	21557.5	3.4	21.7	0.1	748:
	15:28:10	0.8358	21558.1	0.6	21.8	0.1	759:
	15:30:00	0.8664	21673.7	115.6	21.8	0.0	770:
	15:31:50	0.8969	22177.7	504.0	23.5	1.7	781:
	15:33:40	0.9275	22709.2	531.5	27.0	3.5	792:
	15:35:30	0.9581	23187.9	478.7	32.5	5.5	803:
	15:37:20	0.9886	23632.9	444.9	40.4	7.9	814:
	15:39:10	1.0192	23673.3	40.5	48.7	8.2	825:
	15:41:00	1.0497	23670.6	-2.8	54.8	6.2	836:
	15:42:50	1.0803	23667.6	-3 0	59.7	4.9	847:
	15:44:40	1.1108	23666.0	-1.6	63.6	3.8	858:
	15:46:30	1.1414	23666.0	0.0	66.6	3.0	869:
	15:48:20	1.1719	23729.6	63.6	69.1	2.5	880.
	15:50:10	1.2025	24046.6	317.0	72.4	3.3	891:
	15:52:00	1.2331	24349.2	302.6	77.3	4.9	902:
	15:53:50	1.2636	24521.1	171.9	82.7	5.4	913:
	15:55:40	1.2942	24525.2	4.1	86.7	4.0	924:
	15:57:30	1.3247	24529.9	4.8	89.8	3.1	935:
	15:59:20	1.3553	24535.5	5.6	92.1	2.3	946:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800

Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A

Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	16:01:10	1.3858	24541.1	5.6	93.9	1.8	957:
	16:03:00	1.4164	24545.6	4.5	95.4	1.4	968.
	16:04:50	1.4469	24754.1	208.5	97.2	1.8	979:
	16:06:40	1.4775	24976.1	222.0	99.8	2.7	990:
	16:08:30	1.5081	25147.0	170.9	103.1	3.3	1001:
	16:10:20	1.5386	25196.4	49.4	106.5	3.4	1012:
	16:12:10	1.5692	25203.2	6.8	109.1	2.6	1023:
	16:14:00	1.5997	25210.9	7.7	111.1	2.1	1034:
	16:15:50	1.6303	25219.8	8.9	112.7	1.6	1045:
	16:17:40	1.6608	25226.9	7.1	113.8	1.2	1056:
	16:19:30	1.6914	25329.7	102.9	114.9	1.1	1067:
	16:21:20	1.7219	25520.3	190.6	116.6	1.7	1078:
	16:23:10	1.7525	25690.8	170.5	119.4	2.8	1089:
	16:25:00	1.7831	25729.8	39.0	122.6	3.2	1100:
	16:26:50	1.8136	25736.3	6.6	125.2	2.6	1111:
	16:28:40	1.8442	25752.0	15.7	127.1	1.9	1122:
	16:30:30	1.8747	25769.1	17.1	128.4	1.3	1133:
	16:32:20	1.9053	25782.0	13.0	129.4	1.1	1144:
	16:34:10	1.9358	25859.0	76.9	130.3	0.8	1155:
	16:36:00	1.9664	26017.7	158.7	131.9	1.7	1166:
	16:37:50	1.9969	26157.3	139.6	134.9	2.9	1177:
	16:39:40	2.0275	26248.8	91.4	138.3	3.4	1188:
	16:41:30	2.0581	26258.8	10.1	141.1	2.8	1199:
	16:43:20	2.0886	26282.4	23.6	143.1	2.0	1210:
	16:45:10	2.1192	26306.7	24.3	144.6	1.5	1221:
	16:47:00	2.1497	26328.3	21.6	145.7	1.1	1232:
	16:48:50	2.1803	26346.1	17.9	146.6	0.9	1243:
	16:50:40	2.2108	26437.3	91.2	147.4	0.9	1254:
	16:52:30	2.2414	26437.3	0.1	148.4	0.9	1265:
	16:54:20	2.2719	26446.9	9.5	149.2	0.8	1276:
	16:56:10	2.3025	26457.2	10.3	149.7	0.5	1287:
	16:58:00	2.3331	26466.0	8.8	150.1	0.4	1298:
	16:59:50	2.3636	26473.1	7.1	150.3	0.3	1309:
	17:01:40	2.3942	26497.9	24.8	150.6	0.3	1320:
	17:03:30	2.4247	26497.3	-0.6	150.9	0.3	1331:
	17:05:20	2.4553	26500.2	2.9	151.2	0.3	1342:
	17:07:10	2.4858	26503.8	3.7	151.4	0.2	1353:
	17:09:00	2.5164	26506.8	3.0	151.6	0.2	1364:
	17:10:50	2.5469	26509.5	2.6	151.7	0.1	1375:
	17:12:40	2.5775	26533.3	23.9	151.8	0.1	1386:
	17:14:30	2.6081	26530.1	-3.2	151.9	0.2	1397:
	17:16:20	2.6386	26531.0	0.9	152.1	0.2	1408:
	17:18:10	2.6692	26532.7	1.7	152.3	0.2	1419:
	17:20:00	2.6997	26534.5	1.8	152.3	0.1	1430:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	17:21:50	2.7303	26536.1	1.6	152.4	0.1	1441:
	17:23:40	2.7608	26560.1	24.0	152.5	0.1	1452:
	17:25:30	2.7914	26556.7	-3.4	152.7	0.2	1463:
	17:27:20	2.8219	26557.3	0.6	152.8	0.2	1474:
	17:29:10	2.8525	26558.7	1.4	152.9	0.1	1485:
	17:31:00	2.8831	26560.4	1.7	153.1	0.1	1496:
	17:32:50	2.9136	26561.8	1.4	153.1	0.1	1507:
	17:34:40	2.9442	26586.5	24.8	153.2	0.1	1518:
	17:36:30	2.9747	26584.1	-2.5	153.3	0.2	1529:
	17:38:20	3.0053	26584.8	0.8	153.4	0.1	1540:
	17:40:10	3.0358	26585.9	1.1	153.5	0.1	1551:
	17:42:00	3.0664	26587.0	1.0	153.6	0.1	1562:
	17:43:50	3.0969	26587.9	1.0	153.6	0.1	1573:
	17:45:40	3.1275	26611.9	24.0	153.7	0.1	1584:
	17:47:30	3.1581	26608.6	-3.3	153.8	0.1	1595:
	17:49:20	3.1886	26608.9	0.3	153.9	0.2	1606:
	17:51:10	3.2192	26609.9	1.0	154.0	0.1	1617:
	17:53:00	3.2497	26611.1	1.2	154.1	0.1	1628:
	17:54:50	3.2803	26612.2	1.1	154.1	0.1	1639:
	17:56:40	3.3108	26636.2	24.0	154.2	0.1	1650:
	17:58:30	3.3414	26634.1	-2.1	154.3	0.1	1661:
	18:00:20	3.3719	26634.3	0.2	154.4	0.1	1672:
	18:02:10	3.4025	26635.2	1.0	154.4	0.1	1683:
	18:04:00	3.4331	26636.3	1.0	154.6	0.1	1694:
	18:05:50	3.4636	26637.1	0.8	154.6	0.0	1705:
	18:07:40	3.4942	26661.6	24.5	154.6	0.1	1716:
	18:09:30	3.5247	26659.0	-2.6	154.7	0.1	1727:
	18:11:20	3.5553	26659.3	0.3	154.8	0.1	1738:
	18:13:10	3.5858	26660.0	0.8	154.9	0.1	1749:
	18:15:00	3.6164	26660.9	0.9	154.9	0.1	1760:
	18:16:50	3.6469	26661.6	0.7	155.0	0.1	1771:
	18:18:40	3.6775	26686.8	25.2	155.1	0.1	1782:
	18:20:30	3.7081	26684.1	-2.7	155.2	0.1	1793:
	18:22:20	3.7386	26684.2	0.1	155.3	0.1	1804:
	18:24:10	3.7692	26685.0	0.8	155.3	0.1	1815:
	18:26:00	3.7997	26686.0	1.0	155.4	0.1	1826:
	18:27:50	3.8303	26686.9	0.9	155.4	0.1	1837:
	18:29:40	3.8608	26712.3	25.4	155.5	0.1	1848:
	18:31:30	3.8914	26710.5	-1.9	155.6	0.1	1859:
	18:33:20	3.9219	26710.5	0.1	155.7	0.1	1870:
	18:35:10	3.9525	26711.1	0.6	155.7	0.1	1881:
	18:37:00	3.9831	26711.9	0.8	155.8	0.1	1892:
	18:38:50	4.0136	26712.7	0.8	155.8	0.1	1903:
	18:40:40	4.0442	26738.9	26.2	155.9	0.1	1914:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	18:42:30	4.0747	26741.3	2.4	155.9	0.0	1925:
	18:44:20	4.1053	26742.0	0.7	155.9	0.0	1936:
	18:46:10	4.1358	26742.1	0.1	155.9	0.0	1947:
	18:48:00	4.1664	26742.3	0.2	155.9	0.0	1958:
	18:49:50	4.1969	26742.3	0.0	155.9	0.0	1969:
	18:51:40	4.2275	26878.8	136.5	155.9	0.1	1980:
	18:53:30	4.2581	26869.0	-9.9	156.2	0.2	1991:
	18:55:20	4.2886	26868.5	-0.5	156.4	0.2	2002:
	18:57:10	4.3192	26870.5	2.0	156.5	0.1	2013:
	18:59:00	4.3497	26872.6	2.1	156.6	0.1	2024:
	19:00:50	4.3803	26874.6	2.0	156.7	0.1	2035:
	19:02:40	4.4108	27044.4	169.8	156.8	0.1	2046:
	19:04:30	4.4414	27041.8	-2.6	156.9	0.2	2057:
	19:06:20	4.4719	27042.9	1.0	157.1	0.1	2068:
	19:08:10	4.5025	27044.6	1.7	157.1	0.1	2079:
	19:10:00	4.5331	27046.1	1.5	157.2	0.1	2090:
	19:11:50	4.5636	27047.3	1.2	157.2	0.1	2101:
	19:13:40	4.5942	27215.3	168.0	157.3	0.1	2112:
	19:15:30	4.6247	27212.6	-2.7	157.4	0.2	2123:
	19:17:20	4.6553	27213.4	0.8	157.6	0.1	2134:
	19:19:10	4.6858	27214.9	1.4	157.6	0.1	2145:
	19:21:00	4.7164	27216.1	1.2	157.7	0.1	2156:
	19:22:50	4.7469	27217.2	1.1	157.7	0.0	2167:
	19:24:40	4.7775	27277.6	60.4	157.7	0.1	2178:
	19:26:30	4.8081	27275.2	-2.3	157.8	0.1	2189:
	19:28:20	4.8386	27275.2	0.0	157.8	0.1	2200:
	19:30:10	4.8692	27275.6	0.3	157.9	0.1	2211:
	19:32:00	4.8997	27275.8	0.2	157.9	0.1	2222:
	19:33:50	4.9303	27276.2	0.4	157.9	0.0	2233:
	19:35:40	4.9608	27276.5	0.3	157.9	0.0	2244:
	19:37:30	4.9914	26896.3	-380.1	157.9	0.0	2255:
	19:39:20	5.0219	26607.0	-289.3	157.4	-0.6	2266:
	19:41:10	5.0525	26487.5	-119.6	156.1	-1.3	2277:
	19:43:00	5.0831	26324.7	-162.8	153.8	-2.2	2288:
	19:44:50	5.1136	26104.2	-220.4	150.5	-3.3	2299:
	19:46:40	5.1442	25855.3	-249.0	145.6	-4.9	2310:
	19:48:30	5.1747	25558.3	-297.0	139.6	-6.0	2321:
	19:50:20	5.2053	25178.1	-380.2	133.0	-6.6	2332:
	19:52:10	5.2358	24649.6	-528.5	125.7	-7.3	2343:
	19:54:00	5.2664	24060.3	-589.3	117.3	-8.4	2354:
	19:55:50	5.2969	23426.0	-634.3	106.9	-10.4	2365:
	19:57:40	5.3275	22787.6	-638.4	94.4	-12.5	2376:
	19:59:30	5.3581	22088.9	-698.7	81.5	-12.9	2387:
	20:01:20	5.3886	21660.7	-428.2	68.9	-12.6	2398:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	20:03:20	5.4219	10062.6	-11598.2	58.1	-10.9	2409:
	20:05:30	5.4581	103.1	-9959.3	46.8	-11.2	2420:
	20:07:30	5.4914	63.0	-40.1	40.2	-6.7	2431:
	20:09:20	5.5219	40.2	-22.8	36.4	-3.8	2442:
	20:11:10	5.5525	27.6	-12.6	34.0	-2.3	2453:
1998/07/24	20:12:40	5.5775	23.2	-4.4	32.4	-1.6	2462:
				End Data Acquisition:			

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

TEST REPORTS (3)

RANGER OIL LIMITED

RANGER FORT LIARD
P-66-A

1. SURFACE READ-OUT - SINGLE POINT FLOW & BUILD-UP DATA

2. SURFACE READ-OUT - SINGLE POINT FLOW & BUILD-UP PLOTS

3. SURFACE READ-OUT - TRANSIENT DATA

4. GENTRONIC METZLINE QUARTZ - BOTTOM DATA

5. GENTRONIC METZLINE QUARTZ - BOTTOM PLOTS

6. GENTRONIC METZLINE QUARTZ - TOP PLOTS

7. COMPARISON PLOT

8. GENTRONIC METZLINE QUARTZ - BOTTOM TRANSIENT DATA

Date: July 11 - 14, 1998
Report By: Pat Mulgrew

GENCO Pressure Control Limited

(403) 250-3800 — CALGARY, AB.

SUBSURFACE PRESSURE MEASUREMENTS

Basic Data:

Company Ranger Oil Limited
Address #1600, 321 - 6Th. Ave. S.W.
Calgary, AB.
T2P 3H3

Gentronics Electronic Gauge
c/w SRO System
S/N: GMQ-9812

Well Name Ranger Fort Liard	Field & Pool Liard / Nihanni
Well Identifier P-66-A	Type of Test Single Point Flow & B.U.
Status Shut in Gas	Date of Test July 11 - 14, 1998
DWG Tubing Pressure N/A kPa	DWG Casing Pressure N/A kPa
Tubing 88.9 mm @ 3082.4 m KB	Casing 177.8 mm @ 3499.0 m KB
Producing Interval 3115 - 3334 m KB	Producing Through Tubing
Elevation 449.54 m CF, 459.89 m KB	MPP Interval 3214.2 m CF
Datum Depth of Well ____ m CF	Run Depth 3071 m CF
Temperature at Run Depth 150.8 °C	Pool Datum ____ m (subsea)
Pressure at Run Depth 26483 kPaG	Gradient at Run Depth ____ kPa/m
MPP Pressure ____ kPaG	Datum Depth Pressure ____ kPaG
Final Buildup Pressure 26467.0 kPaG	Date on Bottom July 11, 1998
Date off Bottom July 14, 1998	Shut in Date July 12, 1998

Summary:

Single LMR Quartz SRO recorder ran within specifications.

Preparation Data:

Tested By GENCO Computed By P. Mulgrew Report Date Aug 05, 1998

SRO Recorder

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

OPERATIONS SUMMARY

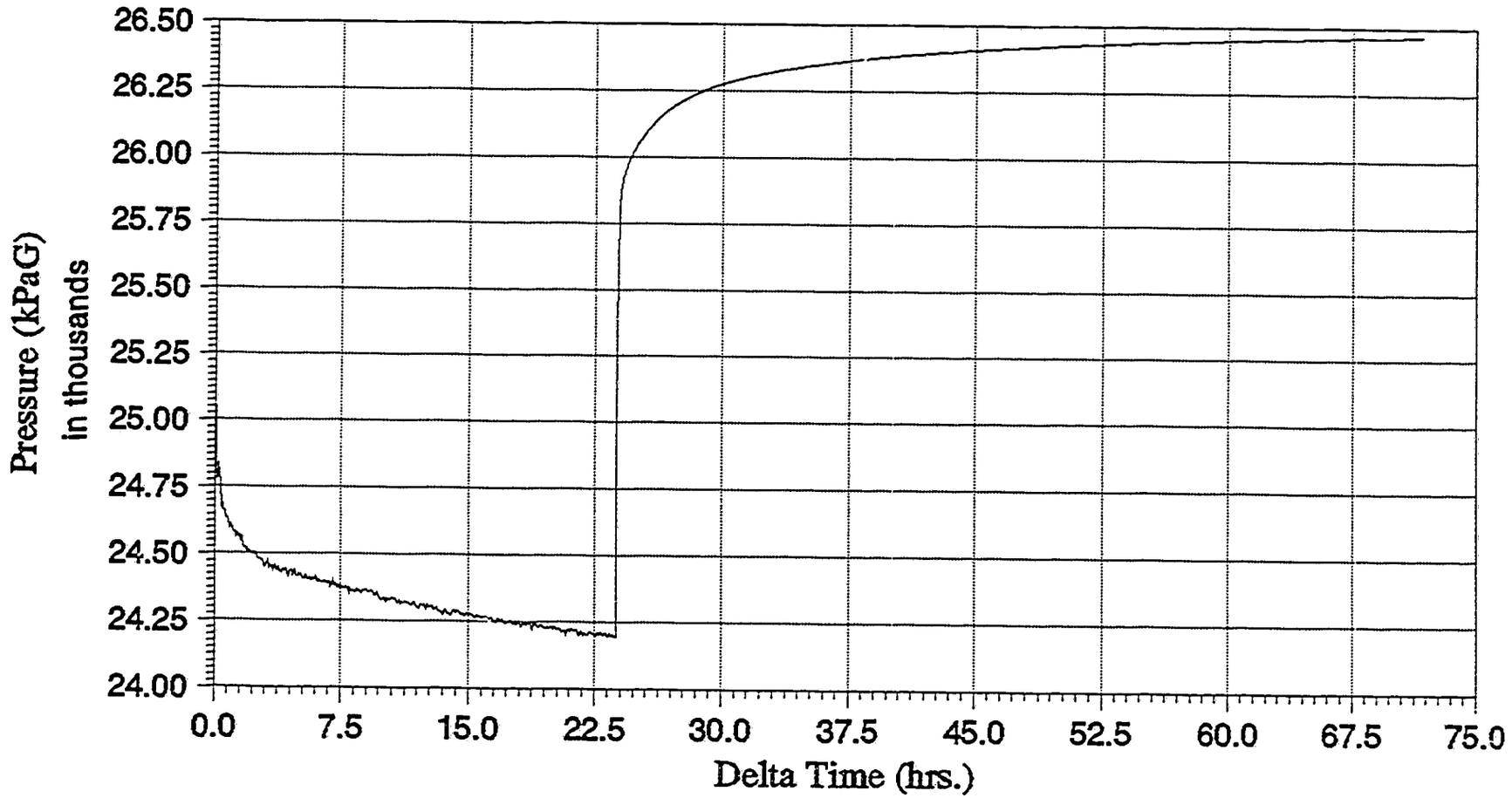
Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/07/11	08:45:18	0.0000	24815.0	153.8	1:	Begin Data Acquisition
	08:45:58	0.0111	24804.2	153.9	3:	Note: Powered up SRO recorder at 05:30 Hours but lost first 3 hours of data due to software error.
	08:48:18	0.0500	24993.1	154.1	10:	SRO recorder On Bottom at 07:13 Hrs. at 3071 m CF.
	08:49:55	0.0769	25048.8	154.2	15:	Well Open to Flow at 07:30 Hrs. Choke adjustments were made and 24 hour Single Point Test was started at 08:30 Hrs. July 11, 1998
1998/07/12	08:30:18	23.7500	24203.6	154.1	3556:	Well Shut in for B.U.
1998/07/14	08:28:59	71.7281	26467.0	151.3	10107:	SRO recorder shut down and pulled Off Bottom.
	08:30:29	71.7531	26466.9	151.3	10110:	End Data Acquisition

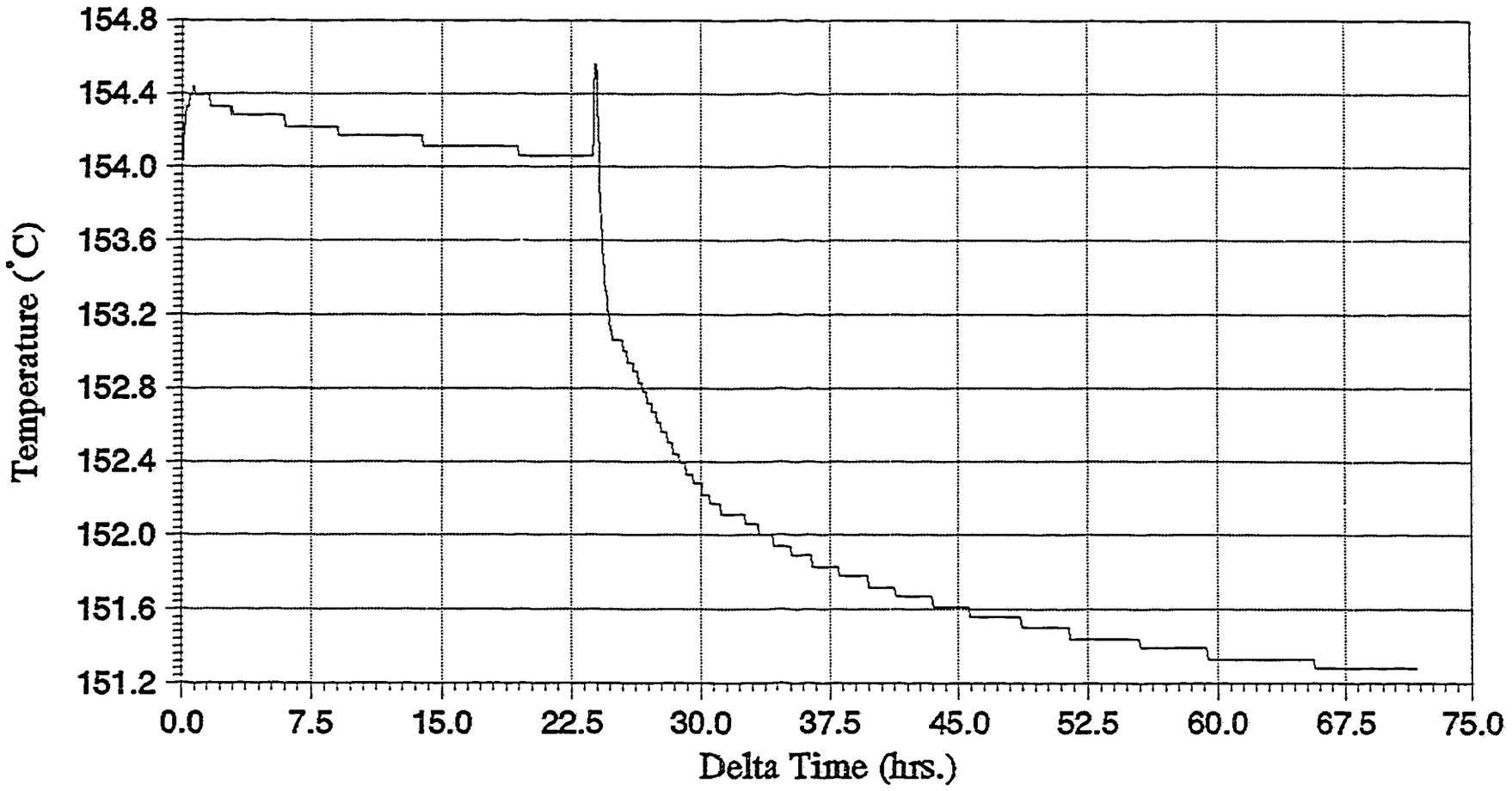
Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Pressures



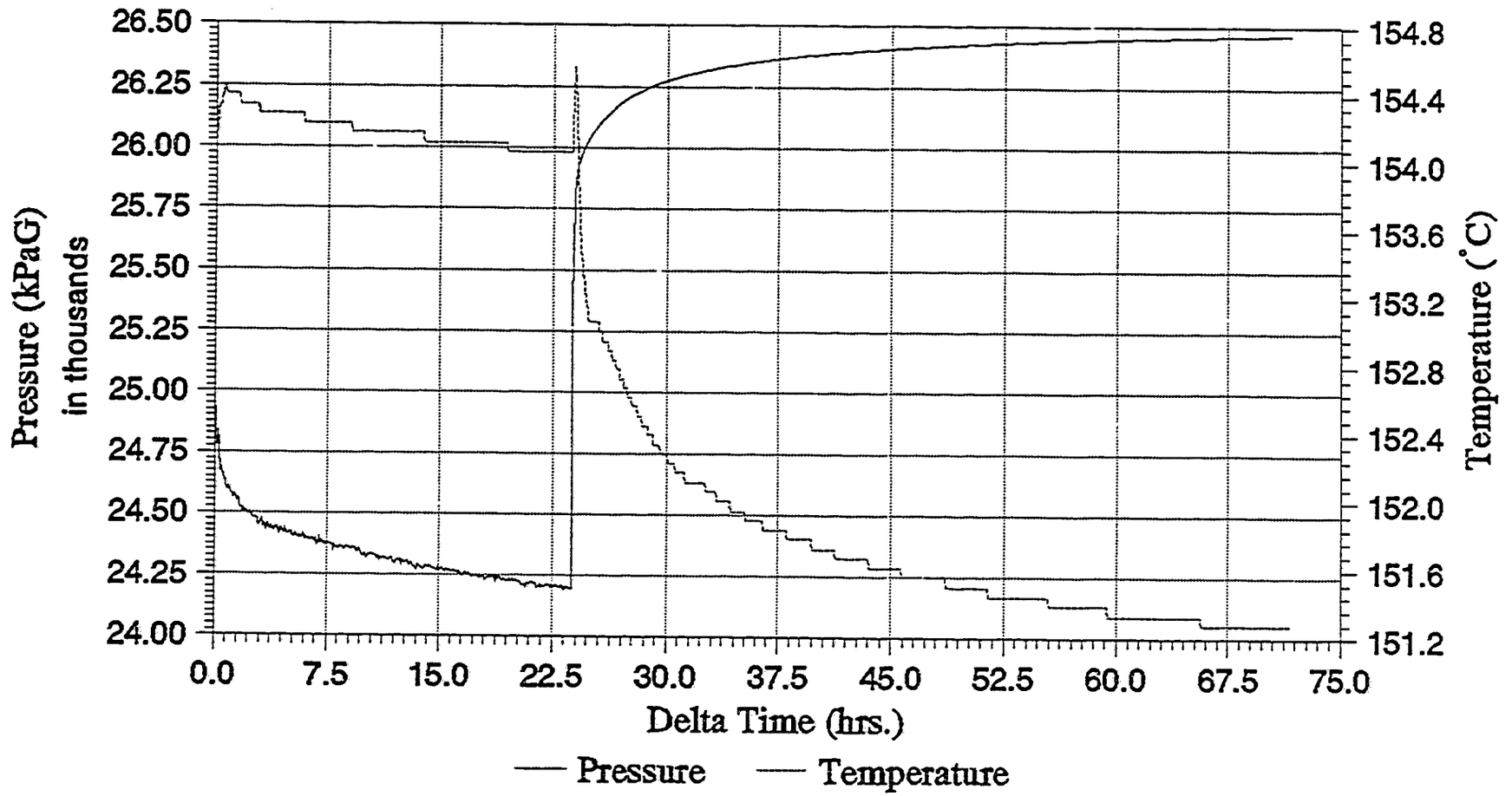
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 06:30:18
End Aquisition: 1998/07/14 06:15:29

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Temp.



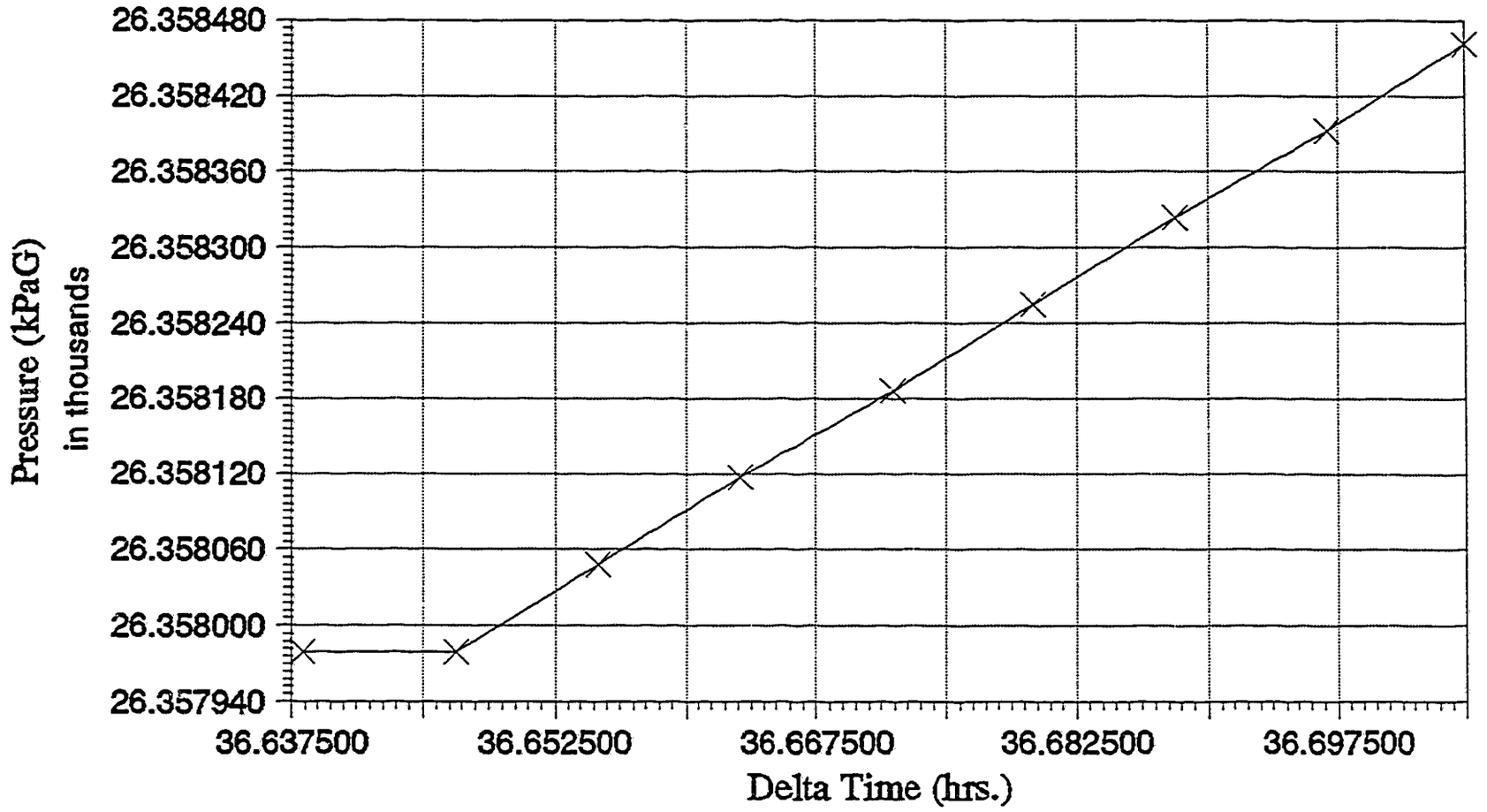
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 06:30:18
End Aquisition: 1998/07/14 06:15:29

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Pressure/Temp



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 06:30:18
End Aquisition: 1998/07/14 06:15:29

Ranger Oil Limited
P-66-A
Bottom Gauge Apparent Resolution



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 06:30:18
End Aquisition: 1998/07/14 06:15:29

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
				Begin Data Acquisition:			
1998/07/11	08:45:18	0.0000	24815.0	24815.0	153.8	153.8	0:
	08:48:36	0.0550	25021.4	206.4	154.1	0.3	11:
	08:52:12	0.1150	24819.4	-202.0	154.2	0.1	22:
	08:55:48	0.1750	24779.6	-39.8	154.3	0.1	33:
	08:59:24	0.2350	24828.0	48.4	154.3	0.1	44:
	09:03:00	0.2950	24788.9	-39.2	154.3	0.0	55:
	09:06:36	0.3550	24707.6	-81.3	154.3	0.0	66:
	09:10:12	0.4150	24687.0	-20.5	154.4	0.1	77:
	09:13:48	0.4750	24665.2	-21.9	154.4	0.0	88:
	09:17:24	0.5350	24665.3	0.1	154.4	0.0	99:
	09:21:00	0.5950	24650.4	-14.9	154.4	0.0	110:
	09:24:36	0.6550	24626.4	-23.9	154.4	0.1	121:
	09:28:12	0.7150	24634.0	7.5	154.4	-0.1	132:
	09:31:48	0.7750	24630.4	-3.5	154.4	0.0	143:
	09:35:24	0.8350	24619.6	-10.8	154.4	0.0	154:
	09:39:00	0.8950	24610.4	-9.2	154.4	0.0	165:
	09:42:36	0.9550	24614.2	3.8	154.4	0.0	176:
	09:46:12	1.0150	24595.1	-19.2	154.4	0.0	187:
	09:49:48	1.0750	24605.5	10.5	154.4	0.0	198:
	09:53:24	1.1350	24576.9	-28.6	154.4	0.0	209:
	09:57:00	1.1950	24588.7	11.8	154.4	0.0	220:
	10:00:36	1.2550	24577.5	-11.2	154.4	0.0	231:
	10:04:12	1.3150	24570.7	-6.8	154.4	0.0	242:
	10:07:48	1.3750	24557.2	-13.5	154.4	0.0	253:
	10:11:24	1.4350	24566.0	8.8	154.4	0.0	264:
	10:15:00	1.4950	24553.9	-12.1	154.4	0.0	275:
	10:18:36	1.5550	24556.5	2.6	154.4	0.0	286:
	10:22:12	1.6150	24526.7	-29.8	154.3	-0.1	297:
	10:25:48	1.6750	24543.0	16.3	154.3	0.0	308:
	10:29:24	1.7350	24537.7	-5.3	154.3	0.0	319:
	10:33:00	1.7950	24549.3	11.6	154.3	0.0	330:
	10:36:36	1.8550	24510.0	-39.3	154.3	0.0	341:
	10:40:12	1.9150	24502.7	-7.2	154.3	0.0	352:
	10:43:48	1.9750	24528.0	25.3	154.3	0.0	363:
	10:47:24	2.0350	24522.3	-5.7	154.3	0.0	374:
	10:51:00	2.0950	24518.0	-4.3	154.3	0.0	385:
	10:54:36	2.1550	24511.6	-6.3	154.3	0.0	396:
	10:58:12	2.2150	24491.2	-20.4	154.3	0.0	407:
	11:01:48	2.2750	24511.7	20.5	154.3	0.0	418:
	11:05:24	2.3350	24499.4	-12.3	154.3	0.0	429:
	11:09:00	2.3950	24486.8	-12.6	154.3	0.0	440:
	11:12:36	2.4550	24503.4	16.6	154.3	0.0	451:
	11:16:12	2.5150	24487.8	-15.7	154.3	0.0	462:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800

Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A

Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	11:19:48	2.5750	24480.5	-7.3	154.3	0.0	473:
	11:23:24	2.6350	24472.5	-8.0	154.3	0.0	484:
	11:27:00	2.6950	24476.5	4.1	154.3	0.0	495:
	11:30:36	2.7550	24476.2	-0.3	154.3	0.0	506:
	11:34:12	2.8150	24480.3	4.1	154.3	-0.1	517:
	11:37:48	2.8750	24464.6	-15.7	154.3	0.0	528:
	11:41:24	2.9350	24470.9	6.3	154.3	0.0	539:
	11:45:00	2.9950	24477.0	6.1	154.3	0.0	550:
	11:48:36	3.0550	24473.8	-3.2	154.3	0.0	561:
	11:52:12	3.1150	24465.6	-8.2	154.3	0.0	572:
	11:55:48	3.1750	24445.2	-20.4	154.3	0.0	583:
	11:59:24	3.2350	24455.5	10.3	154.3	0.0	594:
	12:03:00	3.2950	24454.9	-0.6	154.3	0.0	605:
	12:06:36	3.3550	24469.1	14.2	154.3	0.0	616:
	12:10:12	3.4150	24439.3	-29.8	154.3	0.0	627:
	12:13:48	3.4750	24458.3	19.0	154.3	0.0	638:
	12:17:24	3.5350	24463.2	4.8	154.3	0.0	649:
	12:21:00	3.5950	24449.9	-13.3	154.3	0.0	660:
	12:24:36	3.6550	24433.9	-15.9	154.3	0.0	671:
	12:28:12	3.7150	24435.7	1.8	154.3	0.0	682:
	12:31:48	3.7750	24457.2	21.4	154.3	0.0	693:
	12:35:24	3.8350	24450.5	-6.7	154.3	0.0	704:
	12:39:00	3.8950	24436.8	-13.7	154.3	0.0	715:
	12:42:36	3.9550	24447.2	10.4	154.3	0.0	726:
	12:46:12	4.0150	24439.7	-7.6	154.3	0.0	737:
	12:49:48	4.0750	24439.7	0.1	154.3	0.0	748:
	12:53:24	4.1350	24426.1	-13.7	154.3	0.0	759:
	12:57:00	4.1950	24419.7	-6.4	154.3	0.0	770:
	13:00:36	4.2550	24431.0	11.3	154.3	0.0	781:
	13:04:12	4.3150	24433.1	2.1	154.3	0.0	792:
	13:07:48	4.3750	24410.0	-23.1	154.3	0.0	803:
	13:11:24	4.4350	24431.4	21.4	154.3	0.0	814:
	13:15:00	4.4950	24423.7	-7.7	154.3	0.0	825:
	13:18:36	4.5550	24413.5	-10.3	154.3	0.0	836:
	13:22:12	4.6150	24424.3	10.8	154.3	0.0	847:
	13:25:48	4.6750	24427.9	3.6	154.3	0.0	858:
	13:29:24	4.7350	24428.4	0.6	154.3	0.0	869:
	13:33:00	4.7950	24415.7	-12.8	154.3	0.0	880:
	13:36:36	4.8550	24427.2	11.6	154.3	0.0	891:
	13:40:12	4.9150	24415.7	-11.5	154.3	0.0	902:
	13:43:48	4.9750	24411.0	-4.7	154.3	0.0	913:
	13:47:24	5.0350	24422.6	11.5	154.3	0.0	924:
	13:51:00	5.0950	24418.1	-4.5	154.3	0.0	935:
	13:54:36	5.1550	24403.7	-14.4	154.3	0.0	946:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A

Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	13:58:12	5.2150	24409.2	5.6	154.3	0.0	957:
	14:01:48	5.2750	24403.2	-6.1	154.3	0.0	968:
	14:05:24	5.3350	24401.9	-1.2	154.3	0.0	979:
	14:09:00	5.3950	24419.2	17.2	154.3	0.0	990:
	14:12:36	5.4550	24419.2	0.0	154.3	0.0	1001:
	14:16:12	5.5150	24405.8	-13.4	154.3	0.0	1012:
	14:19:48	5.5750	24411.4	5.6	154.3	0.0	1023:
	14:23:24	5.6350	24414.8	3.4	154.3	0.0	1034:
	14:27:00	5.6950	24405.6	-9.2	154.3	0.0	1045:
	14:30:36	5.7550	24422.6	17.0	154.3	0.0	1056:
	14:34:12	5.8150	24397.4	-25.2	154.3	0.0	1067:
	14:37:48	5.8750	24401.2	3.9	154.3	0.0	1078:
	14:41:24	5.9350	24405.2	3.9	154.2	-0.1	1089:
	14:45:04	5.9961	24401.7	-3.4	154.2	0.0	1100:
	14:48:40	6.0561	24400.4	-1.3	154.2	0.0	1111:
	14:52:16	6.1161	24402.1	1.7	154.2	0.0	1122:
	14:55:52	6.1761	24405.8	3.7	154.2	0.0	1133:
	14:59:28	6.2361	24379.3	-26.5	154.2	0.0	1144:
	15:03:04	6.2961	24396.6	17.3	154.2	0.0	1155:
	15:06:40	6.3561	24396.5	-0.1	154.2	0.0	1166:
	15:10:16	6.4161	24393.2	-3.3	154.2	0.0	1177:
	15:13:52	6.4761	24376.9	-16.3	154.2	0.0	1188:
	15:17:28	6.5361	24386.0	9.1	154.2	0.0	1199:
	15:21:04	6.5961	24392.8	6.8	154.2	0.0	1210:
	15:24:40	6.6561	24377.5	-15.3	154.2	0.0	1221:
	15:28:16	6.7161	24387.6	10.1	154.2	0.0	1232:
	15:31:52	6.7761	24394.6	7.0	154.2	0.0	1243:
	15:35:28	6.8361	24374.8	-19.8	154.2	0.0	1254:
	15:39:04	6.8961	24388.8	14.0	154.2	0.0	1265:
	15:42:40	6.9561	24392.7	3.9	154.2	0.0	1276:
	15:46:16	7.0161	24397.0	4.3	154.2	0.0	1287:
	15:49:52	7.0761	24363.5	-33.6	154.2	0.0	1298:
	15:53:28	7.1361	24384.8	21.3	154.2	0.0	1309:
	15:57:04	7.1961	24380.8	-4.0	154.2	0.0	1320:
	16:00:40	7.2561	24371.0	-9.8	154.2	0.0	1331:
	16:04:16	7.3161	24371.8	0.8	154.2	0.0	1342:
	16:07:52	7.3761	24378.4	6.6	154.2	0.0	1353:
	16:11:28	7.4361	24379.5	1.1	154.2	0.0	1364:
	16:15:04	7.4961	24367.8	-11.7	154.2	0.0	1375:
	16:18:40	7.5561	24376.0	8.2	154.2	0.0	1386:
	16:22:16	7.6161	24373.5	-2.5	154.2	0.0	1397:
	16:25:52	7.6761	24367.3	-6.2	154.2	0.0	1408:
	16:29:28	7.7361	24366.2	-1.1	154.2	0.0	1419:
	16:33:04	7.7961	24379.7	13.4	154.2	0.0	1430:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	16:36:40	7.8561	24355.0	-24.7	154.2	0.0	1441:
	16:40:16	7.9161	24373.3	18.3	154.2	0.0	1452:
	16:43:52	7.9761	24368.4	-4.8	154.2	0.0	1463:
	16:47:28	8.0361	24374.8	6.3	154.2	0.0	1474:
	16:51:04	8.0961	24345.6	-29.2	154.2	0.0	1485:
	16:54:40	8.1561	24369.0	23.4	154.2	0.0	1496:
	16:58:16	8.2161	24368.6	-0.4	154.2	0.0	1507:
	17:01:52	8.2761	24363.7	-4.9	154.2	0.0	1518:
	17:05:28	8.3361	24367.8	4.1	154.2	0.0	1529:
	17:09:04	8.3961	24368.8	1.0	154.2	0.0	1540:
	17:12:40	8.4561	24353.7	-15.2	154.2	0.0	1551:
	17:16:16	8.5161	24358.2	4.5	154.2	0.0	1562:
	17:19:52	8.5761	24363.5	5.4	154.2	0.0	1573:
	17:23:28	8.6361	24367.6	4.1	154.2	0.0	1584:
	17:27:04	8.6961	24370.6	3.0	154.2	0.0	1595:
	17:32:20	8.7839	24366.2	-4.3	154.2	0.0	1606:
	17:37:52	8.8761	24357.0	-9.2	154.2	0.0	1617:
	17:43:23	8.9681	24345.4	-11.7	154.2	0.0	1628:
	17:48:50	9.0589	24356.1	10.7	154.2	-0.1	1639:
	17:54:22	9.1511	24350.0	-6.1	154.2	0.0	1650:
	17:59:53	9.2431	24363.0	13.0	154.2	0.0	1661:
	18:05:20	9.3339	24357.9	-5.1	154.2	0.0	1672:
	18:10:52	9.4261	24353.5	-4.4	154.2	0.0	1683:
	18:16:23	9.5181	24349.7	-3.7	154.2	0.0	1694:
	18:21:50	9.6089	24340.4	-9.4	154.2	0.0	1705:
	18:27:22	9.7011	24340.8	0.4	154.2	0.0	1716:
	18:32:53	9.7931	24332.9	-7.9	154.2	0.0	1727:
	18:38:20	9.8839	24345.7	12.8	154.2	0.0	1738:
	18:43:52	9.9761	24340.6	-5.2	154.2	0.0	1749:
	18:49:19	10.0669	24346.5	5.9	154.2	0.0	1760:
	18:54:50	10.1589	24330.4	-16.1	154.2	0.0	1771:
	19:00:22	10.2511	24335.4	5.0	154.2	0.0	1782:
	19:05:49	10.3419	24349.5	14.1	154.2	0.0	1793:
	19:11:20	10.4339	24331.6	-17.9	154.2	0.0	1804:
	19:16:52	10.5261	24346.9	15.3	154.2	0.0	1815:
	19:22:19	10.6169	24313.5	-33.4	154.2	0.0	1826:
	19:27:50	10.7089	24327.5	14.0	154.2	0.0	1837:
	19:33:22	10.8011	24323.7	-3.7	154.2	0.0	1848:
	19:38:49	10.8919	24326.7	3.0	154.2	0.0	1859:
	19:44:20	10.9839	24321.2	-5.5	154.2	0.0	1870:
	19:49:52	11.0761	24320.9	-0.3	154.2	0.0	1881:
	19:55:19	11.1669	24317.1	-3.9	154.2	0.0	1892:
	20:00:50	11.2589	24324.6	7.5	154.2	0.0	1903:
	20:06:18	11.3500	24321.1	-3.4	154.2	0.0	1914:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	20:11:49	11.4419	24314.9	-6.2	154.2	0.0	1925:
	20:17:20	11.5339	24299.3	-15.7	154.2	0.0	1936:
	20:22:48	11.6250	24312.9	13.6	154.2	0.0	1947:
	20:28:19	11.7169	24315.8	3.0	154.2	0.0	1958:
	20:33:50	11.8089	24325.3	9.5	154.2	0.0	1969:
	20:39:18	11.9000	24306.2	-19.1	154.2	0.0	1980:
	20:44:49	11.9919	24318.1	11.9	154.2	0.0	1991:
	20:50:20	12.0839	24294.4	-23.6	154.2	0.0	2002:
	20:55:48	12.1750	24318.2	23.7	154.2	0.0	2013:
	21:01:19	12.2669	24312.3	-5.9	154.2	0.0	2024:
	21:06:47	12.3581	24302.3	-10.0	154.2	0.0	2035:
	21:12:18	12.4500	24315.5	13.2	154.2	0.0	2046:
	21:17:49	12.5419	24297.5	-18.1	154.2	0.0	2057:
	21:23:17	12.6331	24301.8	4.3	154.2	0.0	2068:
	21:28:48	12.7250	24299.9	-1.9	154.2	0.0	2079:
	21:34:19	12.8169	24295.8	-4.1	154.2	0.0	2090:
	21:39:47	12.9081	24307.0	11.2	154.2	0.0	2101:
	21:45:18	13.0000	24289.2	-17.8	154.2	0.0	2112:
	21:50:49	13.0919	24301.2	12.0	154.2	0.0	2123:
	21:56:17	13.1831	24297.1	-4.1	154.2	0.0	2134:
	22:01:48	13.2750	24292.1	-5.0	154.2	0.0	2145:
	22:07:19	13.3669	24288.6	-3.5	154.2	0.0	2156:
	22:12:47	13.4581	24284.2	-4.4	154.2	0.0	2167:
	22:18:18	13.5500	24288.4	4.2	154.2	0.0	2178:
	22:23:46	13.6411	24284.9	-3.4	154.2	0.0	2189:
	22:29:17	13.7331	24294.9	9.9	154.2	0.0	2200:
	22:34:48	13.8250	24293.1	-1.7	154.2	0.0	2211:
	22:40:16	13.9161	24271.6	-21.6	154.1	-0.1	2222:
	22:45:47	14.0081	24294.9	23.4	154.1	0.0	2233:
	22:51:18	14.1000	24289.4	-5.5	154.1	0.0	2244:
	22:56:46	14.1911	24287.1	-2.3	154.1	0.0	2255:
	23:02:17	14.2831	24288.0	0.8	154.1	0.0	2266:
	23:07:48	14.3750	24278.0	-10.0	154.1	0.0	2277:
	23:13:16	14.4661	24288.0	10.0	154.1	0.0	2288:
	23:18:47	14.5581	24282.9	-5.0	154.1	0.0	2299:
	23:24:18	14.6500	24281.5	-1.4	154.1	0.0	2310:
	23:29:46	14.7411	24272.0	-9.5	154.1	0.0	2321:
	23:35:17	14.8331	24270.2	-1.9	154.1	0.0	2332:
	23:40:44	14.9239	24278.7	8.5	154.1	0.0	2343:
	23:46:16	15.0161	24282.2	3.5	154.1	0.0	2354:
	23:51:47	15.1081	24267.2	-15.0	154.1	0.0	2365:
	23:57:14	15.1989	24258.4	-8.8	154.1	0.0	2376:
1998/07/12	00:02:46	15.2911	24270.7	12.3	154.1	0.0	2387:
	00:08:17	15.3831	24268.9	-1.9	154.1	0.0	2398:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	00:13:44	15.4739	24273.6	4.8	154.1	0.0	2409:
	00:19:16	15.5661	24267.3	-6.3	154.1	0.0	2420:
	00:24:47	15.6581	24266.9	-0.4	154.1	0.0	2431:
	00:30:14	15.7489	24262.6	-4.3	154.1	0.0	2442:
	00:35:46	15.8411	24268.0	5.4	154.1	0.0	2453:
	00:41:13	15.9319	24266.8	-1.2	154.1	0.0	2464:
	00:46:44	16.0239	24263.3	-3.4	154.1	0.0	2475:
	00:52:16	16.1161	24267.3	3.9	154.1	0.0	2486:
	00:57:43	16.2069	24268.7	1.4	154.1	0.0	2497:
	01:03:14	16.2989	24261.8	-7.0	154.1	0.0	2508:
	01:08:46	16.3911	24267.1	5.4	154.1	0.0	2519:
	01:14:13	16.4819	24257.2	-9.9	154.1	0.0	2530:
	01:19:44	16.5739	24261.9	4.7	154.1	0.0	2541:
	01:25:16	16.6661	24259.9	-2.0	154.1	0.0	2552:
	01:30:43	16.7569	24246.9	-13.0	154.1	0.0	2563:
	01:36:14	16.8489	24262.7	15.8	154.1	0.0	2574:
	01:41:46	16.9411	24235.0	-27.6	154.1	0.0	2585:
	01:47:13	17.0319	24243.1	8.1	154.1	0.0	2596:
	01:52:44	17.1239	24259.4	16.3	154.1	0.0	2607:
	01:58:12	17.2150	24250.5	-9.0	154.1	0.0	2618:
	02:03:43	17.3069	24257.1	6.6	154.1	0.0	2629:
	02:09:14	17.3989	24243.6	-13.5	154.1	0.0	2640:
	02:14:42	17.4900	24253.9	10.3	154.1	0.0	2651:
	02:20:13	17.5819	24245.1	-8.8	154.1	0.0	2662:
	02:25:44	17.6739	24236.9	-8.1	154.1	0.0	2673:
	02:31:12	17.7650	24244.4	7.4	154.1	0.0	2684:
	02:36:43	17.8569	24243.3	-1.1	154.1	0.0	2695:
	02:42:14	17.9489	24241.4	-1.9	154.1	0.0	2706:
	02:47:42	18.0400	24246.9	5.4	154.1	0.0	2717:
	02:53:13	18.1319	24246.7	-0.1	154.1	0.0	2728:
	02:58:44	18.2239	24251.6	4.9	154.1	0.0	2739:
	03:04:12	18.3150	24243.2	-8.4	154.1	0.0	2750:
	03:09:43	18.4069	24248.7	5.4	154.1	0.0	2761:
	03:15:11	18.4981	24246.3	-2.3	154.1	0.0	2772:
	03:20:42	18.5900	24240.2	-6.1	154.1	0.0	2783:
	03:26:13	18.6819	24238.5	-1.7	154.1	0.0	2794:
	03:31:41	18.7731	24220.2	-18.3	154.1	0.0	2805:
	03:37:12	18.8650	24240.0	19.8	154.1	0.0	2816:
	03:42:43	18.9569	24238.0	-2.0	154.1	0.0	2827:
	03:48:11	19.0481	24234.9	-3.0	154.1	0.0	2838:
	03:53:42	19.1400	24224.9	-10.1	154.1	0.0	2849:
	03:59:13	19.2319	24239.7	14.8	154.1	0.0	2860:
	04:04:41	19.3231	24227.4	-12.3	154.1	0.0	2871:
	04:10:12	19.4150	24230.5	3.1	154.1	0.0	2882:

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	04:15:40	19.5061	24236.3	5.8	154.1	0.0	2893:
	04:21:11	19.5981	24232.5	-3.8	154.1	-0.1	2904:
	04:26:42	19.6900	24216.5	-16.1	154.1	0.0	2915:
	04:32:10	19.7811	24236.0	19.5	154.1	0.0	2926:
	04:37:41	19.8731	24225.6	-10.4	154.1	0.0	2937:
	04:43:12	19.9650	24207.2	-18.4	154.1	0.0	2948:
	04:48:40	20.0561	24211.6	4.5	154.1	0.0	2959:
	04:54:11	20.1481	24232.5	20.8	154.1	0.0	2970:
	04:59:42	20.2400	24229.1	-3.4	154.1	0.0	2981:
	05:05:10	20.3311	24224.7	-4.4	154.1	0.0	2992:
	05:10:41	20.4231	24221.1	-3.5	154.1	0.0	3003:
	05:16:12	20.5150	24222.5	1.3	154.1	0.0	3014:
	05:21:40	20.6061	24219.7	-2.8	154.1	0.0	3025:
	05:27:11	20.6981	24226.8	7.1	154.1	0.0	3036:
	05:32:38	20.7889	24219.1	-7.7	154.1	0.0	3047:
	05:38:10	20.8811	24226.9	7.9	154.1	0.0	3058:
	05:43:41	20.9731	24224.3	-2.6	154.1	0.0	3069:
	05:49:08	21.0639	24208.7	-15.6	154.1	0.0	3080:
	05:54:40	21.1561	24217.6	8.8	154.1	0.0	3091:
	06:00:11	21.2481	24218.1	0.6	154.1	0.0	3102:
	06:05:38	21.3389	24215.2	-3.0	154.1	0.0	3113:
	06:11:10	21.4311	24208.4	-6.8	154.1	0.0	3124:
	06:16:41	21.5231	24223.6	15.2	154.1	0.0	3135:
	06:22:08	21.6139	24219.8	-3.8	154.1	0.0	3146:
	06:27:40	21.7061	24211.2	-8.7	154.1	0.0	3157:
	06:33:11	21.7981	24208.3	-2.9	154.1	0.0	3168:
	06:38:38	21.8889	24206.6	-1.7	154.1	0.0	3179:
	06:44:10	21.9811	24210.5	3.9	154.1	0.0	3190:
	06:49:37	22.0719	24199.4	-11.0	154.1	0.0	3201:
	06:55:08	22.1639	24213.7	14.3	154.1	0.0	3212:
	07:00:40	22.2561	24202.1	-11.7	154.1	0.0	3223:
	07:04:59	22.3281	24205.4	3.3	154.1	0.0	3234:
	07:07:55	22.3769	24209.3	3.9	154.1	0.0	3245:
	07:10:48	22.4250	24213.0	3.7	154.1	0.0	3256:
	07:13:44	22.4739	24210.9	-2.1	154.1	0.0	3267:
	07:16:37	22.5219	24198.5	-12.3	154.1	0.0	3278:
	07:19:34	22.5711	24202.3	3.7	154.1	0.0	3289:
	07:22:30	22.6200	24210.9	8.6	154.1	0.0	3300:
	07:25:23	22.6681	24206.1	-4.8	154.1	0.0	3311:
	07:28:19	22.7169	24211.2	5.1	154.1	0.0	3322:
	07:31:12	22.7650	24193.6	-17.7	154.1	0.0	3333:
	07:34:08	22.8139	24192.1	-1.5	154.1	0.0	3344:
	07:37:01	22.8619	24202.2	10.1	154.1	0.0	3355:
	07:39:58	22.9111	24204.7	2.6	154.1	0.0	3366:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A

Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	07:42:50	22.9589	24196.8	-7.9	154.1	0.0	3377:
	07:45:47	23.0081	24203.1	6.3	154.1	0.0	3388:
	07:48:43	23.0569	24203.6	0.5	154.1	0.0	3399:
	07:51:36	23.1050	24209.2	5.7	154.1	0.0	3410:
	07:54:32	23.1539	24208.1	-1.1	154.1	0.0	3421:
	07:57:25	23.2019	24208.1	0.0	154.1	0.0	3432:
	08:00:22	23.2511	24201.4	-6.8	154.1	0.0	3443:
	08:03:14	23.2989	24203.2	1.9	154.1	0.0	3454:
	08:06:11	23.3481	24197.6	-5.6	154.1	0.0	3465:
	08:09:07	23.3969	24199.2	1.6	154.1	0.0	3476:
	08:12:00	23.4450	24202.1	2.9	154.1	0.0	3487:
	08:14:56	23.4939	24200.6	-1.5	154.1	0.0	3498:
	08:17:49	23.5419	24194.1	-6.5	154.1	0.0	3509:
	08:20:46	23.5911	24202.0	7.9	154.1	0.0	3520:
	08:23:38	23.6389	24206.7	4.7	154.1	0.0	3531:
	08:26:35	23.6881	24199.2	-7.5	154.1	0.0	3542:
	08:29:31	23.7369	24204.4	5.2	154.1	0.0	3553:
	08:32:24	23.7850	25427.0	1222.6	154.2	0.2	3564:
	08:35:20	23.8339	25685.0	257.9	154.5	0.3	3575:
	08:38:13	23.8819	25773.6	88.7	154.6	0.1	3586:
	08:41:10	23.9311	25844.9	71.3	154.6	-0.1	3597:
	08:44:02	23.9789	25884.7	39.8	154.4	-0.1	3608:
	08:46:59	24.0281	25908.4	23.7	154.2	-0.2	3619:
	08:49:55	24.0769	25918.4	9.9	154.1	-0.2	3630:
	08:52:48	24.1250	25929.4	11.0	153.9	-0.1	3641:
	08:55:44	24.1739	25938.7	9.3	153.8	-0.2	3652:
	08:58:37	24.2219	25948.6	9.9	153.7	-0.1	3663:
	09:01:34	24.2711	25956.9	8.3	153.6	-0.1	3674:
	09:04:26	24.3189	25965.6	8.7	153.6	-0.1	3685:
	09:07:23	24.3681	25973.0	7.4	153.5	-0.1	3696:
	09:10:19	24.4169	25981.1	8.1	153.4	-0.1	3707:
	09:13:12	24.4650	25988.1	7.0	153.4	-0.1	3718:
	09:16:08	24.5139	25995.6	7.6	153.3	-0.1	3729:
	09:19:01	24.5619	26001.8	6.1	153.3	-0.1	3740:
	09:21:58	24.6111	26008.7	7.0	153.3	0.0	3751:
	09:24:50	24.6589	26014.0	5.2	153.2	-0.1	3762:
	09:27:47	24.7081	26019.9	5.9	153.2	-0.1	3773:
	09:30:43	24.7569	26024.9	5.0	153.2	0.0	3784:
	09:33:36	24.8050	26030.7	5.9	153.1	-0.1	3795:
	09:36:32	24.8539	26035.8	5.1	153.1	0.0	3806:
	09:39:25	24.9019	26040.7	4.8	153.1	-0.1	3817:
	09:42:22	24.9511	26048.4	7.7	153.1	0.0	3828:
	09:45:14	24.9989	26052.7	4.3	153.1	0.0	3839:
	09:48:11	25.0481	26056.4	3.7	153.1	0.0	3850:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800

Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A

Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	09:51:07	25.0969	26061.1	4.8	153.1	0.0	3861:
	09:54:00	25.1450	26065.1	3.9	153.1	0.0	3872:
	09:56:56	25.1939	26069.8	4.8	153.1	0.0	3883:
	09:59:49	25.2419	26073.9	4.1	153.1	0.0	3894:
	10:02:46	25.2911	26078.5	4.6	153.1	0.0	3905:
	10:05:38	25.3389	26082.5	4.0	153.1	0.0	3916:
	10:08:35	25.3881	26087.0	4.6	153.1	0.0	3927:
	10:11:31	25.4369	26090.7	3.7	153.1	0.0	3938:
	10:14:24	25.4850	26094.9	4.2	153.1	0.0	3949:
	10:17:20	25.5339	26098.4	3.5	153.1	0.0	3960:
	10:20:13	25.5819	26102.5	4.1	153.0	-0.1	3971:
	10:23:10	25.6311	26105.9	3.4	153.0	0.0	3982:
	10:26:02	25.6789	26109.8	3.9	153.0	0.0	3993:
	10:28:59	25.7281	26113.1	3.3	153.0	0.0	4004:
	10:31:55	25.7769	26116.7	3.6	152.9	-0.1	4015:
	10:34:48	25.8250	26119.9	3.2	152.9	0.0	4026:
	10:37:44	25.8739	26123.4	3.5	152.9	0.0	4037:
	10:40:37	25.9219	26126.6	3.2	152.9	0.0	4048:
	10:13:34	25.9711	26130.0	3.4	152.9	0.0	4059:
	10:46:26	26.0189	26132.8	2.8	152.9	0.0	4070:
	10:49:23	26.0681	26136.2	3.4	152.9	0.0	4081:
	10:52:19	26.1169	26139.0	2.8	152.9	-0.1	4092:
	10:55:12	26.1650	26142.2	3.2	152.9	0.0	4103:
	10:58:08	26.2139	26144.9	2.7	152.9	0.0	4114:
	11:01:01	26.2619	26148.1	3.2	152.9	0.0	4125:
	11:03:58	26.3111	26150.6	2.5	152.9	0.0	4136:
	11:06:50	26.3589	26153.6	3.0	152.8	-0.1	4147:
	11:09:47	26.4081	26156.2	2.6	152.8	0.0	4158:
	11:12:43	26.4569	26159.1	2.9	152.8	0.0	4169:
	11:15:36	26.5050	26161.5	2.4	152.8	0.0	4180:
	11:18:32	26.5539	26164.2	2.7	152.8	0.0	4191:
	11:21:25	26.6019	26166.6	2.4	152.8	0.0	4202:
	11:24:22	26.6511	26169.2	2.6	152.8	-0.1	4213:
	11:27:14	26.6989	26171.5	2.3	152.8	0.0	4224:
	11:30:11	26.7481	26174.0	2.5	152.8	0.0	4235:
	11:33:07	26.7969	26176.2	2.3	152.8	0.0	4246:
	11:36:00	26.8450	26178.6	2.4	152.8	0.0	4257:
	11:38:56	26.8939	26180.8	2.2	152.8	0.0	4268:
	11:41:49	26.9419	26183.2	2.3	152.7	-0.1	4279:
	11:44:46	26.9911	26185.3	2.1	152.7	0.0	4290:
	11:47:38	27.0389	26187.6	2.3	152.7	0.0	4301:
	11:50:35	27.0881	26189.5	1.9	152.7	0.0	4312:
	11:53:31	27.1369	26191.8	2.3	152.7	0.0	4323:
	11:56:24	27.1850	26193.8	2.0	152.7	-0.1	4334:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	11:59:20	27.2339	26196.0	2.2	152.7	0.0	4345:
	12:02:13	27.2819	26197.8	1.8	152.7	0.0	4356:
	12:05:10	27.3311	26199.8	2.0	152.7	0.0	4367:
	12:08:02	27.3789	26201.6	1.8	152.7	0.0	4378:
	12:10:59	27.4281	26203.6	2.0	152.6	-0.1	4389:
	12:13:55	27.4769	26205.4	1.8	152.6	0.0	4400:
	12:16:48	27.5250	26207.3	1.9	152.6	0.0	4411:
	12:19:44	27.5739	26208.9	1.7	152.6	0.0	4422:
	12:22:37	27.6219	26210.9	2.0	152.6	0.0	4433:
	12:25:34	27.6711	26212.4	1.5	152.6	0.0	4444:
	12:28:26	27.7189	26214.3	1.9	152.6	-0.1	4455:
	12:31:23	27.7681	26215.8	1.5	152.6	0.0	4466:
	12:34:19	27.8169	26217.7	1.9	152.6	0.0	4477:
	12:37:12	27.8650	26219.2	1.5	152.6	0.0	4488:
	12:40:08	27.9139	26221.0	1.9	152.6	0.0	4499:
	12:43:01	27.9619	26222.6	1.5	152.6	0.0	4510:
	12:45:58	28.0111	26224.1	1.6	152.6	0.0	4521:
	12:48:50	28.0589	26225.6	1.4	152.5	-0.1	4532:
	12:51:47	28.1081	26227.2	1.7	152.5	0.0	4543:
	12:54:43	28.1569	26228.7	1.4	152.5	0.0	4554:
	12:57:36	28.2050	26230.4	1.7	152.5	0.0	4565:
	13:00:32	28.2539	26231.7	1.3	152.5	0.0	4576:
	13:03:25	28.3019	26233.3	1.7	152.5	0.0	4587:
	13:06:22	28.3511	26234.6	1.3	152.4	-0.1	4598:
	13:09:14	28.3989	26236.1	1.5	152.4	0.0	4609:
	13:12:11	28.4481	26237.4	1.2	152.4	0.0	4620:
	13:15:07	28.4969	26239.0	1.6	152.4	0.0	4631:
	13:18:00	28.5450	26240.3	1.3	152.4	0.0	4642:
	13:20:56	28.5939	26241.8	1.5	152.4	0.0	4653:
	13:23:49	28.6419	26243.1	1.3	152.4	0.0	4664:
	13:26:46	28.6911	26244.6	1.4	152.4	0.0	4675:
	13:29:38	28.7389	26245.7	1.2	152.4	-0.1	4686:
	13:32:35	28.7881	26247.2	1.4	152.4	0.0	4697:
	13:35:31	28.8369	26248.3	1.2	152.4	0.0	4708:
	13:38:24	28.8850	26249.6	1.2	152.4	0.0	4719:
	13:41:20	28.9339	26250.8	1.2	152.4	0.0	4730:
	13:44:13	28.9819	26252.2	1.4	152.4	0.0	4741:
	13:47:10	29.0311	26253.3	1.1	152.4	0.0	4752:
	13:50:02	29.0789	26254.6	1.2	152.4	0.0	4763:
	13:52:59	29.1281	26255.8	1.2	152.3	-0.1	4774:
	13:55:55	29.1769	26257.0	1.2	152.3	0.0	4785:
	13:58:48	29.2250	26258.1	1.1	152.3	0.0	4796:
	14:01:44	29.2739	26259.3	1.2	152.3	0.0	4807:
	14:04:37	29.3219	26260.4	1.1	152.3	0.0	4818:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	14:07:34	29.3711	26261.6	1.2	152.3	0.0	4829:
	14:10:26	29.4189	26262.5	0.9	152.3	0.0	4840:
	14:13:23	29.4681	26263.8	1.3	152.3	0.0	4851:
	14:16:19	29.5169	26264.8	1.0	152.3	0.0	4862:
	14:19:12	29.5650	26265.9	1.2	152.3	-0.1	4873:
	14:22:08	29.6139	26266.9	1.0	152.3	0.0	4884:
	14:25:01	29.6619	26268.0	1.1	152.3	0.0	4895:
	14:27:58	29.7111	26269.0	1.0	152.3	0.0	4906:
	14:30:50	29.7589	26270.1	1.1	152.3	0.0	4917:
	14:33:47	29.8081	26271.0	0.9	152.3	0.0	4928:
	14:36:43	29.8569	26272.1	1.1	152.3	0.0	4939:
	14:39:36	29.9050	26273.0	0.8	152.3	0.0	4950:
	14:42:32	29.9539	26274.1	1.2	152.3	0.0	4961:
	14:45:25	30.0019	26275.0	0.8	152.3	0.0	4972:
	14:48:22	30.0511	26276.1	1.1	152.3	0.0	4983:
	14:51:14	30.0989	26277.0	0.9	152.2	-0.1	4994:
	14:54:11	30.1481	26278.1	1.1	152.2	0.0	5005:
	14:57:04	30.1961	26278.9	0.8	152.2	0.0	5016:
	15:00:00	30.2450	26279.9	1.0	152.2	0.0	5027:
	15:02:56	30.2939	26280.6	0.8	152.2	0.0	5038:
	15:05:49	30.3419	26281.7	1.0	152.2	0.0	5049:
	15:08:46	30.3911	26282.5	0.8	152.2	0.0	5060:
	15:11:38	30.4389	26283.5	1.0	152.2	0.0	5071:
	15:14:35	30.4881	26284.2	0.7	152.2	0.0	5082:
	15:17:28	30.5361	26285.2	1.0	152.2	0.0	5093:
	15:20:24	30.5850	26286.1	0.8	152.2	-0.1	5104:
	15:23:20	30.6339	26287.0	0.9	152.2	0.0	5115:
	15:26:13	30.6819	26287.9	0.9	152.2	0.0	5126:
	15:29:10	30.7311	26288.8	0.9	152.2	0.0	5137:
	15:32:02	30.7789	26289.5	0.8	152.2	0.0	5148:
	15:34:59	30.8281	26290.5	1.0	152.2	0.0	5159:
	15:37:52	30.8761	26291.2	0.7	152.2	0.0	5170:
	15:40:48	30.9250	26292.1	0.9	152.2	0.0	5181:
	15:43:44	30.9739	26292.8	0.8	152.2	0.0	5192:
	15:46:37	31.0219	26293.6	0.8	152.2	0.0	5203:
	15:49:34	31.0711	26294.4	0.8	152.2	0.0	5214:
	15:52:26	31.1189	26295.4	1.0	152.2	0.0	5225:
	15:55:23	31.1681	26296.1	0.8	152.1	-0.1	5236:
	15:59:42	31.2400	26297.6	1.4	152.1	0.0	5247:
	16:05:13	31.3319	26299.0	1.4	152.1	0.0	5258:
	16:10:41	31.4231	26300.4	1.4	152.1	0.0	5269:
	16:16:12	31.5150	26301.8	1.4	152.1	0.0	5280:
	16:21:43	31.6069	26303.1	1.3	152.1	0.0	5291:
	16:27:11	31.6981	26304.5	1.4	152.1	0.0	5302:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	16:32:42	31.7900	26305.8	1.3	152.1	0.0	5313:
	16:38:10	31.8811	26307.0	1.2	152.1	0.0	5324:
	16:43:41	31.9731	26308.3	1.3	152.1	0.0	5335:
	16:49:12	32.0650	26309.5	1.2	152.1	0.0	5346:
	16:54:40	32.1561	26310.8	1.3	152.1	0.0	5357:
	17:00:11	32.2481	26312.1	1.3	152.1	0.0	5368:
	17:05:42	32.3400	26313.4	1.2	152.1	0.0	5379:
	17:11:10	32.4311	26314.5	1.2	152.1	0.0	5390:
	17:16:41	32.5231	26315.8	1.2	152.1	0.0	5401:
	17:22:12	32.6150	26317.0	1.2	152.1	-0.1	5412:
	17:27:40	32.7061	26318.1	1.1	152.1	0.0	5423:
	17:33:11	32.7981	26319.3	1.2	152.1	0.0	5434:
	17:38:42	32.8900	26320.5	1.2	152.1	0.0	5445:
	17:44:10	32.9811	26321.4	1.0	152.1	0.0	5456:
	17:49:41	33.0731	26322.7	1.2	152.1	0.0	5467:
	17:55:08	33.1639	26323.7	1.0	152.1	0.0	5478:
	18:00:40	33.2561	26324.7	1.0	152.1	0.0	5489:
	18:06:11	33.3481	26325.7	1.0	152.0	-0.1	5500:
	18:11:38	33.4389	26326.7	1.0	152.0	0.0	5511:
	18:17:10	33.5311	26327.8	1.1	152.0	0.0	5522:
	18:22:41	33.6231	26328.8	1.0	152.0	0.0	5533:
	18:28:08	33.7139	26329.9	1.1	152.0	0.0	5544:
	18:33:40	33.8061	26330.9	1.0	152.0	0.0	5555:
	18:39:11	33.8981	26331.9	1.0	152.0	0.0	5566:
	18:44:38	33.9889	26332.8	0.9	152.0	0.0	5577:
	18:50:10	34.0811	26333.9	1.1	152.0	0.0	5588:
	18:55:37	34.1719	26334.9	1.0	152.0	0.0	5599:
	19:01:08	34.2639	26335.7	0.8	151.9	-0.1	5610:
	19:06:40	34.3561	26336.7	1.0	151.9	0.0	5621:
	19:12:07	34.4469	26337.7	1.0	151.9	0.0	5632:
	19:17:38	34.5389	26338.6	0.9	151.9	0.0	5643:
	19:23:10	34.6311	26339.6	1.0	151.9	0.0	5654:
	19:28:37	34.7219	26340.5	0.9	151.9	0.0	5665:
	19:34:08	34.8139	26341.4	1.0	151.9	0.0	5676:
	19:39:40	34.9061	26342.3	0.9	151.9	0.0	5687:
	19:45:07	34.9969	26343.3	1.0	151.9	0.0	5698:
	19:50:38	35.0889	26344.1	0.8	151.9	0.0	5709:
	19:56:10	35.1811	26345.0	1.0	151.9	0.0	5720:
	20:01:37	35.2719	26345.9	0.9	151.9	0.0	5731:
	20:07:08	35.3639	26346.8	0.9	151.9	-0.1	5742:
	20:12:36	35.4550	26347.6	0.8	151.9	0.0	5753:
	20:18:07	35.5469	26348.4	0.8	151.9	0.0	5764:
	20:23:38	35.6389	26349.3	0.9	151.9	0.0	5775:
	20:29:06	35.7300	26350.1	0.8	151.9	0.0	5786:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	20:34:37	35.8219	26350.8	0.7	151.9	0.0	5797:
	20:40:08	35.9139	26351.6	0.8	151.9	0.0	5808:
	20:45:36	36.0050	26352.5	0.9	151.9	0.0	5819:
	20:51:07	36.0969	26353.4	0.8	151.9	0.0	5830:
	20:56:38	36.1889	26354.1	0.8	151.9	0.0	5841:
	21:02:06	36.2800	26354.9	0.8	151.9	0.0	5852:
	21:07:37	36.3719	26355.8	0.9	151.9	0.0	5863:
	21:13:08	36.4639	26356.5	0.7	151.9	0.0	5874:
	21:18:36	36.5550	26357.2	0.8	151.8	-0.1	5885:
	21:24:07	36.6469	26358.0	0.8	151.8	0.0	5896:
	21:29:35	36.7381	26358.7	0.8	151.8	0.0	5907:
	21:35:06	36.8300	26359.5	0.8	151.8	0.0	5918:
	21:40:37	36.9219	26360.3	0.8	151.8	0.0	5929:
	21:46:05	37.0131	26361.0	0.8	151.8	0.0	5940:
	21:51:36	37.1050	26361.8	0.8	151.8	0.0	5951:
	21:57:07	37.1969	26362.5	0.8	151.8	0.0	5962:
	22:02:35	37.2881	26363.2	0.6	151.8	0.0	5973:
	22:08:06	37.3800	26363.8	0.7	151.8	0.0	5984:
	22:13:37	37.4719	26364.6	0.8	151.8	0.0	5995:
	22:19:05	37.5631	26365.3	0.7	151.8	0.0	6006:
	22:24:36	37.6550	26365.9	0.6	151.8	0.0	6017:
	22:30:04	37.7461	26366.7	0.8	151.8	0.0	6028:
	22:35:35	37.8381	26367.4	0.7	151.8	0.0	6039:
	22:41:06	37.9300	26368.0	0.6	151.8	0.0	6050:
	22:46:34	38.0211	26368.6	0.6	151.8	0.0	6061:
	22:52:05	38.1131	26369.4	0.8	151.8	-0.1	6072:
	22:57:36	38.2050	26369.9	0.6	151.8	0.0	6083:
	23:03:04	38.2961	26370.6	0.7	151.8	0.0	6094:
	23:08:35	38.3881	26371.3	0.7	151.8	0.0	6105:
	23:14:06	38.4800	26371.9	0.6	151.8	0.0	6116:
	23:19:34	38.5711	26372.5	0.6	151.8	0.0	6127:
	23:25:05	38.6631	26373.1	0.6	151.8	0.0	6138:
	23:30:36	38.7550	26373.8	0.7	151.8	0.0	6149:
	23:36:04	38.8461	26374.4	0.6	151.8	0.0	6160:
	23:41:35	38.9381	26375.0	0.6	151.8	0.0	6171:
	23:47:02	39.0289	26375.6	0.6	151.8	0.0	6182:
	23:52:34	39.1211	26376.3	0.6	151.8	0.0	6193:
	23:58:05	39.2131	26376.9	0.7	151.8	0.0	6204:
1998/07/13	00:03:32	39.3039	26377.5	0.6	151.8	0.0	6215:
	00:09:04	39.3961	26378.0	0.6	151.8	0.0	6226:
	00:14:35	39.4881	26378.7	0.6	151.8	0.0	6237:
	00:20:02	39.5789	26379.2	0.6	151.8	0.0	6248:
	00:25:34	39.6711	26379.8	0.6	151.8	0.0	6259:
	00:31:05	39.7631	26380.5	0.6	151.7	-0.1	6270:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	00:36:32	39.8539	26380.9	0.5	151.7	0.0	6281:
	00:42:04	39.9461	26381.6	0.6	151.7	0.0	6292:
	00:47:35	40.0381	26382.1	0.6	151.7	0.0	6303:
	00:53:02	40.1289	26382.7	0.6	151.7	0.0	6314:
	00:58:34	40.2211	26383.1	0.5	151.7	0.0	6325:
	01:04:01	40.3119	26383.8	0.7	151.7	0.0	6336:
	01:09:32	40.4039	26384.3	0.5	151.7	0.0	6347:
	01:15:04	40.4961	26384.8	0.5	151.7	0.0	6358:
	01:20:31	40.5869	26385.3	0.5	151.7	0.0	6369:
	01:26:02	40.6789	26385.9	0.6	151.7	0.0	6380:
	01:31:34	40.7711	26386.4	0.5	151.7	0.0	6391:
	01:37:01	40.8619	26387.0	0.6	151.7	0.0	6402:
	01:42:32	40.9539	26387.4	0.4	151.7	0.0	6413:
	01:48:04	41.0461	26388.0	0.6	151.7	0.0	6424:
	01:53:31	41.1369	26388.5	0.5	151.7	0.0	6435:
	01:59:02	41.2289	26389.1	0.6	151.7	0.0	6446:
	02:04:30	41.3200	26389.6	0.5	151.7	-0.1	6457:
	02:10:01	41.4119	26390.0	0.4	151.7	0.0	6468:
	02:15:32	41.5039	26390.5	0.6	151.7	0.0	6479:
	02:21:00	41.5950	26391.1	0.6	151.7	0.0	6490:
	02:26:31	41.6869	26391.6	0.6	151.7	0.0	6501:
	02:32:02	41.7789	26392.1	0.5	151.7	0.0	6512:
	02:37:30	41.8700	26392.6	0.5	151.7	0.0	6523:
	02:43:01	41.9619	26393.1	0.5	151.7	0.0	6534:
	02:48:32	42.0539	26393.5	0.4	151.7	0.0	6545:
	02:54:00	42.1450	26394.0	0.5	151.7	0.0	6556:
	02:59:31	42.2369	26394.5	0.6	151.7	0.0	6567:
	03:05:02	42.3289	26395.0	0.5	151.7	0.0	6578:
	03:10:30	42.4200	26395.5	0.5	151.7	0.0	6589:
	03:16:01	42.5119	26395.9	0.4	151.7	0.0	6600:
	03:21:29	42.6031	26396.4	0.5	151.7	0.0	6611:
	03:27:00	42.6950	26396.9	0.5	151.7	0.0	6622:
	03:32:31	42.7869	26397.3	0.4	151.7	0.0	6633:
	03:37:59	42.8781	26397.8	0.5	151.7	0.0	6644:
	03:43:30	42.9700	26398.2	0.4	151.7	0.0	6655:
	03:49:01	43.0619	26398.7	0.5	151.7	0.0	6666:
	03:54:29	43.1531	26399.1	0.5	151.7	0.0	6677:
	04:00:00	43.2450	26399.6	0.5	151.7	0.0	6688:
	04:05:31	43.3369	26400.0	0.4	151.7	0.0	6699:
	04:10:59	43.4281	26400.6	0.6	151.7	0.0	6710:
	04:16:30	43.5200	26401.0	0.4	151.6	-0.1	6721:
	04:21:58	43.6111	26401.4	0.4	151.6	0.0	6732:
	04:27:29	43.7031	26401.8	0.4	151.6	0.0	6743:
	04:33:00	43.7950	26402.3	0.5	151.6	0.0	6754:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	04:38:28	43.8861	26402.7	0.4	151.6	0.0	6765:
	04:43:59	43.9781	26403.1	0.4	151.6	0.0	6776:
	04:49:30	44.0700	26403.6	0.4	151.6	0.0	6787:
	04:54:58	44.1611	26404.0	0.4	151.6	0.0	6798:
	05:00:29	44.2531	26404.4	0.4	151.6	0.0	6809:
	05:05:56	44.3439	26404.8	0.4	151.6	0.0	6820:
	05:11:28	44.4361	26405.2	0.4	151.6	0.0	6831:
	05:16:59	44.5281	26405.7	0.5	151.6	0.0	6842:
	05:22:26	44.6189	26406.1	0.4	151.6	0.0	6853:
	05:27:58	44.7111	26406.5	0.3	151.6	0.0	6864:
	05:33:29	44.8031	26406.9	0.4	151.6	0.0	6875:
	05:38:56	44.8939	26407.3	0.4	151.6	0.0	6886:
	05:44:28	44.9861	26407.6	0.3	151.6	0.0	6897:
	05:49:59	45.0781	26407.9	0.3	151.6	0.0	6908:
	05:55:26	45.1689	26408.0	0.1	151.6	0.0	6919:
	06:00:58	45.2611	26408.4	0.4	151.6	0.0	6930:
	06:06:29	45.3531	26408.7	0.3	151.6	0.0	6941:
	06:11:56	45.4439	26409.2	0.5	151.6	0.0	6952:
	06:17:28	45.5361	26409.6	0.3	151.6	0.0	6963:
	06:22:55	45.6269	26409.8	0.2	151.6	0.0	6974:
	06:28:26	45.7189	26410.3	0.6	151.6	-0.1	6985:
	06:33:58	45.8111	26410.6	0.3	151.6	0.0	6996:
	06:39:25	45.9019	26411.0	0.4	151.6	0.0	7007:
	06:44:56	45.9939	26411.5	0.5	151.6	0.0	7018:
	06:50:28	46.0861	26411.8	0.3	151.6	0.0	7029:
	06:55:55	46.1769	26412.0	0.3	151.6	0.0	7040:
	07:01:26	46.2689	26412.4	0.3	151.6	0.0	7051:
	07:06:58	46.3611	26412.9	0.6	151.6	0.0	7062:
	07:12:25	46.4519	26413.3	0.3	151.6	0.0	7073:
	07:17:56	46.5439	26413.6	0.3	151.6	0.0	7084:
	07:23:24	46.6350	26413.9	0.3	151.6	0.0	7095:
	07:28:55	46.7269	26414.2	0.3	151.6	0.0	7106:
	07:34:26	46.8189	26414.7	0.4	151.6	0.0	7117:
	07:39:54	46.9100	26414.9	0.3	151.6	0.0	7128:
	07:45:25	47.0019	26415.3	0.3	151.6	0.0	7139:
	07:50:56	47.0939	26415.8	0.5	151.6	0.0	7150:
	07:56:24	47.1850	26416.0	0.3	151.6	0.0	7161:
	08:01:55	47.2769	26416.3	0.3	151.6	0.0	7172:
	08:07:26	47.3689	26416.7	0.4	151.6	0.0	7183:
	08:12:54	47.4600	26417.1	0.3	151.6	0.0	7194:
	08:18:25	47.5519	26417.4	0.3	151.6	0.0	7205:
	08:23:56	47.6439	26417.7	0.3	151.6	0.0	7216:
	08:29:24	47.7350	26418.2	0.5	151.6	0.0	7227:
	08:34:55	47.8269	26418.4	0.3	151.6	0.0	7238:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	08:40:23	47.9181	26418.7	0.3	151.6	0.0	7249:
	08:45:54	48.0100	26418.9	0.2	151.6	0.0	7260:
	08:51:25	48.1019	26419.4	0.5	151.6	0.0	7271:
	08:56:53	48.1931	26419.8	0.3	151.6	0.0	7282:
	09:02:24	48.2850	26420.0	0.3	151.6	0.0	7293:
	09:07:55	48.3769	26420.3	0.3	151.6	0.0	7304:
	09:13:23	48.4681	26420.7	0.3	151.6	0.0	7315:
	09:18:54	48.5600	26420.9	0.3	151.6	0.0	7326:
	09:24:25	48.6519	26421.3	0.3	151.5	-0.1	7337:
	09:29:53	48.7431	26421.6	0.3	151.5	0.0	7348:
	09:35:24	48.8350	26422.0	0.4	151.5	0.0	7359:
	09:40:55	48.9269	26422.2	0.3	151.5	0.0	7370:
	09:46:23	49.0181	26422.6	0.3	151.5	0.0	7381:
	09:51:54	49.1100	26422.9	0.3	151.5	0.0	7392:
	09:57:22	49.2011	26423.2	0.3	151.5	0.0	7403:
	10:02:53	49.2931	26423.5	0.3	151.5	0.0	7414:
	10:08:24	49.3850	26423.8	0.3	151.5	0.0	7425:
	10:13:52	49.4761	26424.0	0.2	151.5	0.0	7436:
	10:19:23	49.5681	26424.4	0.3	151.5	0.0	7447:
	10:24:54	49.6600	26424.7	0.3	151.5	0.0	7458:
	10:30:22	49.7511	26425.0	0.3	151.5	0.0	7469:
	10:35:53	49.8431	26425.3	0.3	151.5	0.0	7480:
	10:41:24	49.9350	26425.5	0.2	151.5	0.0	7491:
	10:46:52	50.0261	26425.8	0.3	151.5	0.0	7502:
	10:52:23	50.1181	26426.1	0.3	151.5	0.0	7513:
	10:57:50	50.2089	26426.3	0.2	151.5	0.0	7524:
	11:03:22	50.3011	26426.7	0.4	151.5	0.0	7535:
	11:08:53	50.3931	26427.0	0.3	151.5	0.0	7546:
	11:14:20	50.4839	26427.3	0.3	151.5	0.0	7557:
	11:19:52	50.5761	26427.5	0.1	151.5	0.0	7568:
	11:25:23	50.6681	26427.8	0.3	151.5	0.0	7579:
	11:30:50	50.7589	26428.1	0.3	151.5	0.0	7590:
	11:36:22	50.8511	26428.3	0.2	151.5	0.0	7601:
	11:41:53	50.9431	26428.6	0.3	151.5	0.0	7612:
	11:47:20	51.0339	26428.9	0.3	151.5	0.0	7623:
	11:52:52	51.1261	26429.2	0.3	151.5	0.0	7634:
	11:58:23	51.2181	26429.5	0.3	151.5	0.0	7645:
	12:03:50	51.3089	26429.7	0.2	151.5	0.0	7656:
	12:09:22	51.4011	26430.0	0.3	151.4	-0.1	7667:
	12:14:49	51.4919	26430.2	0.2	151.4	0.0	7678:
	12:20:20	51.5839	26430.5	0.3	151.4	0.0	7689:
	12:25:52	51.6761	26430.7	0.2	151.4	0.0	7700:
	12:31:19	51.7669	26431.0	0.3	151.4	0.0	7711:
	12:36:50	51.8589	26431.4	0.4	151.4	0.0	7722:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	12:42:22	51.9511	26431.6	0.2	151.4	0.0	7733:
	12:47:49	52.0419	26431.8	0.2	151.4	0.0	7744:
	12:53:20	52.1339	26432.2	0.3	151.4	0.0	7755:
	12:58:52	52.2261	26432.3	0.1	151.4	0.0	7766:
	13:04:19	52.3169	26432.7	0.3	151.4	0.0	7777:
	13:09:50	52.4089	26432.8	0.1	151.4	0.0	7788:
	13:15:22	52.5011	26433.1	0.3	151.4	0.0	7799:
	13:20:49	52.5919	26433.4	0.3	151.4	0.0	7810:
	13:26:20	52.6839	26433.5	0.1	151.4	0.0	7821:
	13:31:48	52.7750	26433.9	0.3	151.4	0.0	7832:
	13:37:19	52.8669	26434.2	0.3	151.4	0.0	7843:
	13:42:50	52.9589	26434.3	0.1	151.4	0.0	7854:
	13:48:18	53.0500	26434.6	0.3	151.4	0.0	7865:
	13:53:49	53.1419	26434.8	0.2	151.4	0.0	7876:
	13:59:20	53.2339	26435.1	0.3	151.4	0.0	7887:
	14:04:48	53.3250	26435.3	0.1	151.4	0.0	7898:
	14:10:19	53.4169	26435.5	0.3	151.4	0.0	7909:
	14:15:50	53.5089	26435.8	0.3	151.4	0.0	7920:
	14:21:18	53.6000	26436.0	0.1	151.4	0.0	7931:
	14:26:49	53.6919	26436.3	0.3	151.4	0.0	7942:
	14:32:17	53.7831	26436.6	0.3	151.4	0.0	7953:
	14:37:48	53.8750	26436.8	0.2	151.4	0.0	7964:
	14:43:19	53.9669	26437.1	0.3	151.4	0.0	7975:
	14:48:47	54.0581	26437.2	0.1	151.4	0.0	7986:
	14:54:18	54.1500	26437.4	0.2	151.4	0.0	7997:
	14:59:49	54.2419	26437.6	0.2	151.4	0.0	8008:
	15:05:17	54.3331	26438.0	0.3	151.4	0.0	8019:
	15:10:48	54.4250	26438.1	0.1	151.4	0.0	8030:
	15:16:19	54.5169	26438.4	0.3	151.4	0.0	8041:
	15:21:47	54.6081	26438.7	0.3	151.4	0.0	8052:
	15:27:18	54.7000	26438.8	0.1	151.4	0.0	8063:
	15:32:49	54.7919	26439.0	0.2	151.4	0.0	8074:
	15:38:17	54.8831	26439.3	0.3	151.4	0.0	8085:
	15:43:48	54.9750	26439.5	0.1	151.4	0.0	8096:
	15:49:16	55.0661	26439.6	0.1	151.4	0.0	8107:
	15:54:47	55.1581	26440.0	0.3	151.4	0.0	8118:
	16:00:18	55.2500	26440.2	0.2	151.4	0.0	8129:
	16:05:46	55.3411	26440.4	0.2	151.4	0.0	8140:
	16:11:17	55.4331	26440.6	0.3	151.4	0.0	8151:
	16:16:44	55.5239	26440.8	0.1	151.4	-0.1	8162:
	16:22:16	55.6161	26441.0	0.2	151.4	0.0	8173:
	16:27:47	55.7081	26441.2	0.2	151.4	0.0	8184:
	16:33:14	55.7989	26441.5	0.3	151.4	0.0	8195:
	16:38:46	55.8911	26441.7	0.2	151.4	0.0	8206:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	16:44:13	55.9819	26442.0	0.3	151.4	0.0	8217:
	16:49:44	56.0739	26442.0	0.1	151.4	0.0	8228:
	16:55:16	56.1661	26442.2	0.2	151.4	0.0	8239:
	17:00:43	56.2569	26442.4	0.2	151.4	0.0	8250:
	17:06:14	56.3489	26442.7	0.3	151.4	0.0	8261:
	17:11:46	56.4411	26442.9	0.1	151.4	0.0	8272:
	17:17:13	56.5319	26443.2	0.3	151.4	0.0	8283:
	17:22:44	56.6239	26443.3	0.1	151.4	0.0	8294:
	17:28:16	56.7161	26443.5	0.2	151.4	0.0	8305:
	17:33:43	56.8069	26443.7	0.1	151.4	0.0	8316:
	17:39:14	56.8989	26444.0	0.3	151.4	0.0	8327:
	17:44:46	56.9911	26444.1	0.1	151.4	0.0	8338:
	17:50:13	57.0819	26444.3	0.2	151.4	0.0	8349:
	17:55:44	57.1739	26444.6	0.3	151.4	0.0	8360:
	18:01:12	57.2650	26444.7	0.1	151.4	0.0	8371:
	18:06:43	57.3569	26444.9	0.2	151.4	0.0	8382:
	18:12:14	57.4489	26445.1	0.1	151.4	0.0	8393:
	18:17:42	57.5400	26445.4	0.3	151.4	0.0	8404:
	18:23:13	57.6319	26445.5	0.1	151.4	0.0	8415:
	18:28:44	57.7239	26445.7	0.2	151.4	0.0	8426:
	18:34:12	57.8150	26445.8	0.1	151.4	0.0	8437:
	18:39:43	57.9069	26446.1	0.3	151.4	0.0	8448:
	18:45:14	57.9989	26446.3	0.2	151.4	0.0	8459:
	18:50:42	58.0900	26446.4	0.1	151.4	0.0	8470:
	18:56:13	58.1819	26446.6	0.1	151.4	0.0	8481:
	19:01:41	58.2731	26446.8	0.2	151.4	0.0	8492:
	19:07:12	58.3650	26446.9	0.1	151.4	0.0	8503:
	19:12:43	58.4569	26447.1	0.1	151.4	0.0	8514:
	19:18:11	58.5481	26447.3	0.3	151.4	0.0	8525:
	19:23:42	58.6400	26447.5	0.1	151.4	0.0	8536:
	19:29:13	58.7319	26447.8	0.3	151.4	0.0	8547:
	19:34:41	58.8231	26448.0	0.2	151.4	0.0	8558:
	19:40:12	58.9150	26448.0	0.0	151.4	0.0	8569:
	19:45:43	59.0069	26448.3	0.3	151.4	0.0	8580:
	19:51:11	59.0981	26448.4	0.1	151.4	0.0	8591:
	19:56:42	59.1900	26448.6	0.2	151.4	0.0	8602:
	20:02:13	59.2819	26448.9	0.3	151.4	0.0	8613:
	20:07:41	59.3731	26449.0	0.1	151.4	0.0	8624:
	20:13:12	59.4650	26449.2	0.2	151.3	-0.1	8635:
	20:18:40	59.5561	26449.4	0.2	151.3	0.0	8646:
	20:24:11	59.6481	26449.4	0.0	151.3	0.0	8657:
	20:29:42	59.7400	26449.7	0.3	151.3	0.0	8668:
	20:35:10	59.8311	26449.8	0.1	151.3	0.0	8679:
	20:40:41	59.9231	26450.0	0.2	151.3	0.0	8690:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	20:46:12	60.0150	26450.1	0.1	151.3	0.0	8701:
	20:51:40	60.1061	26450.3	0.2	151.3	0.0	8712:
	20:57:11	60.1981	26450.5	0.2	151.3	0.0	8723:
	21:02:42	60.2900	26450.6	0.1	151.3	0.0	8734:
	21:08:10	60.3811	26450.9	0.2	151.3	0.0	8745:
	21:13:41	60.4731	26451.1	0.2	151.3	0.0	8756:
	21:19:12	60.5650	26451.1	0.1	151.3	0.0	8767:
	21:24:40	60.6561	26451.3	0.2	151.3	0.0	8778:
	21:30:11	60.7481	26451.5	0.1	151.3	0.0	8789:
	21:35:38	60.8389	26451.7	0.2	151.3	0.0	8800:
	21:41:10	60.9311	26451.9	0.2	151.3	0.0	8811:
	21:46:41	61.0231	26452.0	0.1	151.3	0.0	8822:
	21:52:08	61.1139	26452.1	0.1	151.3	0.0	8833:
	21:57:40	61.2061	26452.2	0.1	151.3	0.0	8844:
	22:03:11	61.2981	26452.4	0.2	151.3	0.0	8855:
	22:08:38	61.3889	26452.5	0.1	151.3	0.0	8866:
	22:14:10	61.4811	26452.8	0.3	151.3	0.0	8877:
	22:19:41	61.5731	26453.0	0.2	151.3	0.0	8888:
	22:25:08	61.6639	26453.1	0.1	151.3	0.0	8899:
	22:30:40	61.7561	26453.3	0.1	151.3	0.0	8910:
	22:36:07	61.8469	26453.4	0.1	151.3	0.0	8921:
	22:41:38	61.9389	26453.7	0.3	151.3	0.0	8932:
	22:47:10	62.0311	26453.7	0.0	151.3	0.0	8943:
	22:52:37	62.1219	26453.8	0.1	151.3	0.0	8954:
	22:58:08	62.2139	26454.0	0.2	151.3	0.0	8965:
	23:03:40	62.3061	26454.2	0.2	151.3	0.0	8976:
	23:09:07	62.3969	26454.4	0.2	151.3	0.0	8987:
	23:14:38	62.4889	26454.5	0.1	151.3	0.0	8998:
	23:20:10	62.5811	26454.8	0.3	151.3	0.0	9009:
	23:25:37	62.6719	26454.9	0.1	151.3	0.0	9020:
	23:31:08	62.7639	26455.0	0.1	151.3	0.0	9031:
	23:36:40	62.8561	26455.1	0.1	151.3	0.0	9042:
	23:42:07	62.9469	26455.3	0.1	151.3	0.0	9053:
	23:47:38	63.0389	26455.4	0.1	151.3	0.0	9064:
	23:53:06	63.1300	26455.5	0.1	151.3	0.0	9075:
	23:58:37	63.2219	26455.7	0.2	151.3	0.0	9086:
1998/07/14	00:04:08	63.3139	26455.9	0.2	151.3	0.0	9097:
	00:09:36	63.4050	26456.0	0.1	151.3	0.0	9108:
	00:15:07	63.4969	26456.2	0.1	151.3	0.0	9119:
	00:20:38	63.5889	26456.2	0.1	151.3	0.0	9130:
	00:26:06	63.6800	26456.4	0.2	151.3	0.0	9141:
	00:31:37	63.7719	26456.6	0.1	151.3	0.0	9152:
	00:37:08	63.8639	26456.6	0.1	151.3	0.0	9163:
	00:42:36	63.9550	26456.8	0.1	151.3	0.0	9174:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	00:48:07	64.0469	26456.9	0.1	151.3	0.0	9185:
	00:53:38	64.1389	26457.2	0.3	151.3	0.0	9196:
	00:59:06	64.2300	26457.3	0.1	151.3	0.0	9207:
	01:04:37	64.3219	26457.5	0.2	151.3	0.0	9218:
	01:10:05	64.4131	26457.5	0.0	151.3	0.0	9229:
	01:15:36	64.5050	26457.7	0.2	151.3	0.0	9240:
	01:21:07	64.5969	26457.7	0.1	151.3	0.0	9251:
	01:26:35	64.6881	26457.9	0.1	151.3	0.0	9262:
	01:32:06	64.7800	26458.1	0.2	151.3	0.0	9273:
	01:37:37	64.8719	26458.3	0.2	151.3	0.0	9284:
	01:43:05	64.9631	26458.3	0.0	151.3	0.0	9295:
	01:48:36	65.0550	26458.5	0.2	151.3	0.0	9306:
	01:54:07	65.1469	26458.6	0.1	151.3	0.0	9317:
	01:59:35	65.2381	26458.8	0.2	151.3	0.0	9328:
	02:05:06	65.3300	26459.0	0.2	151.3	0.0	9339:
	02:10:34	65.4211	26459.0	0.0	151.3	0.0	9350:
	02:16:05	65.5131	26459.1	0.1	151.3	0.0	9361:
	02:21:36	65.6050	26459.3	0.1	151.3	0.0	9372:
	02:27:04	65.6961	26459.4	0.1	151.3	-0.1	9383:
	02:32:35	65.7881	26459.5	0.1	151.3	0.0	9394:
	02:38:06	65.8800	26459.7	0.2	151.3	0.0	9405:
	02:43:34	65.9711	26459.8	0.1	151.3	0.0	9416:
	02:49:05	66.0631	26459.9	0.1	151.3	0.0	9427:
	02:54:36	66.1550	26460.1	0.2	151.3	0.0	9438:
	03:00:04	66.2461	26460.2	0.1	151.3	0.0	9449:
	03:05:35	66.3381	26460.3	0.1	151.3	0.0	9460:
	03:11:06	66.4300	26460.4	0.1	151.3	0.0	9471:
	03:16:34	66.5211	26460.6	0.1	151.3	0.0	9482:
	03:22:05	66.6131	26460.6	0.0	151.3	0.0	9493:
	03:27:32	66.7039	26460.9	0.3	151.3	0.0	9504:
	03:33:04	66.7961	26460.9	0.0	151.3	0.0	9515:
	03:38:35	66.8881	26461.1	0.2	151.3	0.0	9526:
	03:44:02	66.9789	26461.2	0.1	151.3	0.0	9537:
	03:49:34	67.0711	26461.3	0.1	151.3	0.0	9548:
	03:55:05	67.1631	26461.4	0.1	151.3	0.0	9559:
	04:00:32	67.2539	26461.6	0.2	151.3	0.0	9570:
	04:06:04	67.3461	26461.7	0.1	151.3	0.0	9581:
	04:11:35	67.4381	26461.7	0.1	151.3	0.0	9592:
	04:17:02	67.5289	26462.0	0.2	151.3	0.0	9603:
	04:22:34	67.6211	26462.0	0.1	151.3	0.0	9614:
	04:28:05	67.7131	26462.0	0.0	151.3	0.0	9625:
	04:33:32	67.8039	26462.3	0.3	151.3	0.0	9636:
	04:39:04	67.8961	26462.4	0.1	151.3	0.0	9647:
	04:44:31	67.9869	26462.6	0.2	151.3	0.0	9658:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	04:50:02	68.0789	26462.6	0.1	151.3	0.0	9669:
	04:55:34	68.1711	26462.7	0.1	151.3	0.0	9680:
	05:01:01	68.2619	26462.9	0.1	151.3	0.0	9691:
	05:06:32	68.3539	26463.1	0.2	151.3	0.0	9702:
	05:12:04	68.4461	26463.1	0.0	151.3	0.0	9713:
	05:17:31	68.5369	26463.2	0.1	151.3	0.0	9724:
	05:23:02	68.6289	26463.3	0.1	151.3	0.0	9735:
	05:28:34	68.7211	26463.4	0.1	151.3	0.0	9746:
	05:34:01	68.8119	26463.5	0.1	151.3	0.0	9757:
	05:39:32	68.9039	26463.7	0.1	151.3	0.0	9768:
	05:45:00	68.9950	26463.7	0.1	151.3	0.0	9779:
	05:50:31	69.0869	26463.8	0.1	151.3	0.0	9790:
	05:56:02	69.1789	26463.9	0.1	151.3	0.0	9801:
	06:01:30	69.2700	26464.1	0.2	151.3	0.0	9812:
	06:07:01	69.3619	26464.2	0.1	151.3	0.0	9823:
	06:12:32	69.4539	26464.3	0.1	151.3	0.0	9834:
	06:18:00	69.5450	26464.4	0.1	151.3	0.0	9845:
	06:23:31	69.6369	26464.5	0.1	151.3	0.0	9856:
	06:29:02	69.7289	26464.7	0.2	151.3	0.0	9867:
	06:34:30	69.8200	26464.7	0.0	151.3	0.0	9878:
	06:40:01	69.9119	26464.9	0.2	151.3	0.0	9889:
	06:45:32	70.0039	26465.0	0.1	151.3	0.0	9900:
	06:51:00	70.0950	26465.0	0.0	151.3	0.0	9911:
	06:56:31	70.1869	26465.2	0.2	151.3	0.0	9922:
	07:01:59	70.2781	26465.3	0.1	151.3	0.0	9933:
	07:07:30	70.3700	26465.3	0.1	151.3	0.0	9944:
	07:13:01	70.4619	26465.5	0.2	151.3	0.0	9955:
	07:18:29	70.5531	26465.7	0.2	151.3	0.0	9966:
	07:24:00	70.6450	26465.7	0.0	151.3	0.0	9977:
	07:29:31	70.7369	26465.8	0.1	151.3	0.0	9988:
	07:34:59	70.8281	26466.0	0.2	151.3	0.0	9999:
	07:40:30	70.9200	26466.0	0.0	151.3	0.0	10010:
	07:46:01	71.0119	26466.2	0.1	151.3	0.0	10021:
	07:51:29	71.1031	26466.2	0.1	151.3	0.0	10032:
	07:57:00	71.1950	26466.3	0.1	151.3	0.0	10043:
	08:02:31	71.2869	26466.4	0.1	151.3	0.0	10054:
	08:07:59	71.3781	26466.4	0.1	151.3	0.0	10065:
	08:13:30	71.4700	26466.6	0.1	151.3	0.0	10076:
	08:18:58	71.5611	26466.8	0.2	151.3	0.0	10087:
	08:24:29	71.6531	26466.8	0.0	151.3	0.0	10098:
	08:30:00	71.7450	26466.9	0.1	151.3	0.0	10109:
1998/07/14	08:30:29	71.7531	26466.9	0.0	151.3	0.0	10110:
				End Data Acquisition:			

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 11 data points.

GENCO Pressure Control Limited

(403) 250-3800 — CALGARY, AB.

SUBSURFACE PRESSURE MEASUREMENTS

Basic Data:

Company Ranger Oil Limited
Address #1600, 321 - 6Th. Ave. S.W.
Calgary, AB.
T2P 3H3

Gentronics Electronic Gauge
c/w Memory Recorder
S/N: GMQ-9804

Well Name	Ranger Fort Liard	Field & Pool	Liard / Nihanni
Well Identifier	P-66-A	Type of Test	Single Point Flow & B.U.
Status	Shut in Gas	Date of Test	Jul 11 - 14, 1998
DWG Tubing Pressure	N/A kPa	DWG Casing Pressure	N/A kPa
Tubing	88.9 mm @ 3082.4 m KB	Casing	177.8 mm @ 3499.0 m KB
Producing Interval	3115 - 3334 m KB	Producing Through	Tubing
Elevation	449.54 m CF, 459.89 m KB	MPP Interval	3214.2 m CF
Datum Depth of Well	m CF	Run Depth	3072 m CF
Temperature at Run Depth	150.9 °C	Pool Datum	m (subsea)
Pressure at Run Depth	26483 kPaG	Gradient at Run Depth	N/A kPa/m
MPP Pressure	kPaG	Datum Depth Pressure	kPaG
Final Buildup Pressure	26485 kPaG	Date on Bottom	July 11, 1998
Date off Bottom	July 14, 1998	Shut in Date	July 12, 1998

Summary:

Tandem LMR Quartz Recorders ran within specifications.

Recorders hung below RN Lock.

Preparation Data:

Tested By GENCO Computed By P. Mulgrew Report Date Jul 31, 1998

BOTTOM GAUGE

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

OPERATIONS SUMMARY

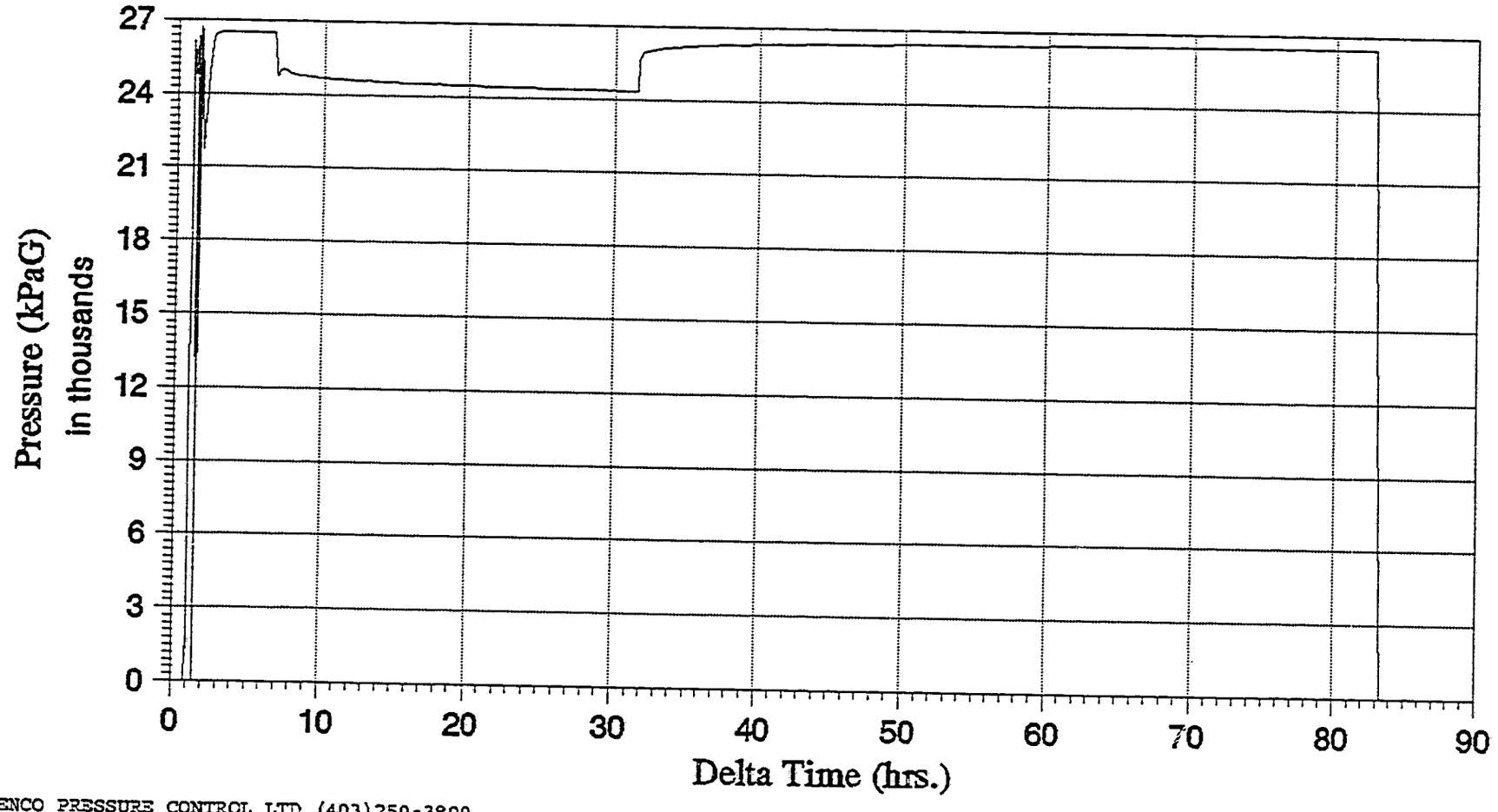
Company: **Ranger Oil Limited** LSD: **P-66-A**

Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/07/11	00:53:01	0.0000	14.9	22.4	1	Begin Data Acquisition
	01:49:00	0.9331	1388.8	17.6	638	Pressure Test Lubricator
	03:40:00	2.7831	26483.6	150.9	743	Recorders on Bottom at 3072 m CF.
	07:30:00	6.6164	26514.8	151.5	973	Well Open to Flow.
	08:30:00	7.6164	24937.3	154.4	1033	Start 24 Hour Flow Rate.
1998/07/12	08:30:00	31.6164	25230.6	154.2	2473	Well Shut In.
1998/07/14	11:46:00	82.8831	26485.0	151.3	5549	Recorders Off Bottom.
	14:15:00	85.3664	24.4	19.8	5696	End Data Acquisition

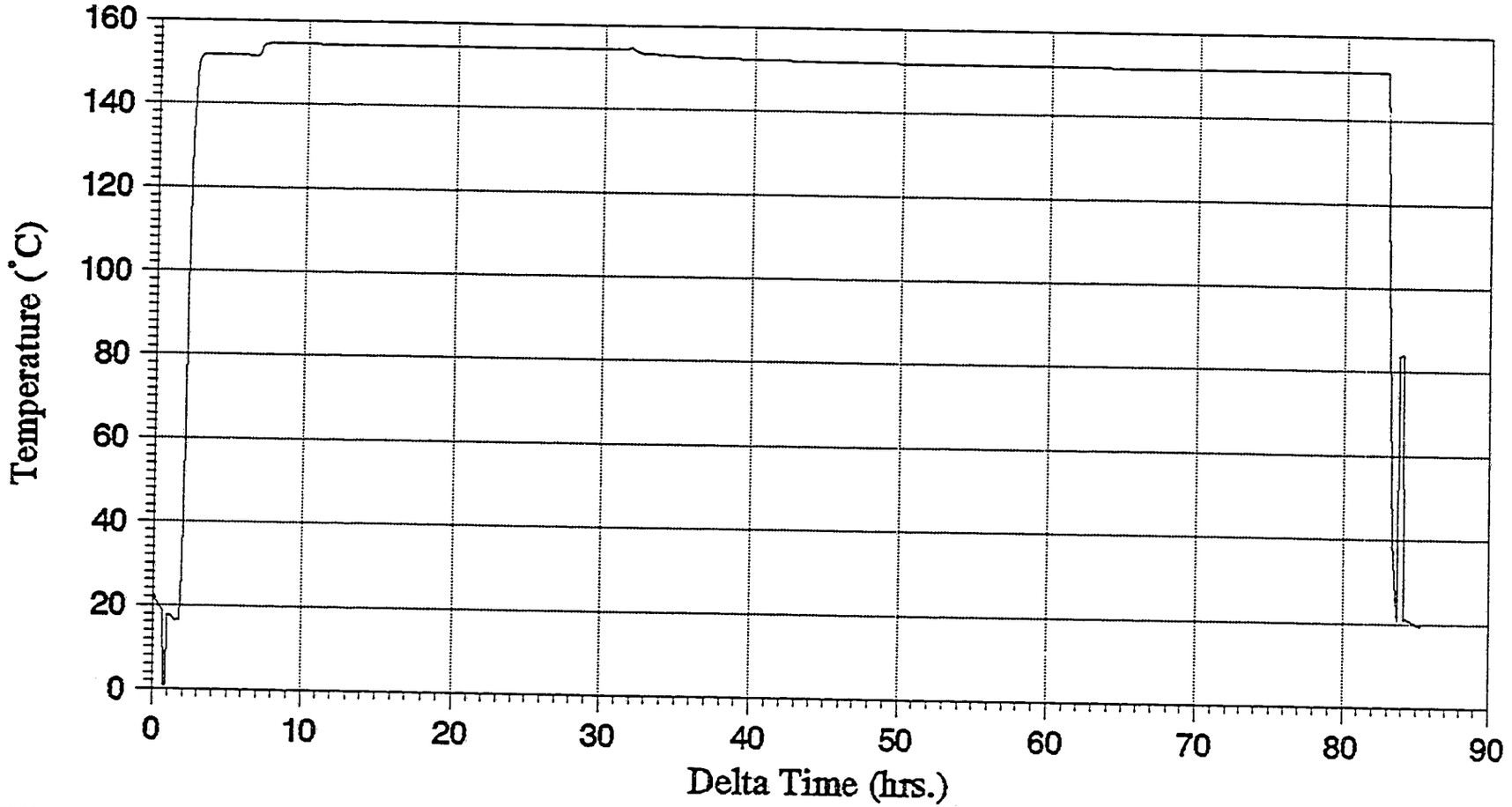
Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Pressures

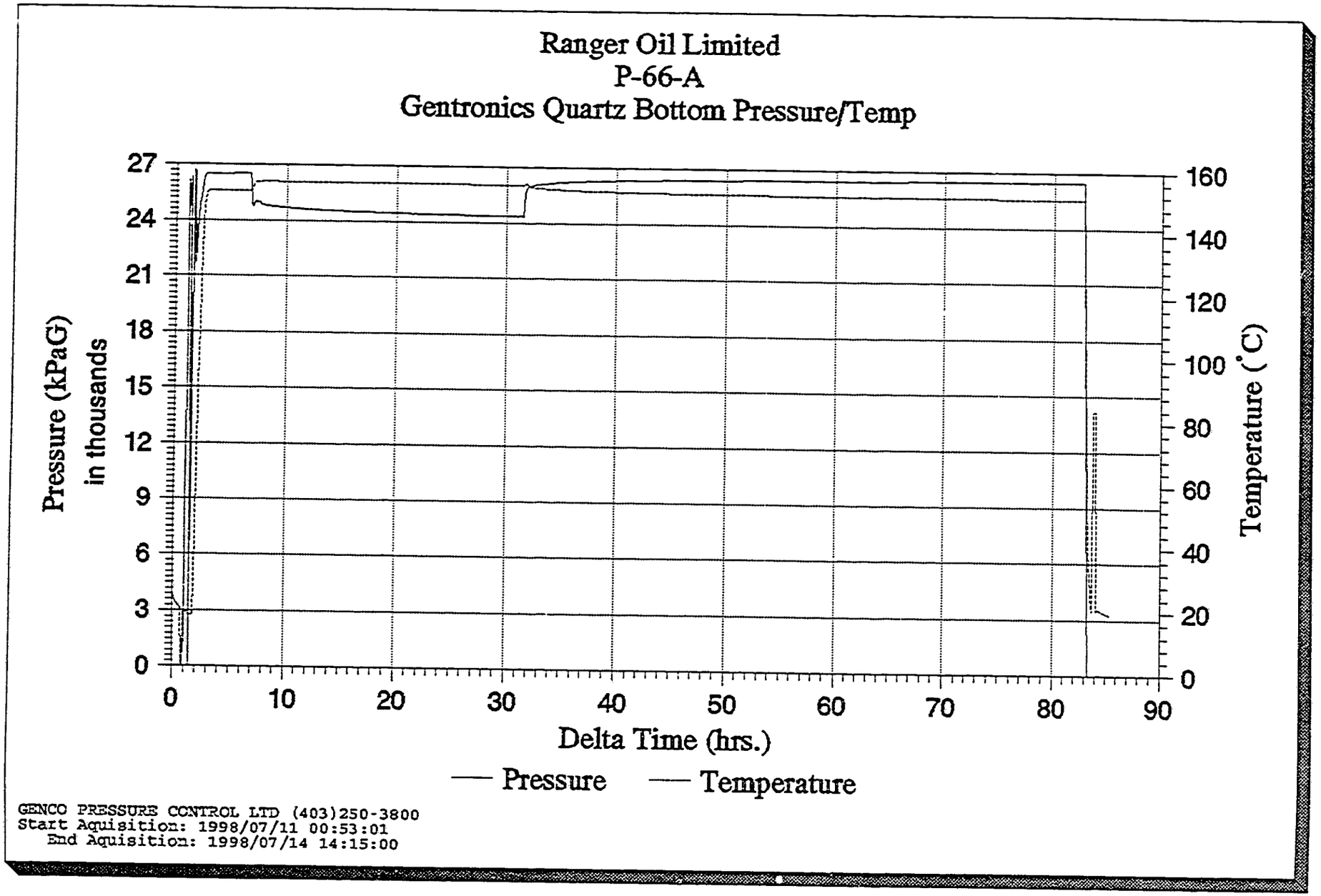


GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 00:53:01
End Aquisition: 1998/07/14 14:15:00

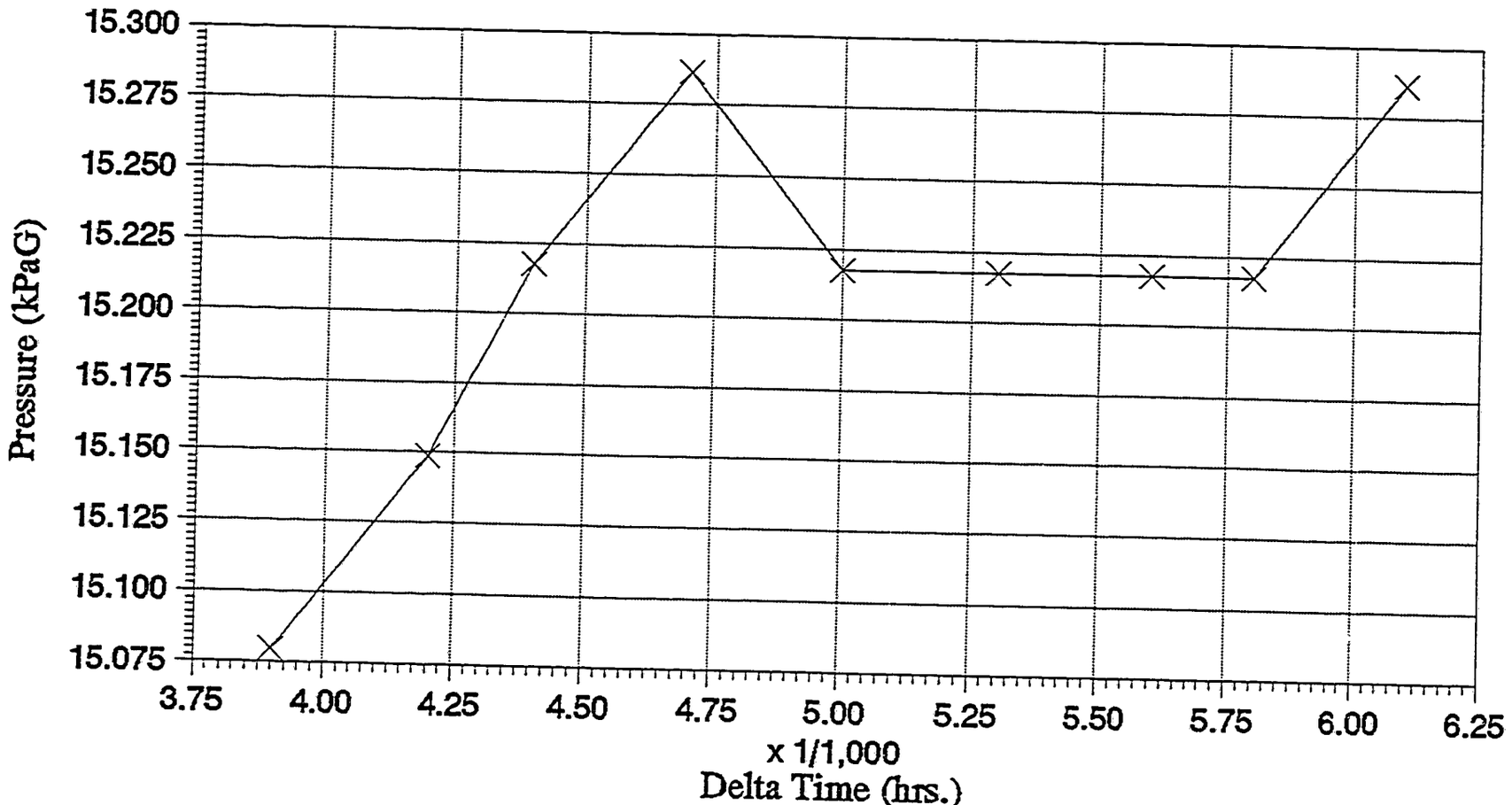
Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Temp.



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 00:53:01
End Aquisition: 1998/07/14 14:15:00

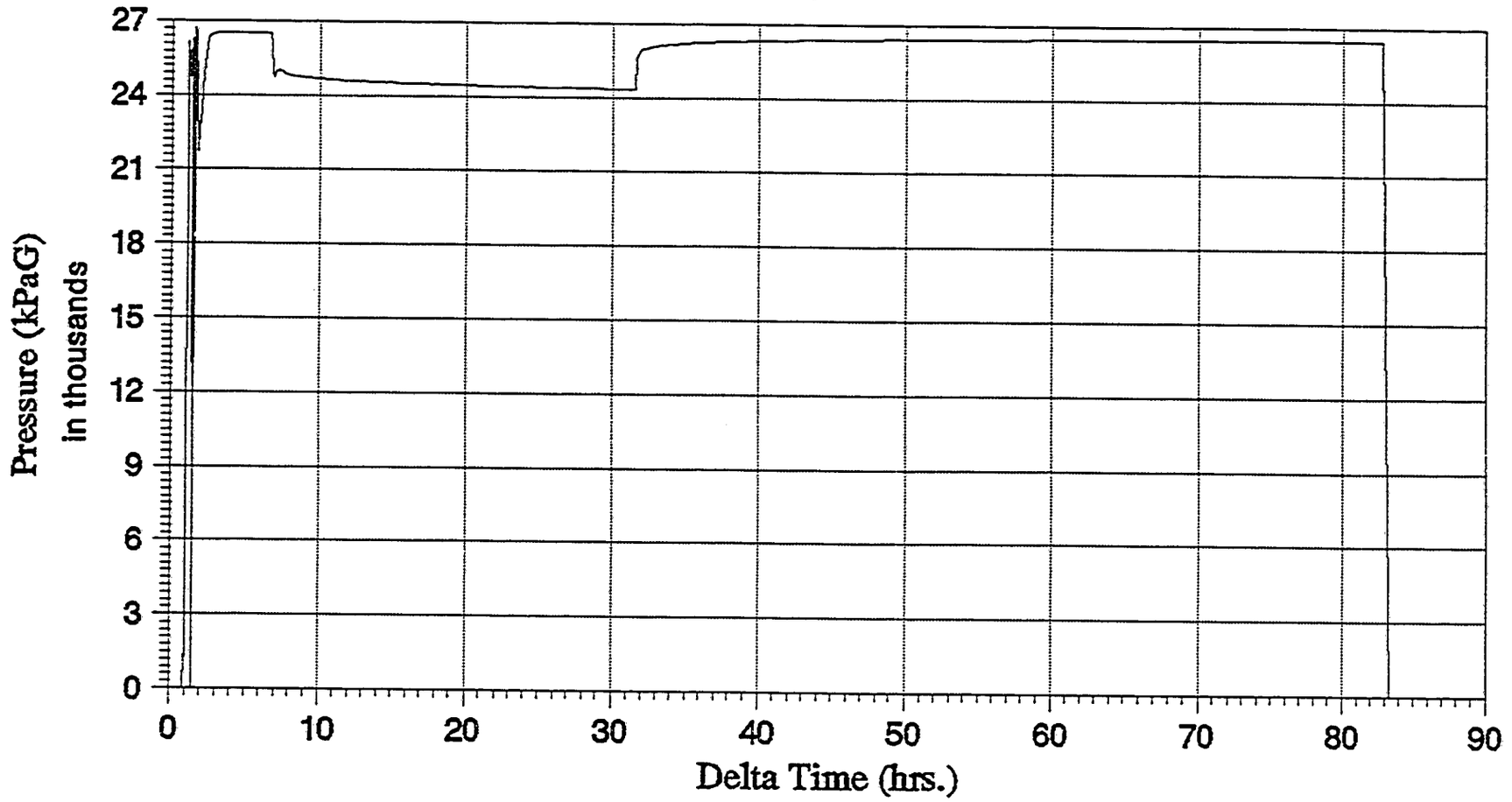

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Pressure/Temp
Pressure (kPaG)
in thousands
27
24
21
18
15
12
9
6
3
0
160
140
120
100
80
60
40
20
0
Temperature (°C)
0
10
20
30
40
50
60
70
80
90
Delta Time (hrs.)
— Pressure — Temperature
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 00:53:01
End Aquisition: 1998/07/14 14:15:00

Ranger Oil Limited
P-66-A
Bottom Gauge Apparent Resolution



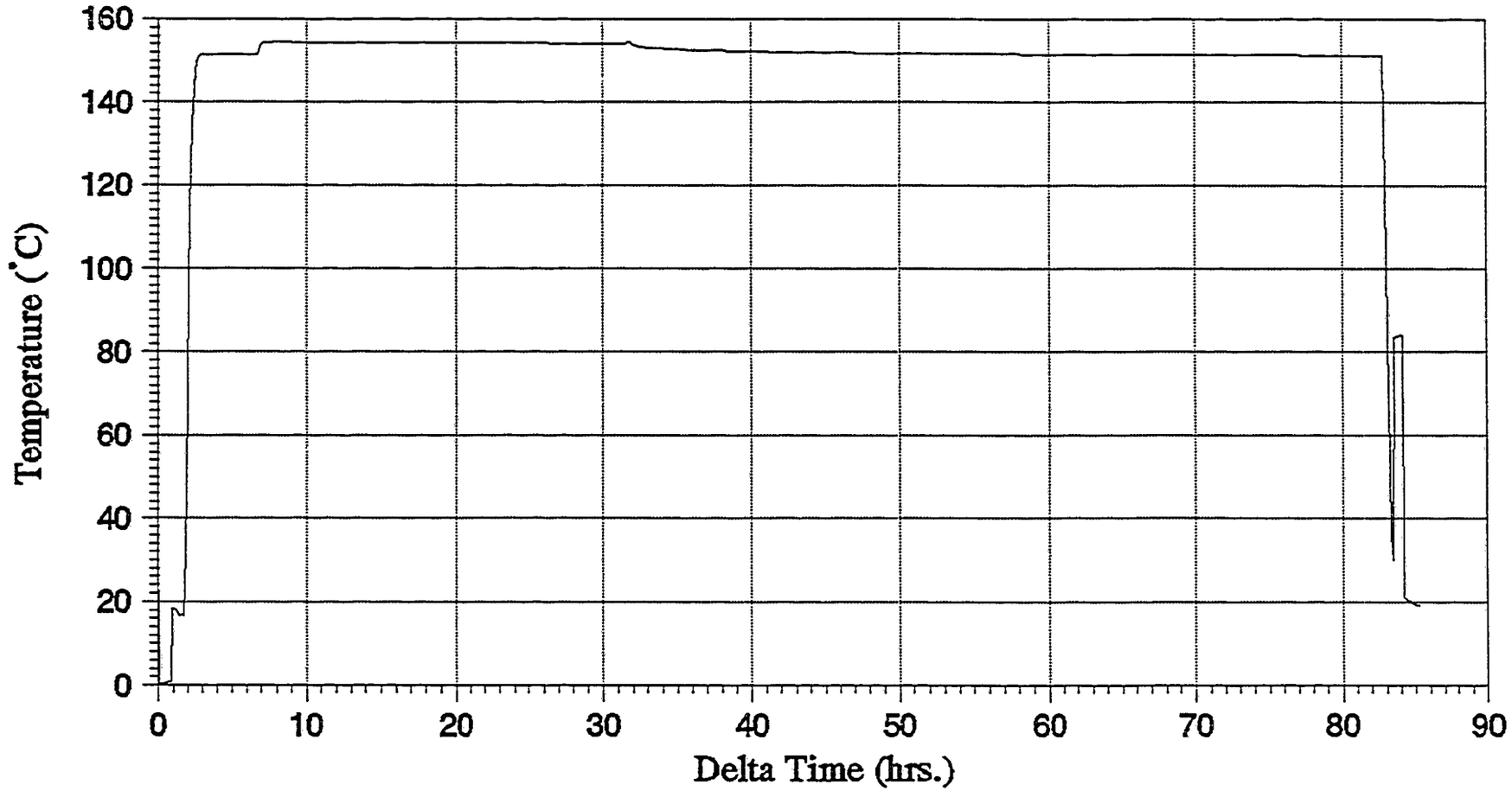
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 00:53:01
End Aquisition: 1998/07/14 14:15:00

Ranger Oil Limited
P-66-A
Gentronics Quartz Top Gauge Pressures



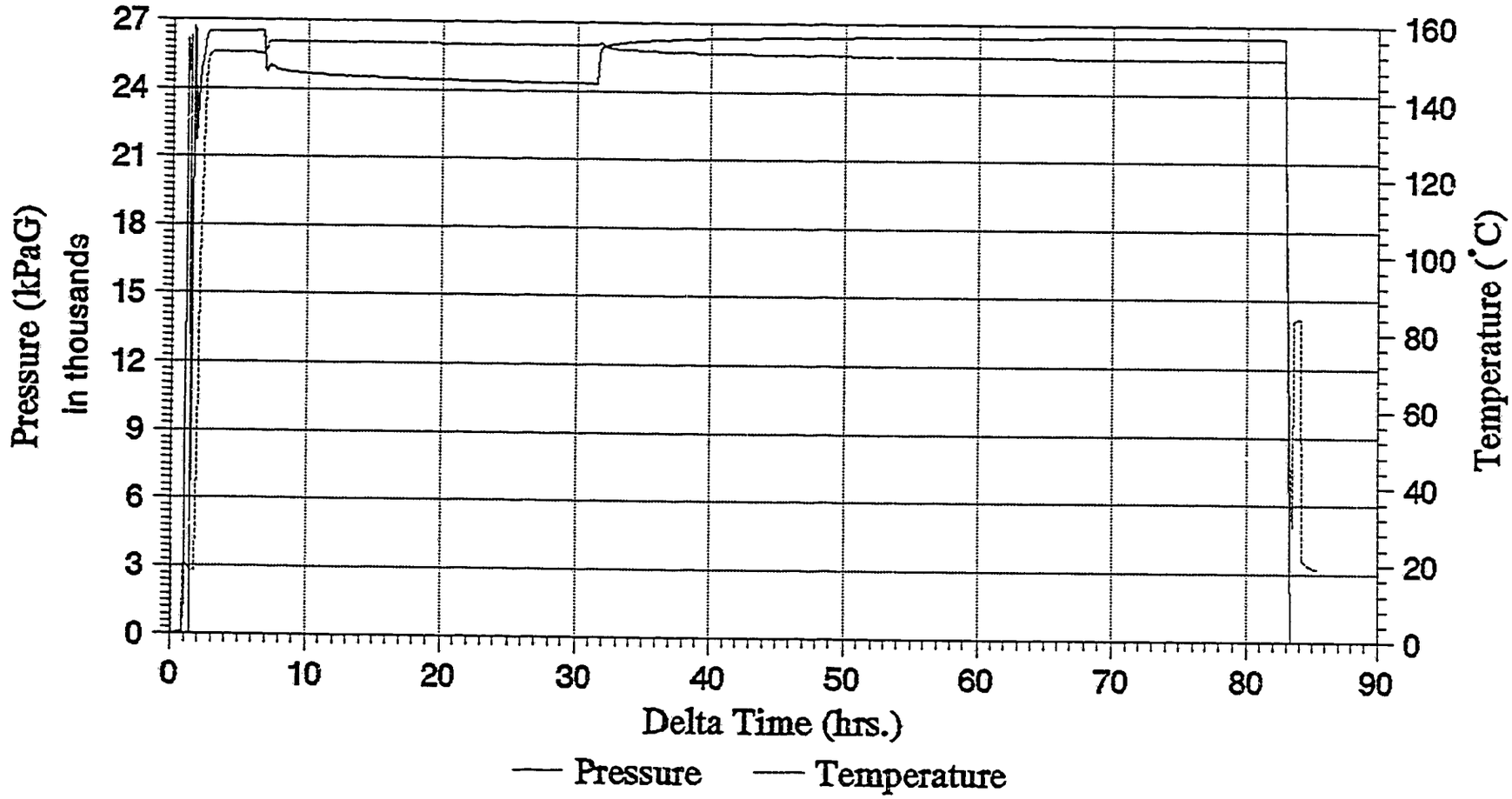
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 00:53:01
End Aquisition: 1998/07/14 14:13:00

Ranger Oil Limited
P-66-A
Gentronics Quartz Top Gauge Temp.



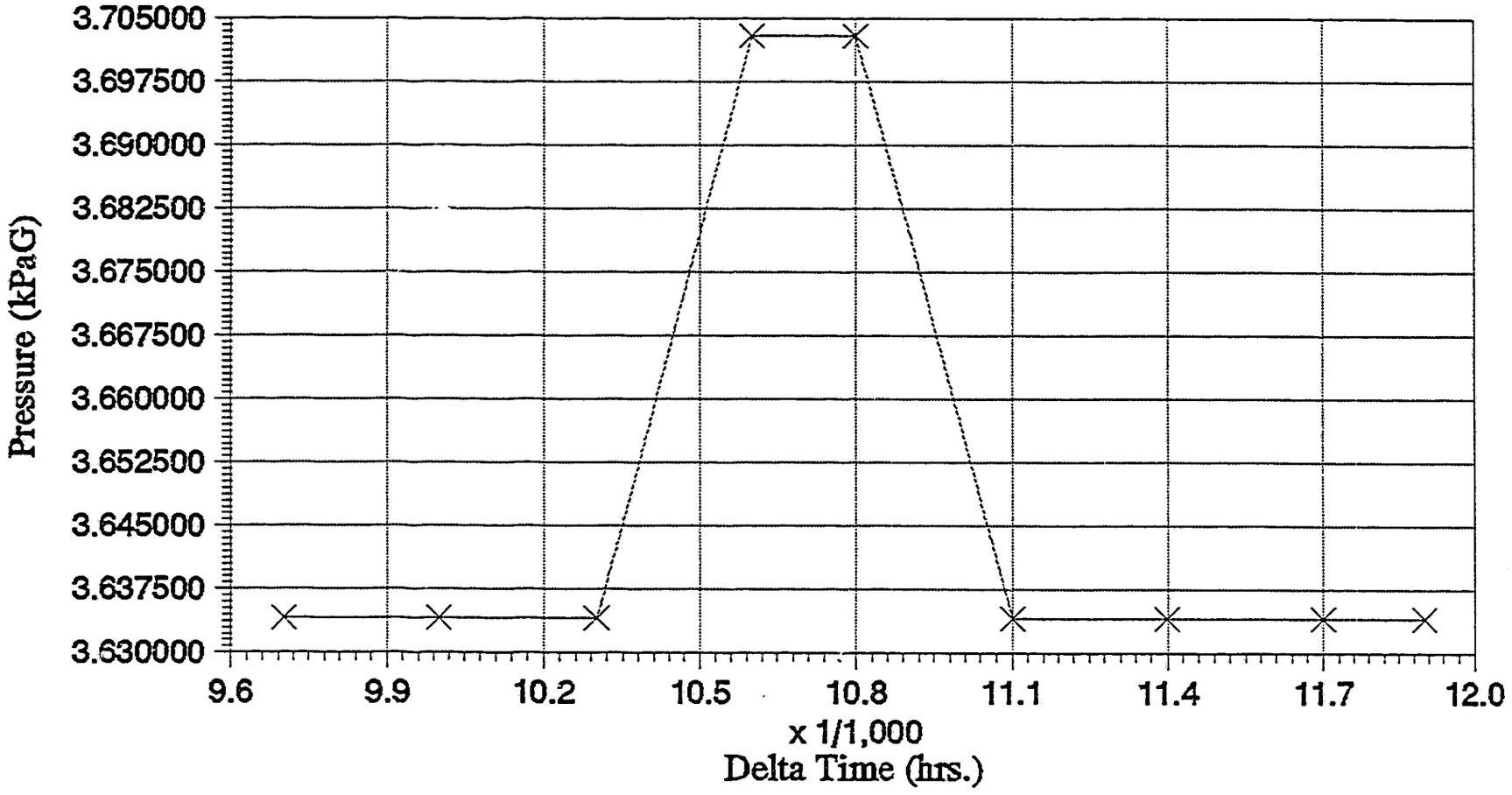
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 00:53:01
End Aquisition: 1998/07/14 14:13:00

Ranger Oil Limited
P-66-A
Gentronic Quartz Top Pressure/Temp



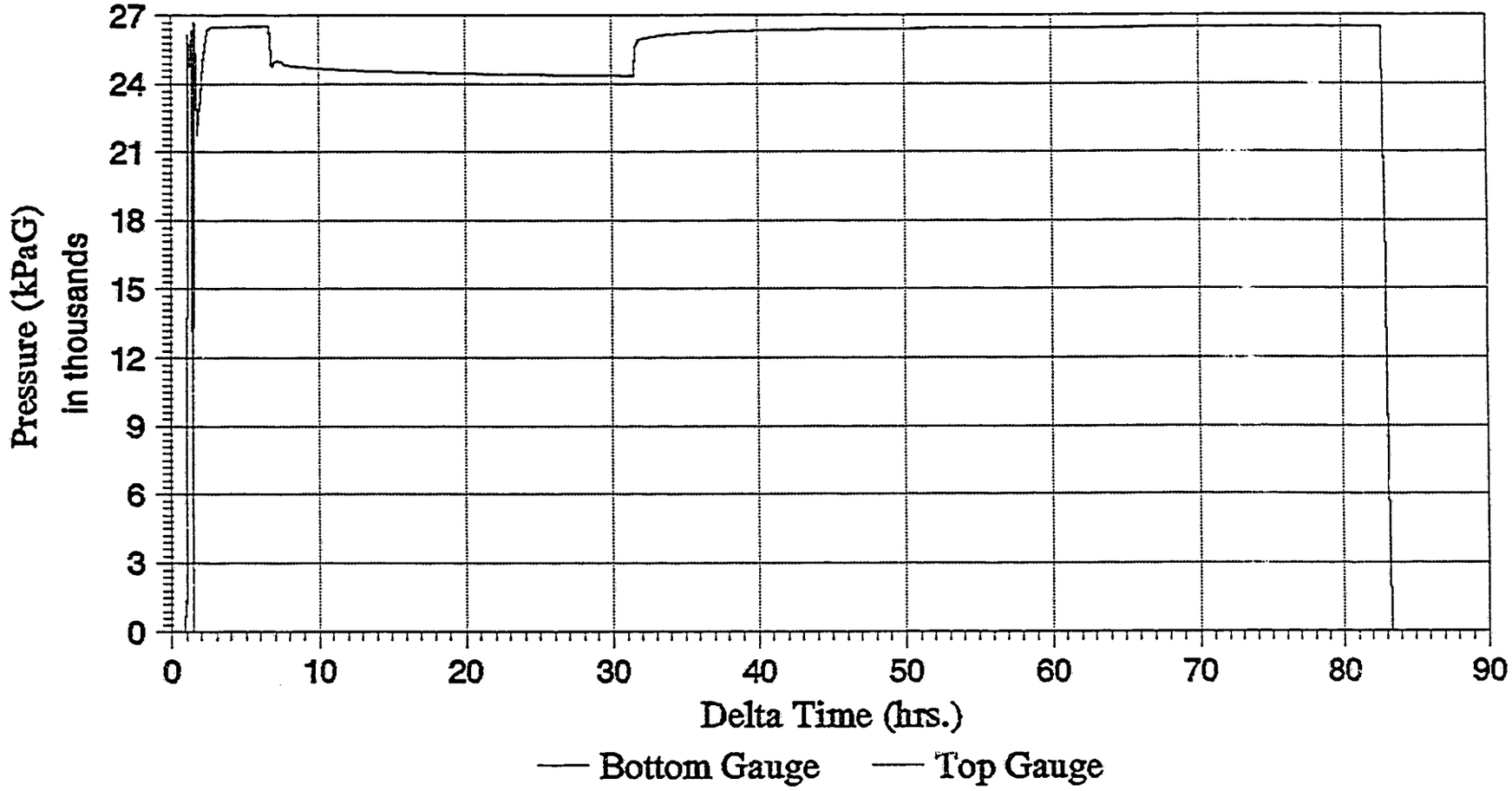
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 00:53:01
End Aquisition: 1998/07/14 14:13:00

Ranger Oil Limited
P-66-A
Top Gauge Apparent Resolution



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 00:53:01
End Aquisition: 1998/07/14 14:13:00

Ranger Oil Limited
P-66-A
Gentronics Quartz Gauge Press. Tracking



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/11 00:53:01
End Aquisition: 1998/07/14 14:13:00

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
				Begin Data Acquisition:			
1998/07/11	00:53:01	0.0000	14.9	14.9	22.4	22.4	0:
	00:53:06	0.0014	15.0	0.1	22.4	0.0	6:
	00:53:12	0.0031	14.9	-0.1	22.4	0.0	12:
	00:53:18	0.0047	15.3	0.3	22.4	-0.0	18:
	00:53:24	0.0064	15.2	-0.1	22.4	0.0	24:
	00:53:30	0.0081	15.2	0.0	22.4	0.0	30:
	00:53:36	0.0097	15.2	0.0	22.4	-0.0	36:
	00:53:42	0.0114	15.2	0.0	22.4	0.0	42:
	00:53:48	0.0131	15.2	0.0	22.4	0.0	48:
	00:53:54	0.0147	15.2	0.0	22.4	-0.0	54:
	00:54:00	0.0164	15.2	0.0	22.4	0.0	60:
	00:54:06	0.0181	15.2	0.0	22.4	-0.0	66:
	00:54:12	0.0197	15.3	0.1	22.4	0.0	72:
	00:54:18	0.0214	15.3	0.0	22.4	0.0	78:
	00:54:24	0.0231	15.3	0.0	22.4	-0.0	84:
	00:54:30	0.0247	15.3	0.0	22.4	0.0	90:
	00:54:36	0.0264	15.2	-0.1	22.4	0.0	96:
	00:54:42	0.0281	15.2	0.0	22.4	-0.0	102:
	00:54:48	0.0297	15.3	0.1	22.4	0.0	108:
	00:54:54	0.0314	15.2	-0.1	22.4	0.0	114:
	00:55:00	0.0331	15.2	0.0	22.4	-0.0	120:
	00:55:06	0.0347	15.2	0.0	22.4	0.0	126:
	00:55:12	0.0364	15.2	0.0	22.4	0.0	132:
	00:55:18	0.0381	15.2	0.0	22.4	-0.0	138:
	00:55:24	0.0397	15.2	0.0	22.4	0.0	144:
	00:55:30	0.0414	15.2	0.0	22.4	0.0	150:
	00:55:36	0.0431	15.1	-0.1	22.4	-0.0	156:
	00:55:42	0.0447	15.2	0.1	22.4	0.0	162:
	00:55:48	0.0464	15.3	0.1	22.3	-0.0	168:
	00:55:54	0.0481	15.1	-0.1	22.3	0.0	174:
	00:56:00	0.0497	15.0	-0.1	22.3	0.0	180:
	00:56:06	0.0514	14.8	-0.2	22.3	-0.0	186:
	00:56:13	0.0533	16.3	1.4	22.3	0.0	192:
	00:56:19	0.0550	16.2	-0.1	22.3	-0.0	198:
	00:56:25	0.0567	16.3	0.1	22.3	0.0	204:
	00:56:31	0.0583	15.8	-0.6	22.3	-0.0	210:
	00:56:37	0.0600	15.1	-0.7	22.3	0.0	216:
	00:56:43	0.0617	14.9	-0.1	22.3	-0.0	222:
	00:56:49	0.0633	14.9	0.0	22.3	-0.0	228:
	00:56:55	0.0650	14.9	-0.1	22.3	-0.0	234:
	00:57:01	0.0667	14.9	0.1	22.3	-0.0	240:
	00:57:07	0.0683	15.0	0.1	22.3	-0.0	246:
	00:57:13	0.0700	15.1	0.1	22.3	-0.0	252:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	00:57:19	0.0717	15.1	0.0	22.2	-0.0	258:
	00:57:25	0.0733	15.1	0.1	22.2	-0.0	264:
	00:57:31	0.0750	15.2	0.1	22.2	-0.0	270:
	00:57:37	0.0767	15.2	0.0	22.2	-0.0	276:
	00:57:43	0.0783	15.3	0.1	22.2	-0.0	282:
	00:57:49	0.0800	15.3	0.0	22.2	-0.0	288:
	00:57:55	0.0817	15.4	0.1	22.2	-0.0	294:
	00:58:01	0.0833	15.3	-0.1	22.2	-0.0	300:
	00:58:07	0.0850	15.4	0.1	22.2	-0.0	306:
	00:58:13	0.0867	15.5	0.1	22.1	-0.0	312:
	00:58:19	0.0883	15.4	-0.1	22.1	-0.0	318:
	00:58:25	0.0900	14.6	-0.8	22.1	-0.0	324:
	00:58:31	0.0917	12.6	-2.0	22.1	-0.0	330:
	00:58:37	0.0933	10.9	-1.7	22.1	-0.0	336:
	00:58:43	0.0950	9.6	-1.3	22.1	-0.0	342:
	00:58:49	0.0967	8.4	-1.2	22.0	-0.0	348:
	00:58:55	0.0983	7.6	-0.8	22.0	-0.0	354:
	00:59:01	0.1000	6.7	-0.8	22.0	-0.0	360:
	00:59:07	0.1017	6.2	-0.6	22.0	-0.0	366:
	00:59:13	0.1033	5.6	-0.6	22.0	-0.0	372:
	00:59:19	0.1050	5.3	-0.3	22.0	-0.0	378:
	00:59:25	0.1067	4.9	-0.3	22.0	-0.0	384:
	00:59:31	0.1083	4.6	-0.3	21.9	-0.0	390:
	00:59:37	0.1100	4.3	-0.3	21.9	-0.0	396:
	00:59:43	0.1117	4.2	-0.1	21.9	-0.0	402:
	00:59:49	0.1133	4.0	-0.2	21.9	-0.0	408:
	00:59:55	0.1150	3.8	-0.1	21.9	-0.0	414:
	01:00:01	0.1167	3.6	-0.2	21.9	-0.0	420:
	01:00:07	0.1183	3.6	0.0	21.8	-0.0	426:
	01:00:13	0.1200	3.5	-0.1	21.8	-0.0	432:
	01:00:19	0.1217	3.4	-0.1	21.8	-0.0	438:
	01:00:25	0.1233	3.3	-0.1	21.8	-0.0	444:
	01:00:31	0.1250	3.2	-0.1	21.8	-0.0	450:
	01:00:37	0.1267	3.1	-0.1	21.8	-0.0	456:
	01:00:43	0.1283	3.1	0.0	21.7	-0.0	462:
	01:00:49	0.1300	3.1	0.0	21.7	-0.0	468:
	01:00:55	0.1317	3.0	-0.1	21.7	-0.0	474:
	01:01:01	0.1333	2.9	-0.1	21.7	-0.0	480:
	01:01:07	0.1350	2.9	-0.1	21.7	-0.0	486:
	01:01:13	0.1367	2.9	0.0	21.7	-0.0	492:
	01:01:19	0.1383	2.9	0.0	21.6	-0.0	498:
	01:01:25	0.1400	2.9	0.0	21.6	-0.0	504:
	01:01:31	0.1417	2.8	-0.1	21.6	-0.0	510:
	01:01:37	0.1433	2.7	-0.1	21.6	-0.0	516:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-2800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	01:01:43	0.1450	2.7	0.0	21.6	-0.0	522:
	01:01:49	0.1467	2.7	0.0	21.6	-0.0	528:
	01:01:55	0.1483	2.7	-0.1	21.6	-0.0	534:
	01:02:01	0.1500	2.7	0.0	21.5	-0.0	540:
	01:02:07	0.1517	2.7	0.0	21.5	-0.0	546:
	01:02:13	0.1533	2.6	-0.1	21.5	-0.0	552:
	01:02:19	0.1550	2.6	0.0	21.5	-0.0	558:
	01:02:25	0.1567	2.5	-0.1	21.5	-0.0	564:
	01:02:31	0.1583	2.6	0.1	21.5	-0.0	570:
	01:02:37	0.1600	2.5	-0.1	21.5	-0.0	576:
	01:02:43	0.1617	2.5	0.0	21.4	-0.0	582:
	01:02:49	0.1633	2.5	0.0	21.4	-0.0	588:
	01:02:55	0.1650	2.5	0.0	21.4	-0.0	594:
	01:05:00	0.1997	2.2	-0.3	21.1	-0.3	600:
	01:12:00	0.3164	1.4	-0.8	20.3	-0.8	606:
	01:20:00	0.4497	0.9	-0.5	19.6	-0.7	612:
	01:29:00	0.5997	0.4	-0.6	18.8	-0.8	618:
	01:35:00	0.6997	0.0	-0.4	18.4	-0.4	624:
	01:41:00	0.7997	0.0	0.0	0.8	-17.6	630:
	01:47:00	0.8997	40.0	40.0	17.6	16.8	636:
	01:53:00	0.9997	1298.2	1258.1	17.6	-0.1	642:
	02:00:00	1.1164	26174.1	24875.9	17.5	-0.1	648:
	02:06:00	1.2164	23991.4	-2182.7	17.3	-0.2	654:
	02:14:00	1.3497	26331.0	2339.6	16.8	-0.4	660:
	02:21:00	1.4664	254.0	-26077.0	16.1	-0.7	666:
	02:27:00	1.5664	26690.5	26436.5	16.4	0.3	672:
	02:34:00	1.6831	22264.8	-4425.8	16.4	-0.0	678:
	02:41:00	1.7997	22181.2	-83.6	22.0	5.6	684:
	02:47:00	1.8997	23040.3	859.1	37.2	15.1	690:
	02:53:00	1.9997	24015.3	975.0	60.4	23.3	696:
	02:59:00	2.0997	24853.6	838.3	90.0	29.6	702:
	03:05:00	2.1997	25332.6	479.0	111.6	21.6	708:
	03:11:00	2.2997	25766.7	434.1	125.8	14.3	714:
	03:17:00	2.3997	26193.7	427.0	137.8	12.0	720:
	03:23:00	2.4997	26379.8	186.1	145.8	7.9	726:
	03:29:00	2.5997	26432.9	53.1	149.1	3.3	732:
	03:35:00	2.6997	26472.9	40.0	150.4	1.3	738:
	03:41:00	2.7997	26482.0	9.1	151.1	0.6	744:
	03:47:00	2.8997	26493.1	11.0	151.4	0.3	750:
	03:53:00	2.9997	26496.8	3.8	151.6	0.2	756:
	03:59:00	3.0997	26500.0	3.2	151.6	0.0	762:
	04:05:00	3.1997	26500.6	0.6	151.6	0.0	768:
	04:11:00	3.2997	26501.2	0.6	151.6	0.0	774:
	04:17:00	3.3997	26501.7	0.6	151.6	0.0	780:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	04:23:00	3.4997	26502.4	0.7	151.6	0.0	786:
	04:29:00	3.5997	26502.9	0.5	151.6	0.1	792:
	04:35:00	3.6997	26503.5	0.6	151.6	0.0	798:
	04:41:00	3.7997	26504.1	0.6	151.6	0.0	804:
	04:47:00	3.8997	26504.5	0.4	151.6	0.0	810:
	04:53:00	3.9997	26505.1	0.6	151.6	0.0	816:
	04:59:00	4.0997	26505.5	0.3	151.6	0.0	822:
	05:05:00	4.1997	26505.9	0.5	151.6	0.0	828:
	05:11:00	4.2997	26506.4	0.5	151.6	0.0	834:
	05:17:00	4.3997	26506.8	0.4	151.6	0.0	840:
	05:23:00	4.4997	26507.3	0.5	151.6	0.0	846:
	05:29:00	4.5997	26507.7	0.4	151.6	-0.1	852:
	05:35:00	4.6997	26508.2	0.4	151.6	0.0	858:
	05:41:00	4.7997	26508.6	0.4	151.6	0.0	864:
	05:47:00	4.8997	26508.9	0.3	151.6	0.0	870:
	05:53:00	4.9997	26509.3	0.3	151.6	0.0	876:
	05:59:00	5.0997	26509.7	0.5	151.6	0.0	882:
	06:05:00	5.1997	26510.1	0.3	151.6	0.0	888:
	06:11:00	5.2997	26510.5	0.4	151.6	0.0	894:
	06:17:00	5.3997	26510.7	0.2	151.6	0.0	900:
	06:23:00	5.4997	26511.1	0.4	151.6	0.0	906:
	06:29:00	5.5997	26511.6	0.5	151.6	0.0	912:
	06:35:00	5.6997	26512.1	0.5	151.6	0.0	918:
	06:41:00	5.7997	26512.5	0.4	151.6	0.0	924:
	06:47:00	5.8997	26512.7	0.2	151.6	0.0	930:
	06:53:00	5.9997	26513.0	0.3	151.5	-0.1	936:
	06:59:00	6.0997	26513.4	0.3	151.5	0.0	942:
	07:05:00	6.1997	26513.7	0.3	151.5	0.0	948:
	07:11:00	6.2997	26513.9	0.3	151.5	0.0	954:
	07:17:00	6.3997	26514.3	0.3	151.5	0.0	960:
	07:23:00	6.4997	26514.6	0.3	151.5	0.0	966:
	07:29:00	6.5997	26515.0	0.3	151.5	0.0	972:
	07:35:00	6.6997	25750.9	-764.1	151.6	0.1	978:
	07:41:00	6.7997	24725.4	-1025.5	152.1	0.5	984:
	07:47:00	6.8997	24771.9	46.5	153.1	0.9	990:
	07:53:00	6.9997	24968.8	197.0	153.9	0.9	996:
	07:59:00	7.0997	24992.1	23.2	154.2	0.3	1002:
	08:05:00	7.1997	25005.3	13.2	154.3	0.1	1008:
	08:11:00	7.2997	24953.2	-52.1	154.4	0.1	1014:
	08:17:00	7.3997	24986.6	33.4	154.4	0.1	1020:
	08:23:00	7.4997	24964.8	-21.9	154.4	0.0	1026:
	08:29:00	7.5997	24941.7	-23.0	154.4	0.0	1032:
	08:35:00	7.6997	24847.5	-94.3	154.4	0.0	1038:
	08:41:00	7.7997	24843.4	-4.1	154.5	0.1	1044:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	08:47:00	7.8997	24823.7	-19.7	154.5	0.0	1050:
	08:53:00	7.9997	24811.0	-12.7	154.5	0.0	1056:
	08:59:00	8.0997	24806.1	-4.9	154.5	0.0	1062:
	09:05:00	8.1997	24797.0	-9.1	154.5	0.0	1068:
	09:11:00	8.2997	24783.0	-14.0	154.5	0.0	1074:
	09:17:00	8.3997	24772.3	-10.8	154.5	0.0	1080:
	09:23:00	8.4997	24771.6	-0.7	154.5	0.0	1086:
	09:29:00	8.5997	24762.9	-8.7	154.5	0.0	1092:
	09:35:00	8.6997	24756.7	-6.2	154.5	0.0	1098:
	09:41:00	8.7997	24744.5	-12.1	154.5	0.0	1104:
	09:47:00	8.8997	24741.7	-2.8	154.5	0.0	1110:
	09:53:00	8.9997	24741.4	-0.3	154.5	0.0	1116:
	09:59:00	9.0997	24736.5	-4.9	154.5	0.0	1122:
	10:05:00	9.1997	24726.3	-10.1	154.4	-0.1	1128:
	10:11:00	9.2997	24716.1	-10.3	154.4	0.0	1134:
	10:17:00	9.3997	24711.3	-4.8	154.4	0.0	1140:
	10:23:00	9.4997	24716.3	5.0	154.4	0.0	1146:
	10:29:00	9.5997	24699.7	-16.7	154.4	0.0	1152:
	10:35:00	9.6997	24695.6	-4.1	154.4	0.0	1158:
	10:41:00	9.7997	24686.8	-8.8	154.4	0.0	1164:
	10:47:00	9.8997	24692.1	5.3	154.4	0.0	1170:
	10:53:00	9.9997	24683.0	-9.2	154.4	0.0	1176:
	10:59:00	10.0997	24693.9	11.0	154.4	0.0	1182:
	11:05:00	10.1997	24664.8	-29.2	154.4	0.0	1188:
	11:11:00	10.2997	24663.9	-0.9	154.4	0.0	1194:
	11:17:00	10.3997	24664.2	0.3	154.4	0.0	1200:
	11:23:00	10.4997	24647.4	-16.8	154.4	0.0	1206:
	11:29:00	10.5997	24652.8	5.4	154.4	0.0	1212:
	11:35:00	10.6997	24651.9	-0.9	154.4	0.0	1218:
	11:41:00	10.7997	24632.0	-19.9	154.4	0.0	1224:
	11:47:00	10.8997	24653.0	21.0	154.4	0.0	1230:
	11:53:00	10.9997	24633.9	-19.1	154.4	-0.1	1236:
	11:59:00	11.0997	24639.7	5.8	154.4	0.0	1242:
	12:05:00	11.1997	24632.8	-6.8	154.4	0.0	1248:
	12:11:00	11.2997	24636.9	4.1	154.4	0.0	1254:
	12:17:00	11.3997	24625.7	-11.2	154.4	0.0	1260:
	12:23:00	11.4997	24629.4	3.7	154.4	0.0	1266:
	12:29:00	11.5997	24606.9	-22.5	154.4	0.0	1272:
	12:35:00	11.6997	24607.9	1.0	154.4	0.0	1278:
	12:41:00	11.7997	24603.5	-4.3	154.4	0.0	1284:
	12:47:00	11.8997	24608.0	4.4	154.4	0.0	1290:
	12:53:00	11.9997	24610.6	2.7	154.4	0.0	1296:
	12:59:00	12.0997	24601.1	-9.6	154.4	0.0	1302:
	13:05:00	12.1997	24606.0	5.0	154.4	0.0	1308:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	13:11:00	12.2997	24604.9	-1.2	154.4	0.0	1314:
	13:17:00	12.3997	24593.1	-11.7	154.4	0.0	1320:
	13:23:00	12.4997	24594.1	1.0	154.4	0.0	1326:
	13:29:00	12.5997	24607.3	13.2	154.4	0.0	1332:
	13:35:00	12.6997	24592.5	-14.8	154.4	0.0	1338:
	13:41:00	12.7997	24586.8	-5.7	154.4	0.0	1344:
	13:47:00	12.8997	24570.5	-16.3	154.4	0.0	1350:
	13:53:00	12.9997	24575.5	5.0	154.4	0.0	1356:
	13:59:00	13.0997	24584.3	8.8	154.3	-0.1	1362:
	14:05:00	13.1997	24574.9	-9.4	154.3	0.0	1368:
	14:11:00	13.2997	24569.6	-5.2	154.3	0.0	1374:
	14:17:00	13.3997	24559.6	-10.1	154.3	0.0	1380:
	14:23:00	13.4997	24565.0	5.4	154.3	0.0	1386:
	14:29:00	13.5997	24564.0	-1.0	154.3	0.0	1392:
	14:35:00	13.6997	24556.7	-7.3	154.3	0.0	1398:
	14:41:00	13.7997	24560.3	3.7	154.3	0.0	1404:
	14:47:00	13.8997	24551.1	-9.2	154.3	0.0	1410:
	14:53:00	13.9997	24547.6	-3.6	154.3	0.0	1416:
	14:59:00	14.0997	24550.4	2.8	154.3	0.0	1422:
	15:05:00	14.1997	24540.7	-9.7	154.3	0.0	1428:
	15:11:00	14.2997	24542.2	1.5	154.3	0.0	1434:
	15:17:00	14.3997	24555.3	13.1	154.3	0.0	1440:
	15:23:00	14.4997	24549.3	-6.0	154.3	0.0	1446:
	15:29:00	14.5997	24540.5	-8.8	154.3	0.0	1452:
	15:35:00	14.6997	24545.3	4.8	154.3	0.0	1458:
	15:41:00	14.7997	24547.7	2.4	154.3	0.0	1464:
	15:47:00	14.8997	24533.3	-14.4	154.3	0.0	1470:
	15:53:00	14.9997	24542.0	8.7	154.3	0.0	1476:
	15:59:00	15.0997	24529.1	-12.8	154.3	0.0	1482:
	16:05:00	15.1997	24519.7	-9.4	154.3	0.0	1488:
	16:11:00	15.2997	24529.9	10.2	154.3	0.0	1494:
	16:17:00	15.3997	24521.8	-8.1	154.3	0.0	1500:
	16:23:00	15.4997	24525.3	3.5	154.3	0.0	1506:
	16:29:00	15.5997	24514.0	-11.3	154.3	0.0	1512:
	16:35:00	15.6997	24512.9	-1.1	154.3	0.0	1518:
	16:41:00	15.7997	24504.6	-8.3	154.3	0.0	1524:
	16:47:00	15.8997	24510.7	6.1	154.3	0.0	1530:
	16:53:00	15.9997	24504.8	-5.9	154.3	0.0	1536:
	16:59:00	16.0997	24519.9	15.1	154.3	0.0	1542:
	17:05:00	16.1997	24514.3	-5.6	154.3	0.0	1548:
	17:11:00	16.2997	24514.7	0.4	154.3	-0.1	1554:
	17:17:00	16.3997	24513.5	-1.2	154.3	0.0	1560:
	17:23:00	16.4997	24506.5	-7.0	154.3	0.0	1566:
	17:29:00	16.5997	24511.2	4.7	154.3	0.0	1572:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	17:35:00	16.6997	24505.2	-6.0	154.3	0.0	1578:
	17:41:00	16.7997	24497.8	-7.3	154.3	0.0	1584:
	17:47:00	16.8997	24502.4	4.6	154.3	0.0	1590:
	17:53:00	16.9997	24498.5	-3.9	154.3	0.0	1596:
	17:59:00	17.0997	24490.6	-7.9	154.3	0.0	1602:
	18:05:00	17.1997	24499.4	8.8	154.3	0.0	1608:
	18:11:00	17.2997	24487.8	-11.7	154.3	0.0	1614:
	18:17:00	17.3997	24490.9	3.1	154.3	0.0	1620:
	18:23:00	17.4997	24488.3	-2.6	154.3	0.0	1626:
	18:29:00	17.5997	24491.1	2.8	154.3	0.0	1632:
	18:35:00	17.6997	24479.7	-11.4	154.3	0.0	1638:
	18:41:00	17.7997	24479.0	-0.8	154.3	0.0	1644:
	18:47:00	17.8997	24485.6	6.7	154.3	0.0	1650:
	18:53:00	17.9997	24480.1	-5.5	154.3	0.0	1656:
	18:59:00	18.0997	24480.7	0.6	154.3	0.0	1662:
	19:05:00	18.1997	24477.9	-2.9	154.3	0.0	1668:
	19:11:00	18.2997	24476.7	-1.2	154.3	0.0	1674:
	19:17:00	18.3997	24470.7	-6.0	154.3	0.0	1680:
	19:23:00	18.4997	24470.7	0.0	154.3	0.0	1686:
	19:29:00	18.5997	24469.0	-1.7	154.3	0.0	1692:
	19:35:00	18.6997	24469.4	0.4	154.3	0.0	1698:
	19:41:00	18.7997	24463.1	-6.3	154.3	0.0	1704:
	19:47:00	18.8997	24470.8	7.7	154.3	0.0	1710:
	19:53:00	18.9997	24463.8	-7.0	154.3	0.0	1716:
	19:59:00	19.0997	24466.1	2.3	154.3	0.0	1722:
	20:05:00	19.1997	24461.0	-5.1	154.3	0.0	1728:
	20:11:00	19.2997	24464.6	3.6	154.3	0.0	1734:
	20:17:00	19.3997	24463.2	-1.4	154.3	0.0	1740:
	20:23:00	19.4997	24462.3	-0.8	154.3	0.0	1746:
	20:29:00	19.5997	24459.9	-2.5	154.3	0.0	1752:
	20:35:00	19.6997	24456.1	-3.8	154.3	0.0	1758:
	20:41:00	19.7997	24455.0	-1.1	154.3	0.0	1764:
	20:47:00	19.8997	24455.0	0.1	154.3	0.0	1770:
	20:53:00	19.9997	24447.8	-7.2	154.3	0.0	1776:
	20:59:00	20.0997	24452.9	5.1	154.3	0.0	1782:
	21:05:00	20.1997	24444.1	-8.8	154.3	0.0	1788:
	21:11:00	20.2997	24448.5	4.4	154.3	0.0	1794:
	21:17:00	20.3997	24441.9	-6.6	154.3	0.0	1800:
	21:23:00	20.4997	24445.8	3.9	154.3	0.0	1806:
	21:29:00	20.5997	24442.8	-3.0	154.3	0.0	1812:
	21:35:00	20.6997	24446.8	4.0	154.3	0.0	1818:
	21:41:00	20.7997	24446.3	-0.5	154.3	0.0	1824:
	21:47:00	20.8997	24438.5	-7.7	154.3	0.0	1830:
	21:53:00	20.9997	24440.3	1.8	154.2	-0.1	1836:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	21:59:00	21.0997	24438.5	-1.9	154.2	0.0	1842:
	22:05:00	21.1997	24439.6	1.1	154.2	0.0	1848:
	22:11:00	21.2997	24438.1	-1.5	154.2	0.0	1854:
	22:17:00	21.3997	24435.4	-2.7	154.2	0.0	1860:
	22:23:00	21.4997	24440.3	4.9	154.2	0.0	1866:
	22:29:00	21.5997	24435.4	-4.8	154.2	0.0	1872:
	22:35:00	21.6997	24436.1	0.7	154.2	0.0	1878:
	22:41:00	21.7997	24427.9	-8.2	154.2	0.0	1884:
	22:47:00	21.8997	24426.0	-1.9	154.2	0.0	1890:
	22:53:00	21.9997	24425.7	-0.3	154.2	0.0	1896:
	22:59:00	22.0997	24424.0	-1.7	154.2	0.0	1902:
	23:05:00	22.1997	24426.3	2.3	154.2	0.0	1908:
	23:11:00	22.2997	24429.2	2.8	154.2	0.0	1914:
	23:17:00	22.3997	24423.2	-6.0	154.2	0.0	1920:
	23:23:00	22.4997	24422.8	-0.3	154.2	0.0	1926:
	23:29:00	22.5997	24416.0	-6.8	154.2	0.0	1932:
	23:35:00	22.6997	24417.0	1.0	154.2	0.0	1938:
	23:41:00	22.7997	24414.6	-2.4	154.2	0.0	1944:
	23:47:00	22.8997	24416.0	1.4	154.2	0.0	1950:
	23:53:00	22.9997	24412.2	-3.8	154.2	0.0	1956:
	23:59:00	23.0997	24412.8	0.6	154.2	0.0	1962:
1998/07/12	00:05:00	23.1997	24408.8	-3.9	154.2	0.0	1968:
	00:11:00	23.2997	24411.4	2.6	154.2	0.0	1974:
	00:17:00	23.3997	24410.7	-0.7	154.2	0.0	1980:
	00:23:00	23.4997	24408.3	-2.4	154.2	0.0	1986:
	00:29:00	23.5997	24413.4	5.1	154.2	0.0	1992:
	00:35:00	23.6997	24406.6	-6.8	154.2	0.0	1998:
	00:41:00	23.7997	24409.9	3.3	154.2	0.0	2004:
	00:47:00	23.8997	24403.0	-6.8	154.2	0.0	2010:
	00:53:00	23.9997	24404.8	1.7	154.2	0.0	2016:
	00:59:00	24.0997	24400.4	-4.3	154.2	0.0	2022:
	01:05:00	24.1997	24400.8	0.4	154.2	0.0	2028:
	01:11:00	24.2997	24408.1	7.3	154.2	0.0	2034:
	01:17:00	24.3997	24402.5	-5.7	154.2	0.0	2040:
	01:23:00	24.4997	24400.1	-2.3	154.2	0.0	2046:
	01:29:00	24.5997	24400.4	0.3	154.2	0.0	2052:
	01:35:00	24.6997	24394.8	-5.7	154.2	0.0	2058:
	01:41:00	24.7997	24405.0	10.3	154.2	0.0	2064:
	01:47:00	24.8997	24400.0	-5.0	154.2	0.0	2070:
	01:53:00	24.9997	24396.7	-3.3	154.2	0.0	2076:
	01:59:00	25.0997	24390.6	-6.1	154.2	0.0	2082:
	02:05:00	25.1997	24393.9	3.3	154.2	0.0	2088:
	02:11:00	25.2997	24392.2	-1.7	154.2	0.0	2094:
	02:17:00	25.3997	24389.8	-2.4	154.2	0.0	2100:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	02:23:00	25.4997	24391.2	1.4	154.2	0.0	2106:
	02:29:00	25.5997	24391.6	0.4	154.2	0.0	2112:
	02:35:00	25.6997	24388.2	-3.4	154.2	0.0	2118:
	02:41:00	25.7997	24386.6	-1.6	154.2	0.0	2124:
	02:47:00	25.8997	24380.5	-6.1	154.2	0.0	2130:
	02:53:00	25.9997	24388.8	8.3	154.2	0.0	2136:
	02:59:00	26.0997	24386.8	-2.1	154.2	0.0	2142:
	03:05:00	26.1997	24380.8	-5.9	154.2	0.0	2148:
	03:11:00	26.2997	24379.4	-1.4	154.2	0.0	2154:
	03:17:00	26.3997	24375.7	-3.7	154.2	0.0	2160:
	03:23:00	26.4997	24382.5	6.8	154.2	0.0	2166:
	03:29:00	26.5997	24376.4	-6.1	154.2	0.0	2172:
	03:35:00	26.6997	24382.7	6.3	154.2	0.0	2178:
	03:41:00	26.7997	24375.7	-7.0	154.2	-0.1	2184:
	03:47:00	26.8997	24375.9	0.3	154.2	0.0	2190:
	03:53:00	26.9997	24371.3	-4.6	154.2	0.0	2196:
	03:59:00	27.0997	24372.1	0.8	154.2	0.0	2202:
	04:05:00	27.1997	24375.6	3.5	154.2	0.0	2208:
	04:11:00	27.2997	24370.6	-5.0	154.2	0.0	2214:
	04:17:00	27.3997	24367.3	-3.4	154.2	0.0	2220:
	04:23:00	27.4997	24366.2	-1.0	154.2	0.0	2226:
	04:29:00	27.5997	24371.1	4.9	154.2	0.0	2232:
	04:35:00	27.6997	24370.7	-0.4	154.2	0.0	2238:
	04:41:00	27.7997	24370.8	0.1	154.2	0.0	2244:
	04:47:00	27.8997	24365.7	-5.2	154.2	0.0	2250:
	04:53:00	27.9997	24367.9	2.3	154.2	0.0	2256:
	04:59:00	28.0997	24362.4	-5.6	154.2	0.0	2262:
	05:05:00	28.1997	24366.3	3.9	154.2	0.0	2268:
	05:11:00	28.2997	24363.0	-3.2	154.2	0.0	2274:
	05:17:00	28.3997	24366.1	3.0	154.2	0.0	2280:
	05:23:00	28.4997	24359.3	-6.8	154.2	0.0	2286:
	05:29:00	28.5997	24359.4	0.1	154.2	0.0	2292:
	05:35:00	28.6997	24361.0	1.6	154.2	0.0	2298:
	05:41:00	28.7997	24363.2	2.2	154.2	0.0	2304:
	05:47:00	28.8997	24360.6	-2.6	154.2	0.0	2310:
	05:53:00	28.9997	24361.2	0.6	154.2	0.0	2316:
	05:59:00	29.0997	24360.1	-1.1	154.2	0.0	2322:
	06:05:00	29.1997	24358.0	-2.1	154.2	0.0	2328:
	06:11:00	29.2997	24352.0	-6.0	154.2	0.0	2334:
	06:17:00	29.3997	24361.5	9.5	154.2	0.0	2340:
	06:23:00	29.4997	24353.7	-7.9	154.2	0.0	2346:
	06:29:00	29.5997	24357.9	4.2	154.2	0.0	2352:
	06:35:00	29.6997	24357.9	0.0	154.2	0.0	2358:
	06:41:00	29.7997	24350.4	-7.4	154.2	0.0	2364:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	06:47:00	29.8997	24356.3	5.9	154.2	0.0	2370:
	06:53:00	29.9997	24351.4	-4.9	154.2	0.0	2376:
	06:59:00	30.0997	24348.2	-3.2	154.2	0.0	2382:
	07:05:00	30.1997	24354.1	5.9	154.2	0.0	2388:
	07:11:00	30.2997	24347.7	-6.3	154.2	0.0	2394:
	07:17:00	30.3997	24354.4	6.7	154.2	0.0	2400:
	07:23:00	30.4997	24348.7	-5.7	154.2	0.0	2406:
	07:29:00	30.5997	24348.1	-0.6	154.2	0.0	2412:
	07:35:00	30.6997	24344.1	-4.0	154.2	0.0	2418:
	07:41:00	30.7997	24342.8	-1.2	154.2	0.0	2424:
	07:47:00	30.8997	24345.5	2.7	154.2	0.0	2430:
	07:53:00	30.9997	24343.8	-1.7	154.2	0.0	2436:
	07:59:00	31.0997	24340.2	-3.7	154.2	0.0	2442:
	08:05:00	31.1997	24341.4	1.2	154.2	0.0	2448:
	08:11:00	31.2997	24343.5	2.1	154.2	0.0	2454:
	08:17:00	31.3997	24340.1	-3.4	154.2	0.0	2460:
	08:23:00	31.4997	24344.1	4.0	154.2	0.0	2466:
	08:29:00	31.5997	24551.8	207.7	154.2	0.0	2472:
	08:35:00	31.6997	25739.5	1187.7	154.6	0.4	2478:
	08:41:00	31.7997	25878.4	138.9	154.6	0.0	2484:
	08:47:00	31.8997	25926.8	48.5	154.3	-0.3	2490:
	08:53:00	31.9997	25949.3	22.5	154.1	-0.3	2496:
	08:59:00	32.0997	25968.1	18.8	153.8	-0.2	2502:
	09:05:00	32.1997	25984.8	16.7	153.7	-0.2	2508:
	09:11:00	32.2997	25999.8	15.0	153.6	-0.1	2514:
	09:17:00	32.3997	26014.1	14.3	153.4	-0.1	2520:
	09:23:00	32.4997	26026.5	12.5	153.3	-0.1	2526:
	09:29:00	32.5997	26037.7	11.2	153.3	-0.1	2532:
	09:35:00	32.6997	26048.6	10.9	153.2	-0.1	2538:
	09:41:00	32.7997	26061.6	13.0	153.2	-0.1	2544:
	09:47:00	32.8997	26070.0	8.4	153.2	0.0	2550:
	09:53:00	32.9997	26078.9	8.9	153.2	0.0	2556:
	09:59:00	33.0997	26087.8	8.8	153.1	-0.1	2562:
	10:05:00	33.1997	26096.4	8.6	153.1	0.0	2568:
	10:11:00	33.2997	26104.6	8.2	153.1	0.0	2574:
	10:17:00	33.3997	26112.5	7.9	153.1	0.0	2580:
	10:23:00	33.4997	26120.2	7.7	153.1	-0.1	2586:
	10:29:00	33.5997	26127.4	7.2	153.1	0.0	2592:
	10:35:00	33.6997	26134.5	7.1	153.1	0.0	2598:
	10:41:00	33.7997	26141.1	6.6	153.0	-0.1	2604:
	10:47:00	33.8997	26147.6	6.5	153.0	0.0	2610:
	10:53:00	33.9997	26153.9	6.3	153.0	0.0	2616:
	10:59:00	34.0997	26160.0	6.1	152.9	-0.1	2622:
	11:05:00	34.1997	26165.7	5.7	152.9	0.0	2628:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	11:11:00	34.2997	26171.2	5.5	152.9	0.0	2634:
	11:17:00	34.3997	26176.6	5.4	152.9	-0.1	2640:
	11:23:00	34.4997	26181.7	5.2	152.9	0.0	2646:
	11:29:00	34.5997	26186.7	5.0	152.8	-0.1	2652:
	11:35:00	34.6997	26191.5	4.8	152.8	0.0	2658:
	11:41:00	34.7997	26196.1	4.6	152.8	0.0	2664:
	11:47:00	34.8997	26200.6	4.5	152.8	-0.1	2670:
	11:53:00	34.9997	26204.9	4.3	152.8	0.0	2676:
	11:59:00	35.0997	26209.2	4.3	152.8	0.0	2682:
	12:05:00	35.1997	26213.2	4.0	152.8	0.0	2688:
	12:11:00	35.2997	26217.0	3.8	152.7	-0.1	2694:
	12:17:00	35.3997	26220.8	3.8	152.7	0.0	2700:
	12:23:00	35.4997	26224.4	3.6	152.7	0.0	2706:
	12:29:00	35.5997	26227.9	3.5	152.7	-0.1	2712:
	12:35:00	35.6997	26231.4	3.5	152.7	0.0	2718:
	12:41:00	35.7997	26234.8	3.4	152.7	0.0	2724:
	12:47:00	35.8997	26237.9	3.2	152.7	0.0	2730:
	12:53:00	35.9997	26241.1	3.2	152.6	-0.1	2736:
	12:59:00	36.0997	26244.3	3.2	152.6	0.0	2742:
	13:05:00	36.1997	26247.3	3.0	152.6	0.0	2748:
	13:11:00	36.2997	26250.2	2.9	152.6	-0.1	2754:
	13:17:00	36.3997	26253.1	2.9	152.6	0.0	2760:
	13:23:00	36.4997	26255.9	2.8	152.6	0.0	2766:
	13:29:00	36.5997	26258.7	2.8	152.6	0.0	2772:
	13:35:00	36.6997	26261.4	2.7	152.6	0.0	2778:
	13:41:00	36.7997	26263.9	2.5	152.5	-0.1	2784:
	13:47:00	36.8997	26266.3	2.5	152.5	0.0	2790:
	13:53:00	36.9997	26268.9	2.6	152.5	0.0	2796:
	13:59:00	37.0997	26271.3	2.4	152.5	0.0	2802:
	14:05:00	37.1997	26273.5	2.2	152.5	0.0	2808:
	14:11:00	37.2997	26275.9	2.4	152.4	-0.1	2814:
	14:17:00	37.3997	26278.1	2.1	152.4	0.0	2820:
	14:23:00	37.4997	26280.3	2.2	152.4	0.0	2826:
	14:29:00	37.5997	26282.3	2.1	152.4	0.0	2832:
	14:35:00	37.6997	26284.5	2.2	152.4	0.0	2838:
	14:41:00	37.7997	26286.4	1.9	152.4	0.0	2844:
	14:47:00	37.8997	26288.5	2.1	152.4	-0.1	2850:
	14:53:00	37.9997	26290.5	1.9	152.4	0.0	2856:
	14:59:00	38.0997	26292.4	1.9	152.4	0.0	2862:
	15:05:00	38.1997	26294.3	1.9	152.4	0.0	2868:
	15:11:00	38.2997	26296.3	2.0	152.4	0.0	2874:
	15:17:00	38.3997	26298.1	1.7	152.3	-0.1	2880:
	15:23:00	38.4997	26299.9	1.8	152.3	0.0	2886:
	15:29:00	38.5997	26301.6	1.7	152.3	0.0	2892:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	15:35:00	38.6997	26303.4	1.8	152.3	0.0	2898:
	15:41:00	38.7997	26305.0	1.6	152.3	0.0	2904:
	15:47:00	38.8997	26306.6	1.7	152.3	0.0	2910:
	15:53:00	38.9997	26308.3	1.7	152.3	0.0	2916:
	15:59:00	39.0997	26310.0	1.7	152.3	-0.1	2922:
	16:05:00	39.1997	26311.5	1.5	152.3	0.0	2928:
	16:11:00	39.2997	26313.0	1.4	152.3	0.0	2934:
	16:17:00	39.3997	26314.5	1.6	152.3	0.0	2940:
	16:23:00	39.4997	26316.1	1.6	152.3	0.0	2946:
	16:29:00	39.5997	26317.5	1.4	152.3	0.0	2952:
	16:35:00	39.6997	26319.0	1.4	152.3	0.0	2958:
	16:41:00	39.7997	26320.5	1.5	152.3	0.0	2964:
	16:47:00	39.8997	26321.8	1.4	152.2	-0.1	2970:
	16:53:00	39.9997	26323.2	1.3	152.2	0.0	2976:
	16:59:00	40.0997	26324.6	1.4	152.2	0.0	2982:
	17:05:00	40.1997	26325.8	1.2	152.2	0.0	2988:
	17:11:00	40.2997	26327.2	1.4	152.2	0.0	2994:
	17:17:00	40.3997	26328.5	1.3	152.2	0.0	3000:
	17:23:00	40.4997	26329.8	1.3	152.2	0.0	3006:
	17:29:00	40.5997	26331.2	1.4	152.2	0.0	3012:
	17:35:00	40.6997	26332.4	1.2	152.2	-0.1	3018:
	17:41:00	40.7997	26333.7	1.3	152.2	0.0	3024:
	17:47:00	40.8997	26334.9	1.2	152.2	0.0	3030:
	17:53:00	40.9997	26336.1	1.2	152.2	0.0	3036:
	17:59:00	41.0997	26337.3	1.2	152.2	0.0	3042:
	18:05:00	41.1997	26338.5	1.2	152.2	0.0	3048:
	18:11:00	41.2997	26339.6	1.1	152.2	0.0	3054:
	18:17:00	41.3997	26340.7	1.2	152.2	0.0	3060:
	18:23:00	41.4997	26341.8	1.1	152.2	0.0	3066:
	18:29:00	41.5997	26342.9	1.0	152.1	-0.1	3072:
	18:35:00	41.6997	26344.1	1.2	152.1	0.0	3078:
	18:41:00	41.7997	26345.1	1.0	152.1	0.0	3084:
	18:47:00	41.8997	26346.3	1.2	152.1	0.0	3090:
	18:53:00	41.9997	26347.4	1.0	152.1	0.0	3096:
	18:59:00	42.0997	26348.5	1.1	152.1	0.0	3102:
	19:05:00	42.1997	26349.5	1.0	152.1	0.0	3108:
	19:11:00	42.2997	26350.5	1.0	152.1	0.0	3114:
	19:17:00	42.3997	26351.5	1.0	152.1	0.0	3120:
	19:23:00	42.4997	26352.5	1.0	152.1	-0.1	3126:
	19:29:00	42.5997	26353.6	1.0	152.1	0.0	3132:
	19:35:00	42.6997	26354.6	1.0	152.1	0.0	3138:
	19:41:00	42.7997	26355.6	1.0	152.1	0.0	3144:
	19:47:00	42.8997	26356.6	1.0	152.1	0.0	3150:
	19:53:00	42.9997	26357.6	1.0	152.1	0.0	3156:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	19:59:00	43.0997	26358.5	1.0	152.1	0.0	3162:
	20:05:00	43.1997	26359.6	1.0	152.1	0.0	3168:
	20:11:00	43.2997	26360.5	0.9	152.1	0.0	3174:
	20:17:00	43.3997	26361.3	0.8	152.1	0.0	3180:
	20:23:00	43.4997	26362.3	1.0	152.1	0.0	3186:
	20:29:00	43.5997	26363.2	0.8	152.0	-0.1	3192:
	20:35:00	43.6997	26364.0	0.9	152.0	0.0	3198:
	20:41:00	43.7997	26364.9	0.9	152.0	0.0	3204:
	20:47:00	43.8997	26365.9	1.0	152.0	0.0	3210:
	20:53:00	43.9997	26366.7	0.8	152.0	0.0	3216:
	20:59:00	44.0997	26367.7	1.0	152.0	0.0	3222:
	21:05:00	44.1997	26368.5	0.8	152.0	0.0	3228:
	21:11:00	44.2997	26369.4	0.8	152.0	0.0	3234:
	21:17:00	44.3997	26370.3	0.9	152.0	0.0	3240:
	21:23:00	44.4997	26371.1	0.8	152.0	0.0	3246:
	21:29:00	44.5997	26371.8	0.8	152.0	0.0	3252:
	21:35:00	44.6997	26372.7	0.8	152.0	0.0	3258:
	21:41:00	44.7997	26373.6	0.9	151.9	-0.1	3264:
	21:47:00	44.8997	26374.3	0.8	151.9	0.0	3270:
	21:53:00	44.9997	26375.1	0.8	151.9	0.0	3276:
	21:59:00	45.0997	26375.8	0.7	151.9	0.0	3282:
	22:05:00	45.1997	26376.7	0.9	151.9	0.0	3288:
	22:11:00	45.2997	26377.4	0.7	151.9	0.0	3294:
	22:17:00	45.3997	26378.3	0.8	151.9	0.0	3300:
	22:23:00	45.4997	26378.9	0.7	151.9	0.0	3306:
	22:29:00	45.5997	26379.8	0.8	151.9	0.0	3312:
	22:35:00	45.6997	26380.5	0.7	151.9	0.0	3318:
	22:41:00	45.7997	26381.3	0.8	151.9	0.0	3324:
	22:47:00	45.8997	26382.0	0.7	151.9	0.0	3330:
	22:53:00	45.9997	26382.7	0.8	151.9	0.0	3336:
	22:59:00	46.0997	26383.5	0.8	151.9	0.0	3342:
	23:05:00	46.1997	26384.2	0.8	151.9	-0.1	3348:
	23:11:00	46.2997	26384.9	0.6	151.9	0.0	3354:
	23:17:00	46.3997	26385.5	0.6	151.9	0.0	3360:
	23:23:00	46.4997	26386.3	0.8	151.9	0.0	3366:
	23:29:00	46.5997	26386.9	0.6	151.9	0.0	3372:
	23:35:00	46.6997	26387.6	0.7	151.9	0.0	3378:
	23:41:00	46.7997	26388.2	0.6	151.9	0.0	3384:
	23:47:00	46.8997	26389.1	0.9	151.9	0.0	3390:
	23:53:00	46.9997	26389.7	0.6	151.9	0.0	3396:
	23:59:00	47.0997	26390.2	0.5	151.9	0.0	3402:
1998/07/13	00:05:00	47.1997	26390.9	0.8	151.9	0.0	3408:
	00:11:00	47.2997	26391.5	0.6	151.9	0.0	3414:
	00:17:00	47.3997	26392.2	0.8	151.9	0.0	3420:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	00:23:00	47.4997	26392.9	0.6	151.9	0.0	3426:
	00:29:00	47.5997	26393.6	0.7	151.9	0.0	3432:
	00:35:00	47.6997	26394.2	0.6	151.8	-0.1	3438:
	00:41:00	47.7997	26394.7	0.5	151.8	0.0	3444:
	00:47:00	47.8997	26395.4	0.8	151.8	0.0	3450:
	00:53:00	47.9997	26396.0	0.6	151.8	0.0	3456:
	00:59:00	48.0997	26396.7	0.7	151.8	0.0	3462:
	01:05:00	48.1997	26397.3	0.6	151.8	0.0	3468:
	01:11:00	48.2997	26397.8	0.6	151.8	0.0	3474:
	01:17:00	48.3997	26398.5	0.6	151.8	0.0	3480:
	01:23:00	48.4997	26399.1	0.6	151.8	0.0	3486:
	01:29:00	48.5997	26399.7	0.6	151.8	0.0	3492:
	01:35:00	48.6997	26400.2	0.5	151.8	0.0	3498:
	01:41:00	48.7997	26400.7	0.6	151.8	0.0	3504:
	01:47:00	48.8997	26401.3	0.6	151.8	0.0	3510:
	01:53:00	48.9997	26401.9	0.6	151.8	0.0	3516:
	01:59:00	49.0997	26402.4	0.5	151.8	0.0	3522:
	02:05:00	49.1997	26403.1	0.7	151.8	0.0	3528:
	02:11:00	49.2997	26403.6	0.6	151.8	0.0	3534:
	02:17:00	49.3997	26404.2	0.6	151.8	0.0	3540:
	02:23:00	49.4997	26404.7	0.5	151.8	0.0	3546:
	02:29:00	49.5997	26405.3	0.6	151.8	-0.1	3552:
	02:35:00	49.6997	26405.8	0.6	151.8	0.0	3558:
	02:41:00	49.7997	26406.5	0.6	151.8	0.0	3564:
	02:47:00	49.8997	26406.9	0.4	151.8	0.0	3570:
	02:53:00	49.9997	26407.4	0.6	151.8	0.0	3576:
	02:59:00	50.0997	26408.0	0.6	151.8	0.0	3582:
	03:05:00	50.1997	26408.5	0.4	151.8	0.0	3588:
	03:11:00	50.2997	26409.0	0.6	151.8	0.0	3594:
	03:17:00	50.3997	26409.6	0.6	151.8	0.0	3600:
	03:23:00	50.4997	26410.0	0.4	151.8	0.0	3606:
	03:29:00	50.5997	26410.6	0.6	151.8	0.0	3612:
	03:35:00	50.6997	26411.1	0.5	151.8	0.0	3618:
	03:41:00	50.7997	26411.6	0.6	151.8	0.0	3624:
	03:47:00	50.8997	26412.0	0.3	151.8	0.0	3630:
	03:53:00	50.9997	26412.6	0.6	151.8	0.0	3636:
	03:59:00	51.0997	26413.1	0.6	151.8	0.0	3642:
	04:05:00	51.1997	26413.5	0.3	151.8	0.0	3648:
	04:11:00	51.2997	26414.1	0.6	151.8	0.0	3654:
	04:17:00	51.3997	26414.4	0.3	151.8	0.0	3660:
	04:23:00	51.4997	26415.1	0.6	151.8	0.0	3666:
	04:29:00	51.5997	26415.5	0.4	151.8	0.0	3672:
	04:35:00	51.6997	26415.9	0.4	151.8	0.0	3678:
	04:41:00	51.7997	26416.4	0.5	151.7	-0.1	3684:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	04:47:00	51.8997	26416.9	0.6	151.7	0.0	3690:
	04:53:00	51.9997	26417.3	0.4	151.7	0.0	3696:
	04:59:00	52.0997	26417.8	0.5	151.7	0.0	3702:
	05:05:00	52.1997	26418.3	0.5	151.7	0.0	3708:
	05:11:00	52.2997	26418.7	0.4	151.7	0.0	3714:
	05:17:00	52.3997	26419.2	0.5	151.7	0.0	3720:
	05:23:00	52.4997	26419.6	0.4	151.7	0.0	3726:
	05:29:00	52.5997	26420.1	0.5	151.7	0.0	3732:
	05:35:00	52.6997	26420.6	0.5	151.7	0.0	3738:
	05:41:00	52.7997	26420.9	0.3	151.7	0.0	3744:
	05:47:00	52.8997	26421.3	0.4	151.7	0.0	3750:
	05:53:00	52.9997	26421.8	0.5	151.7	0.0	3756:
	05:59:00	53.0997	26422.2	0.4	151.7	0.0	3762:
	06:05:00	53.1997	26422.7	0.4	151.7	0.0	3768:
	06:11:00	53.2997	26423.1	0.4	151.7	0.0	3774:
	06:17:00	53.3997	26423.5	0.4	151.7	0.0	3780:
	06:23:00	53.4997	26424.0	0.5	151.7	0.0	3786:
	06:29:00	53.5997	26424.3	0.3	151.7	0.0	3792:
	06:35:00	53.6997	26424.7	0.4	151.7	0.0	3798:
	06:41:00	53.7997	26425.1	0.3	151.7	0.0	3804:
	06:47:00	53.8997	26425.5	0.5	151.7	-0.1	3810:
	06:53:00	53.9997	26426.0	0.4	151.7	0.0	3816:
	06:59:00	54.0997	26426.4	0.4	151.7	0.0	3822:
	07:05:00	54.1997	26426.7	0.3	151.7	0.0	3828:
	07:11:00	54.2997	26427.1	0.4	151.7	0.0	3834:
	07:17:00	54.3997	26427.6	0.5	151.7	0.0	3840:
	07:23:00	54.4997	26428.0	0.3	151.7	0.0	3846:
	07:29:00	54.5997	26428.4	0.4	151.7	0.0	3852:
	07:35:00	54.6997	26428.7	0.3	151.7	0.0	3858:
	07:41:00	54.7997	26429.1	0.3	151.7	0.0	3864:
	07:47:00	54.8997	26429.5	0.5	151.7	0.0	3870:
	07:53:00	54.9997	26430.0	0.4	151.7	0.0	3876:
	07:59:00	55.0997	26430.3	0.3	151.7	0.0	3882:
	08:05:00	55.1997	26430.7	0.4	151.7	0.0	3888:
	08:11:00	55.2997	26431.1	0.3	151.7	0.0	3894:
	08:17:00	55.3997	26431.3	0.3	151.7	0.0	3900:
	08:23:00	55.4997	26431.8	0.4	151.7	0.0	3906:
	08:29:00	55.5997	26432.1	0.3	151.7	0.0	3912:
	08:35:00	55.6997	26432.4	0.3	151.7	0.0	3918:
	08:41:00	55.7997	26432.9	0.5	151.7	0.0	3924:
	08:47:00	55.8997	26433.1	0.2	151.7	0.0	3930:
	08:53:00	55.9997	26433.5	0.4	151.7	0.0	3936:
	08:59:00	56.0997	26434.0	0.4	151.7	0.0	3942:
	09:05:00	56.1997	26434.3	0.3	151.7	0.0	3948:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	09:11:00	56.2997	26434.7	0.3	151.7	0.0	3954:
	09:17:00	56.3997	26434.9	0.3	151.7	0.0	3960:
	09:23:00	56.4997	26435.4	0.5	151.7	0.0	3966:
	09:29:00	56.5997	26435.6	0.2	151.7	0.0	3972:
	09:35:00	56.6997	26436.0	0.4	151.7	0.0	3978:
	09:41:00	56.7997	26436.3	0.3	151.7	0.0	3984:
	09:47:00	56.8997	26436.7	0.3	151.7	0.0	3990:
	09:53:00	56.9997	26437.1	0.4	151.6	-0.1	3996:
	09:59:00	57.0997	26437.5	0.4	151.6	0.0	4002:
	10:05:00	57.1997	26437.6	0.1	151.6	0.0	4008:
	10:11:00	57.2997	26438.1	0.5	151.6	0.0	4014:
	10:17:00	57.3997	26438.4	0.3	151.6	0.0	4020:
	10:23:00	57.4997	26438.7	0.3	151.6	0.0	4026:
	10:29:00	57.5997	26439.0	0.3	151.6	0.0	4032:
	10:35:00	57.6997	26439.4	0.4	151.6	0.0	4038:
	10:41:00	57.7997	26439.6	0.2	151.6	0.0	4044:
	10:47:00	57.8997	26440.0	0.3	151.6	0.0	4050:
	10:53:00	57.9997	26440.4	0.4	151.6	0.0	4056:
	10:59:00	58.0997	26440.6	0.2	151.6	0.0	4062:
	11:05:00	58.1997	26441.0	0.4	151.6	0.0	4068:
	11:11:00	58.2997	26441.3	0.3	151.6	0.0	4074:
	11:17:00	58.3997	26441.7	0.4	151.6	0.0	4080:
	11:23:00	58.4997	26441.8	0.1	151.6	0.0	4086:
	11:29:00	58.5997	26442.2	0.4	151.6	0.0	4092:
	11:35:00	58.6997	26442.5	0.3	151.6	0.0	4098:
	11:41:00	58.7997	26442.9	0.3	151.6	0.0	4104:
	11:47:00	58.8997	26443.0	0.1	151.6	0.0	4110:
	11:53:00	58.9997	26443.5	0.5	151.6	0.0	4116:
	11:59:00	59.0997	26443.8	0.3	151.6	0.0	4122:
	12:05:00	59.1997	26444.0	0.2	151.6	0.0	4128:
	12:11:00	59.2997	26444.4	0.4	151.6	0.0	4134:
	12:17:00	59.3997	26444.6	0.2	151.6	0.0	4140:
	12:23:00	59.4997	26445.0	0.4	151.6	0.0	4146:
	12:29:00	59.5997	26445.1	0.1	151.6	0.0	4152:
	12:35:00	59.6997	26445.4	0.3	151.6	0.0	4158:
	12:41:00	59.7997	26445.8	0.3	151.6	-0.1	4164:
	12:47:00	59.8997	26446.0	0.3	151.6	0.0	4170:
	12:53:00	59.9997	26446.3	0.3	151.6	0.0	4176:
	12:59:00	60.0997	26446.6	0.3	151.6	0.0	4182:
	13:05:00	60.1997	26446.9	0.2	151.6	0.0	4188:
	13:11:00	60.2997	26447.1	0.3	151.6	0.0	4194:
	13:17:00	60.3997	26447.4	0.3	151.6	0.0	4200:
	13:23:00	60.4997	26447.7	0.3	151.6	0.0	4206:
	13:29:00	60.5997	26448.1	0.4	151.6	0.0	4212:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	13:35:00	60.6997	26448.3	0.2	151.6	0.0	4218:
	13:41:00	60.7997	26448.5	0.2	151.6	0.0	4224:
	13:47:00	60.8997	26448.7	0.2	151.6	0.0	4230:
	13:53:00	60.9997	26449.0	0.3	151.6	0.0	4236:
	13:59:00	61.0997	26449.3	0.3	151.6	0.0	4242:
	14:05:00	61.1997	26449.6	0.3	151.6	0.0	4248:
	14:11:00	61.2997	26449.8	0.1	151.6	0.0	4254:
	14:17:00	61.3997	26450.2	0.4	151.6	0.0	4260:
	14:23:00	61.4997	26450.4	0.3	151.6	0.0	4266:
	14:29:00	61.5997	26450.6	0.2	151.6	0.0	4272:
	14:35:00	61.6997	26451.0	0.3	151.6	0.0	4278:
	14:41:00	61.7997	26451.1	0.1	151.6	0.0	4284:
	14:47:00	61.8997	26451.4	0.3	151.6	0.0	4290:
	14:53:00	61.9997	26451.8	0.3	151.6	0.0	4296:
	14:59:00	62.0997	26451.8	0.1	151.6	0.0	4302:
	15:05:00	62.1997	26452.0	0.2	151.6	0.0	4308:
	15:11:00	62.2997	26452.5	0.5	151.6	0.0	4314:
	15:17:00	62.3997	26452.6	0.1	151.6	0.0	4320:
	15:23:00	62.4997	26452.9	0.3	151.6	0.0	4326:
	15:29:00	62.5997	26453.1	0.2	151.6	0.0	4332:
	15:35:00	62.6997	26453.3	0.2	151.6	0.0	4338:
	15:41:00	62.7997	26453.6	0.3	151.6	0.0	4344:
	15:47:00	62.8997	26453.9	0.3	151.6	0.0	4350:
	15:53:00	62.9997	26454.1	0.2	151.6	0.0	4356:
	15:59:00	63.0997	26454.4	0.3	151.6	0.0	4362:
	16:05:00	63.1997	26454.6	0.2	151.6	0.0	4368:
	16:11:00	63.2997	26454.9	0.3	151.6	0.0	4374:
	16:17:00	63.3997	26455.1	0.3	151.6	0.0	4380:
	16:23:00	63.4997	26455.3	0.2	151.6	0.0	4386:
	16:29:00	63.5997	26455.5	0.2	151.6	0.0	4392:
	16:35:00	63.6997	26455.8	0.2	151.6	0.0	4398:
	16:41:00	63.7997	26456.0	0.2	151.6	0.0	4404:
	16:47:00	63.8997	26456.2	0.3	151.6	0.0	4410:
	16:53:00	63.9997	26456.4	0.2	151.5	-0.1	4416:
	16:59:00	64.0997	26456.6	0.2	151.5	0.0	4422:
	17:05:00	64.1997	26456.9	0.2	151.5	0.0	4428:
	17:11:00	64.2997	26457.1	0.2	151.5	0.0	4434:
	17:17:00	64.3997	26457.4	0.3	151.5	0.0	4440:
	17:23:00	64.4997	26457.7	0.3	151.5	0.0	4446:
	17:29:00	64.5997	26457.8	0.1	151.5	0.0	4452:
	17:35:00	64.6997	26458.1	0.3	151.5	0.0	4458:
	17:41:00	64.7997	26458.2	0.1	151.5	0.0	4464:
	17:47:00	64.8997	26458.4	0.2	151.5	0.0	4470:
	17:53:00	64.9997	26458.6	0.2	151.5	0.0	4476:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A

Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	17:59:00	65.0997	26458.9	0.3	151.5	0.0	4482:
	18:05:00	65.1997	26459.1	0.2	151.5	0.0	4488:
	18:11:00	65.2997	26459.3	0.1	151.5	0.0	4494:
	18:17:00	65.3997	26459.5	0.3	151.5	0.0	4500:
	18:23:00	65.4997	26459.7	0.2	151.5	0.0	4506:
	18:29:00	65.5997	26460.0	0.2	151.5	0.0	4512:
	18:35:00	65.6997	26460.2	0.2	151.5	0.0	4518:
	18:41:00	65.7997	26460.3	0.1	151.5	0.0	4524:
	18:47:00	65.8997	26460.6	0.3	151.5	0.0	4530:
	18:53:00	65.9997	26460.8	0.2	151.5	0.0	4536:
	18:59:00	66.0997	26461.0	0.2	151.5	0.0	4542:
	19:05:00	66.1997	26461.2	0.2	151.5	0.0	4548:
	19:11:00	66.2997	26461.4	0.2	151.5	0.0	4554:
	19:17:00	66.3997	26461.6	0.2	151.5	0.0	4560:
	19:23:00	66.4997	26461.8	0.2	151.5	0.0	4566:
	19:29:00	66.5997	26462.0	0.2	151.5	0.0	4572:
	19:35:00	66.6997	26462.3	0.3	151.5	0.0	4578:
	19:41:00	66.7997	26462.4	0.1	151.5	0.0	4584:
	19:47:00	66.8997	26462.6	0.2	151.5	0.0	4590:
	19:53:00	66.9997	26462.8	0.1	151.5	0.0	4596.
	19:59:00	67.0997	26463.1	0.3	151.5	0.0	4602:
	20:05:00	67.1997	26463.2	0.1	151.5	0.0	4608:
	20:11:00	67.2997	26463.3	0.1	151.5	0.0	4614:
	20:17:00	67.3997	26463.5	0.2	151.5	0.0	4620:
	20:23:00	67.4997	26463.9	0.4	151.5	0.0	4626:
	20:29:00	67.5997	26464.0	0.1	151.5	0.0	4632:
	20:35:00	67.6997	26464.2	0.2	151.5	0.0	4638:
	20:41:00	67.7997	26464.4	0.1	151.5	0.0	4644:
	20:47:00	67.8997	26464.5	0.1	151.5	0.0	4650:
	20:53:00	67.9997	26464.7	0.2	151.5	0.0	4656:
	20:59:00	68.0997	26464.9	0.2	151.5	0.0	4662:
	21:05:00	68.1997	26465.1	0.1	151.5	0.0	4668:
	21:11:00	68.2997	26465.1	0.1	151.5	0.0	4674:
	21:17:00	68.3997	26465.4	0.3	151.5	0.0	4680:
	21:23:00	68.4997	26465.7	0.3	151.4	-0.1	4686:
	21:29:00	68.5997	26465.9	0.2	151.4	0.0	4692:
	21:35:00	68.6997	26466.0	0.1	151.4	0.0	4698:
	21:41:00	68.7997	26466.2	0.2	151.4	0.0	4704:
	21:47:00	68.8997	26466.3	0.1	151.4	0.0	4710:
	21:53:00	68.9997	26466.4	0.1	151.4	0.0	4716:
	21:59:00	69.0997	26466.6	0.1	151.4	0.0	4722:
	22:05:00	69.1997	26466.9	0.3	151.4	0.0	4728:
	22:11:00	69.2997	26467.1	0.2	151.4	0.0	4734:
	22:17:00	69.3997	26467.2	0.1	151.4	0.0	4740:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	22:23:00	69.4997	26467.4	0.2	151.4	0.0	4746:
	22:29:00	69.5997	26467.6	0.2	151.4	0.0	4752:
	22:35:00	69.6997	26467.8	0.2	151.4	0.0	4758:
	22:41:00	69.7997	26468.0	0.1	151.4	0.0	4764:
	22:47:00	69.8997	26468.1	0.1	151.4	0.0	4770:
	22:53:00	69.9997	26468.2	0.1	151.4	0.0	4776:
	22:59:00	70.0997	26468.4	0.1	151.4	0.0	4782:
	23:05:00	70.1997	26468.6	0.3	151.4	0.0	4788:
	23:11:00	70.2997	26468.8	0.1	151.4	0.0	4794:
	23:17:00	70.3997	26469.0	0.2	151.4	0.0	4800:
	23:23:00	70.4997	26469.2	0.2	151.4	0.0	4806:
	23:29:00	70.5997	26469.3	0.1	151.4	0.0	4812:
	23:35:00	70.6997	26469.5	0.2	151.4	0.0	4818:
	23:41:00	70.7997	26469.6	0.1	151.4	0.0	4824:
	23:47:00	70.8997	26469.8	0.2	151.4	0.0	4830:
	23:53:00	70.9997	26470.0	0.1	151.4	0.0	4836:
	23:59:00	71.0997	26470.1	0.1	151.4	0.0	4842:
1998/07/14	00:05:00	71.1997	26470.3	0.2	151.4	0.0	4848:
	00:11:00	71.2997	26470.4	0.1	151.4	0.0	4854:
	00:17:00	71.3997	26470.6	0.1	151.4	0.0	4860:
	00:23:00	71.4997	26470.8	0.2	151.4	0.0	4866:
	00:29:00	71.5997	26470.9	0.1	151.4	0.0	4872:
	00:35:00	71.6997	26471.0	0.1	151.4	0.0	4878:
	00:41:00	71.7997	26471.2	0.2	151.4	0.0	4884:
	00:47:00	71.8997	26471.4	0.2	151.4	0.0	4890:
	00:53:00	71.9997	26471.5	0.1	151.4	0.0	4896:
	00:59:00	72.0997	26471.7	0.2	151.4	0.0	4902:
	01:05:00	72.1997	26471.8	0.1	151.4	0.0	4908:
	01:11:00	72.2997	26471.9	0.1	151.4	0.0	4914:
	01:17:00	72.3997	26472.0	0.1	151.4	0.0	4920:
	01:23:00	72.4997	26472.4	0.3	151.4	0.0	4926:
	01:29:00	72.5997	26472.4	0.0	151.4	0.0	4932:
	01:35:00	72.6997	26472.6	0.2	151.4	0.0	4938:
	01:41:00	72.7997	26472.7	0.1	151.4	0.0	4944:
	01:47:00	72.8997	26472.8	0.1	151.4	0.0	4950:
	01:53:00	72.9997	26472.9	0.1	151.4	0.0	4956:
	01:59:00	73.0997	26473.2	0.3	151.4	0.0	4962:
	02:05:00	73.1997	26473.3	0.1	151.4	0.0	4968:
	02:11:00	73.2997	26473.3	0.0	151.4	0.0	4974:
	02:17:00	73.3997	26473.5	0.2	151.4	0.0	4980:
	02:23:00	73.4997	26473.7	0.2	151.4	0.0	4986:
	02:29:00	73.5997	26474.0	0.2	151.4	0.0	4992:
	02:35:00	73.6997	26474.0	0.1	151.4	0.0	4998:
	02:41:00	73.7997	26474.2	0.2	151.4	0.0	5004:

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	02:47:00	73.8997	26474.4	0.1	151.4	0.0	5010:
	02:53:00	73.9997	26474.4	0.0	151.4	0.0	5016:
	02:59:00	74.0997	26474.6	0.3	151.4	0.0	5022:
	03:05:00	74.1997	26474.8	0.1	151.4	0.0	5028:
	03:11:00	74.2997	26474.8	0.0	151.4	0.0	5034:
	03:17:00	74.3997	26475.0	0.2	151.4	0.0	5040:
	03:23:00	74.4997	26475.2	0.2	151.4	0.0	5046:
	03:29:00	74.5997	26475.3	0.1	151.4	0.0	5052:
	03:35:00	74.6997	26475.5	0.3	151.4	0.0	5058:
	03:41:00	74.7997	26475.6	0.1	151.4	0.0	5064:
	03:47:00	74.8997	26475.7	0.1	151.4	-0.1	5070:
	03:53:00	74.9997	26475.8	0.1	151.4	0.0	5076:
	03:59:00	75.0997	26476.0	0.1	151.4	0.0	5082:
	04:05:00	75.1997	26476.2	0.2	151.4	0.0	5088:
	04:11:00	75.2997	26476.2	0.1	151.4	0.0	5094:
	04:17:00	75.3997	26476.4	0.2	151.4	0.0	5100:
	04:23:00	75.4997	26476.6	0.1	151.4	0.0	5106:
	04:29:00	75.5997	26476.6	0.1	151.4	0.0	5112:
	04:35:00	75.6997	26476.7	0.1	151.4	0.0	5118:
	04:41:00	75.7997	26476.8	0.1	151.4	0.0	5124:
	04:47:00	75.8997	26477.1	0.2	151.4	0.0	5130:
	04:53:00	75.9997	26477.3	0.2	151.4	0.0	5136:
	04:59:00	76.0997	26477.3	0.0	151.4	0.0	5142:
	05:05:00	76.1997	26477.5	0.2	151.4	0.0	5148:
	05:11:00	76.2997	26477.6	0.1	151.4	0.0	5154:
	05:17:00	76.3997	26477.7	0.1	151.4	0.0	5160:
	05:23:00	76.4997	26477.8	0.1	151.4	0.0	5166:
	05:29:00	76.5997	26478.0	0.1	151.4	0.0	5172:
	05:35:00	76.6997	26478.1	0.1	151.4	0.0	5178:
	05:41:00	76.7997	26478.2	0.1	151.4	0.0	5184:
	05:47:00	76.8997	26478.2	0.1	151.4	0.0	5190:
	05:53:00	76.9997	26478.5	0.3	151.4	0.0	5196:
	05:59:00	77.0997	26478.5	0.0	151.4	0.0	5202:
	06:05:00	77.1997	26478.8	0.3	151.4	0.0	5208:
	06:11:00	77.2997	26478.8	0.0	151.4	0.0	5214:
	06:17:00	77.3997	26479.0	0.2	151.4	0.0	5220:
	06:23:00	77.4997	26479.1	0.1	151.4	0.0	5226:
	06:29:00	77.5997	26479.3	0.1	151.4	0.0	5232:
	06:35:00	77.6997	26479.3	0.0	151.4	0.0	5238:
	06:41:00	77.7997	26479.5	0.2	151.4	0.0	5244:
	06:47:00	77.8997	26479.5	0.1	151.4	0.0	5250:
	06:53:00	77.9997	26479.6	0.1	151.4	0.0	5256:
	06:59:00	78.0997	26479.8	0.2	151.4	0.0	5262:
	07:05:00	78.1997	26479.9	0.1	151.4	0.0	5268:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	07:11:00	78.2997	26479.9	0.0	151.4	0.0	5274:
	07:17:00	78.3997	26480.2	0.3	151.4	0.0	5280:
	07:23:00	78.4997	26480.2	0.0	151.4	0.0	5286:
	07:29:00	78.5997	26480.3	0.1	151.4	0.0	5292:
	07:35:00	78.6997	26480.4	0.1	151.4	0.0	5298:
	07:41:00	78.7997	26480.6	0.1	151.4	0.0	5304:
	07:47:00	78.8997	26480.7	0.1	151.4	0.0	5310:
	07:53:00	78.9997	26480.8	0.1	151.4	0.0	5316:
	07:59:00	79.0997	26480.9	0.1	151.4	0.0	5322:
	08:05:00	79.1997	26481.1	0.2	151.4	0.0	5328:
	08:11:00	79.2997	26481.1	0.0	151.4	0.0	5334:
	08:17:00	79.3997	26481.2	0.1	151.4	0.0	5340:
	08:23:00	79.4997	26481.3	0.1	151.4	0.0	5346:
	08:29:00	79.5997	26481.5	0.2	151.4	0.0	5352:
	08:35:00	79.6997	26481.5	0.0	151.4	0.0	5358:
	08:41:00	79.7997	26481.5	0.0	151.4	0.0	5364:
	08:47:00	79.8997	26481.6	0.1	151.4	0.0	5370:
	08:53:00	79.9997	26481.7	0.1	151.4	0.0	5376:
	08:59:00	80.0997	26481.8	0.1	151.4	0.0	5382:
	09:05:00	80.1997	26482.0	0.2	151.4	0.0	5388:
	09:11:00	80.2997	26482.1	0.1	151.4	0.0	5394:
	09:17:00	80.3997	26482.2	0.1	151.4	0.0	5400:
	09:23:00	80.4997	26482.4	0.2	151.4	0.0	5406:
	09:29:00	80.5997	26482.4	0.0	151.4	0.0	5412:
	09:35:00	80.6997	26482.6	0.1	151.4	0.0	5418:
	09:41:00	80.7997	26482.7	0.1	151.4	0.0	5424:
	09:47:00	80.8997	26482.8	0.1	151.4	0.0	5430:
	09:53:00	80.9997	26482.9	0.1	151.4	0.0	5436:
	09:59:00	81.0997	26483.0	0.1	151.4	0.0	5442:
	10:05:00	81.1997	26483.1	0.1	151.4	0.0	5448:
	10:11:00	81.2997	26483.3	0.1	151.4	0.0	5454:
	10:17:00	81.3997	26483.5	0.2	151.4	0.0	5460:
	10:23:00	81.4997	26483.4	-0.1	151.4	0.0	5466:
	10:29:00	81.5997	26483.5	0.1	151.4	0.0	5472:
	10:35:00	81.6997	26483.6	0.1	151.4	0.0	5478:
	10:41:00	81.7997	26483.8	0.2	151.4	0.0	5484:
	10:47:00	81.8997	26483.9	0.1	151.4	0.0	5490:
	10:53:00	81.9997	26484.1	0.2	151.3	-0.1	5496:
	10:59:00	82.0997	26484.2	0.1	151.3	0.0	5502:
	11:05:00	82.1997	26484.2	0.1	151.3	0.0	5508:
	11:11:00	82.2997	26484.2	0.0	151.3	0.0	5514:
	11:17:00	82.3997	26484.4	0.1	151.3	0.0	5520:
	11:23:00	82.4997	26484.6	0.2	151.3	0.0	5526:
	11:29:00	82.5997	26484.6	0.1	151.3	0.0	5532:

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	11:35:00	82.6997	26484.8	0.1	151.3	0.0	5538:
	11:41:00	82.7997	26484.8	0.1	151.3	0.0	5544:
	11:47:00	82.8997	26440.1	-44.7	151.3	0.0	5550:
	11:53:00	82.9997	25838.7	-601.4	144.2	-7.2	5556:
	11:59:00	83.0997	24330.2	-1508.6	122.8	-21.3	5562:
	12:06:00	83.2164	21725.2	-2604.9	74.8	-48.0	5568:
	12:12:00	83.3164	71.9	-21653.3	42.8	-32.1	5574:
	12:18:00	83.4164	23.0	-48.9	30.8	-12.0	5580:
	12:24:00	83.5164	10.7	-12.3	25.2	-5.6	5586:
	12:30:00	83.6164	4.8	-5.9	21.7	-3.5	5592:
	12:36:00	83.7164	0.9	-3.9	19.7	-2.0	5598:
	12:42:00	83.8164	0.0	-0.9	83.8	64.1	5604:
	12:48:00	83.9164	0.0	0.0	83.9	0.1	5610:
	12:54:00	84.0164	0.0	0.0	84.0	0.1	5616:
	13:00:00	84.1164	0.0	0.0	84.1	0.1	5622:
	13:06:00	84.2164	3.8	3.8	21.1	-63.0	5628:
	13:13:00	84.3331	9.4	5.5	20.9	-0.2	5634:
	13:19:00	84.4331	12.1	2.8	20.7	-0.2	5640:
	13:25:00	84.5331	14.5	2.4	20.5	-0.2	5646:
	13:31:00	84.6331	16.7	2.1	20.4	-0.2	5652:
	13:37:00	84.7331	18.2	1.5	20.2	-0.1	5658:
	13:43:00	84.8331	19.6	1.4	20.2	-0.1	5664:
	13:49:00	84.9331	21.0	1.4	19.9	-0.3	5670:
	13:55:00	85.0331	22.5	1.4	19.7	-0.2	5676:
	14:01:00	85.1331	23.7	1.2	19.6	-0.1	5682:
	14:07:00	85.2331	24.6	0.9	19.5	-0.1	5688:
	14:13:00	85.3331	24.5	-0.1	19.8	0.3	5694:
1998/07/14	14:15:00	85.3664	24.4	-0.1	19.8	0.1	5696:
					End Data Acquisition:		

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 6 data points.

RANGER OIL LIMITED

RANGER FORT LIARD
P-66-A

1. GENTRONIC METZLINE QUARTZ - FLOWING GRADIENT & BUILD-UP DATA

2. GENTRONIC METZLINE QUARTZ - FLOWING GRADIENT & BUILD-UP PLOTS

3. GENTRONIC METZLINE QUARTZ - TRANSIENT DATA

Date: July 15 - 21, 1998
Report By: Pat Mulgrew

GENCO Pressure Control Limited

(403) 250-3800 — CALGARY, AB.

SUBSURFACE PRESSURE MEASUREMENTS

Basic Data:

Company Ranger Oil Limited
Address #1600, 321 - 6Th. Ave. S.W.
Calgary, AB.
T2P 3H3

Gentronics Electronic Gauge
c/w Memory Recorder
S/N: GMQ-9804

Well Name Ranger Fort Liard	Field & Pool Liard / Nihanni
Well Identifier P-66-A	Type of Test Fl. Grd. & Build Up
Status Shut in Gas	Date of Test Jul 15 - 21, 1998
DWG Tubing Pressure N/A kPa	DWG Casing Pressure N/A kPa
Tubing 88.9 mm @ 3082.4 m KB	Casing 177.8 mm @ 3499.0 m KB
Producing Interval 3115 - 3334 m KB	Producing Through Tubing
Elevation 449.54 m CF, 459.89 m KB	MPP Interval 3214.2 m CF
Datum Depth of Well _____ m CF	Run Depth 3347 m CF
Temperature at Run Depth 158.2 °C	Pool Datum _____ m (subsea)
Pressure at Run Depth 27296 kPaG	Gradient at Run Depth _____ kPa/m
MPP Pressure _____ kPaG	Datum Depth Pressure _____ kPaG
Final Buildup Pressure 27299 kPaG	Date on Bottom July 15, 1998
Date off Bottom July 20, 1998	Shut in Date July 16, 1998

Summary:

Single LMR Quartz Memory Recorder ran within specifications.

Parted wireline near surface while attempting to pull tools off bottom on July 16, 1998.

Preparation Data:

Tested By GENCO Computed By P. Mulgrew Report Date Aug 04, 1998

BOTTOM GAUGE

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

OPERATIONS SUMMARY

Company: **Ranger Oil Limited** LSD: **P-66-A**
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/07/15	20:35:01	0.0000	24000.9	59.4	1	Begin Data Acquisition
	21:51:00	1.2664	27293.8	157.7	732	Recorders on Bottom at 3347 m CF.
	22:29:00	1.8997	27295.9	158.2	808	Well Open to Flow.
1998/07/16	02:21:00	5.7664	26061.0	158.2	1272	@ 3347 mCF
	02:32:00	5.9497	26023.9	158.2	1294	@ 3340 mCF
	02:43:00	6.1331	25942.9	158.3	1316	@ 3330 mCF
	02:53:30	6.3081	25852.5	157.8	1337	@ 3320 mCF
	03:04:30	6.4914	25758.0	157.7	1359	@ 3310 mCF
	03:15:30	6.6747	25669.9	157.7	1381	@ 3300 mCF
	03:26:00	6.8497	25579.5	157.6	1402	@ 3290 mCF
	03:37:00	7.0331	25495.1	157.4	1424	@ 3280 mCF
	03:48:30	7.2247	25403.8	156.7	1447	@ 3270 mCF
	03:59:30	7.4081	25319.2	156.5	1469	@ 3260 mCF
	04:10:30	7.5914	25238.3	156.5	1491	@ 3250 mCF
	04:21:00	7.7664	25160.2	156.4	1512	@ 3240 mCF
	04:32:00	7.9497	25082.3	156.4	1534	@ 3230 mCF
	04:43:00	8.1331	25004.1	156.4	1556	@ 3220 mCF
	04:55:00	8.3331	24926.5	156.4	1580	@ 3210 mCF
	05:05:30	8.5081	24849.3	156.3	1601	@ 3200 mCF
	05:16:30	8.6914	24770.1	156.3	1623	@ 3190 mCF
	05:27:30	8.8747	24694.6	156.3	1645	@ 3180 mCF
	05:38:30	9.0581	24614.0	156.2	1667	@ 3170 mCF

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

OPERATIONS SUMMARY

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/07/16	05:49:30	9.2414	24536.3	156.2	1689:	@ 3160 mCF
	06:00:00	9.4164	24484.6	156.1	1710:	@ 3150 mCF
	06:11:00	9.5997	24446.8	155.6	1732:	@ 3140 mCF
	06:22:00	9.7831	24411.0	155.3	1754:	@ 3130 mCF
	06:33:00	9.9664	24384.4	154.7	1776:	@ 3120 mCF
	06:44:00	10.1497	24354.5	154.4	1798:	@ 3110 mCF
	06:55:00	10.3331	24330.8	154.3	1820:	@ 3100 mCF
	07:17:00	10.6997	24339.3	154.3	1864:	@ 3110 mCF
	07:28:00	10.8831	24354.2	154.3	1886:	@ 3120 mCF
	07:38:30	11.0581	24375.0	154.3	1907:	@ 3130 mCF
	07:48:30	11.2247	24394.3	154.4	1927:	@ 3140 mCF
	07:58:30	11.3914	24423.9	154.9	1947:	@ 3150 mCF
	08:10:30	11.5914	24472.1	155.4	1971:	@ 3160 mCF
	08:20:30	11.7581	24540.0	155.8	1991:	@ 3170 mCF
	08:32:00	11.9497	24606.9	156.2	2014:	@ 3180 mCF
	08:43:00	12.1331	24678.5	156.2	2036:	@ 3190 mCF
	08:54:00	12.3164	24750.4	156.3	2058:	@ 3200 mCF
	09:04:30	12.4914	24823.8	156.3	2079:	@ 3210 mCF
	09:16:00	12.6831	24894.2	156.3	2102:	@ 3220 mCF
	09:27:00	12.8664	24967.3	156.4	2124:	@ 3230 mCF
	09:38:00	13.0497	25043.7	156.4	2146:	@ 3240 mCF
	09:49:00	13.2331	25115.4	156.4	2168:	@ 3250 mCF
	10:10:30	13.5914	24298.0	156.0	2211:	@ 3100 mCF

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

OPERATIONS SUMMARY

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/07/16	10:24:00	13.8164	24290.9	154.4	2238:	@ 3110 mCF
	10:35:00	13.9997	24302.0	154.3	2260:	@ 3120 mCF
	10:45:30	14.1747	24323.3	154.3	2281:	@ 3130 mCF
	10:56:30	14.3581	24340.2	154.4	2303:	@ 3140 mCF
	11:07:00	14.5331	24374.5	155.0	2324:	@ 3150 mCF
	11:18:00	14.7164	24427.0	155.4	2346:	@ 3160 mCF
	11:28:30	14.8914	24497.9	156.0	2367:	@ 3170 mCF
	11:39:00	15.0664	24574.5	156.2	2388:	@ 3180 mCF
	11:50:00	15.2497	24647.5	156.3	2410:	@ 3190 mCF
	12:00:30	15.4247	24719.3	156.3	2431:	@ 3200 mCF
	12:11:00	15.5997	24791.2	156.3	2452:	@ 3210 mCF
	12:23:00	15.7997	24862.1	156.4	2476:	@ 3220 mCF
	12:33:00	15.9664	24941.2	156.4	2496:	@ 3230 mCF
	12:44:00	16.1497	25013.9	156.4	2518:	@ 3240 mCF
	13:07:00	16.5331	25090.5	156.5	2564:	@ 3250 mCF
	13:16:30	16.6914	25168.3	156.5	2583:	@ 3260 mCF
	13:27:00	16.8664	25250.9	156.6	2604:	@ 3270 mCF
	13:38:00	17.0497	25330.6	156.6	2626:	@ 3280 mCF
	13:49:00	17.2331	25414.9	156.6	2648:	@ 3290 mCF
	14:02:00	17.4497	25495.9	157.3	2674:	@ 3300 mCF
	14:12:30	17.6247	25580.6	157.5	2695:	@ 3310 mCF
	14:23:00	17.7997	25664.6	157.6	2716:	@ 3320 mCF
	14:33:30	17.9747	25744.2	157.7	2737:	@ 3330 mCF

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

OPERATIONS SUMMARY

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/07/16	14:44:30	18.1581	25831.3	157.7	2759:	@ 3340 mCF
	14:55:00	18.3331	25883.7	157.8	2780:	@ 3347 mCF
	16:01:30	19.4414	26242.6	158.1	2913:	Choke Size Reduced.
	17:44:00	21.1497	26500.6	158.2	3118:	Well Shut In.
1998/07/20	21:40:30	121.0914	27298.9	158.2	15111:	Recorders Off Bottom.
1998/07/21	05:00:00	128.4164	21587.5	26.6	15990 :	Tools in Lubricator.
	05:20:00	128.7497	0.0	10.5	16029 :	End Data Acquisition

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

STATIC GRADIENT SURVEY

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A

Bottom Gauge

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Gradient (°C/m)
At Surface: 1998/07/16 14:55:00 (Running Out)				
3290	25580	8.44	157.6	0.020
3300	25670	9.04	157.7	0.010
3310	25758	8.81	157.7	-----
3320	25853	9.45	157.8	0.010
3330	25943	9.04	158.3	0.050
3340	26024	8.10	158.2	-----
3347	26061	5.30	158.2	-----

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

STATIC GRADIENT SURVEY

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A

Bottom Gauge

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Gradient (°C/m)
At Surface: 1998/07/16 14:55:00 (Running Out)				
3110	24339	1.49	154.3	-----
3100	24331	0.85	154.3	-----
3110	24355	2.37	154.4	0.010
3120	24384	2.99	154.7	0.030
3130	24411	2.66	155.3	0.060
3140	24447	3.58	155.6	0.030
3150	24485	3.78	156.1	0.050
3160	24536	5.17	156.2	0.010
3170	24614	7.77	156.2	-----
3180	24695	8.06	156.3	0.010
3190	24770	7.55	156.3	-----
3200	24849	7.92	156.3	-----
3210	24927	7.72	156.4	0.010
3220	25004	7.76	156.4	-----
3230	25082	7.82	156.4	-----
3240	25160	7.79	156.4	-----
3250	25238	7.81	156.5	0.010
3260	25319	8.09	156.5	-----
3270	25404	8.46	156.7	0.020
3280	25495	9.13	157.4	0.070

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

STATIC GRADIENT SURVEY

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard

Bottom Gauge

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Gradient (°C/m)
At Surface: 1998/07/16 14:55:00 (Running Out)				
3150	24375	5.25	155.0	0.040
3140	24340	3.43	154.4	0.060
3130	24323	1.69	154.3	0.010
3120	24302	2.13	154.3	-----
3110	24291	1.11	154.4	-----
3100	24298	-----	156.0	-----
3250	25115	5.45	156.4	0.003
3240	25044	7.17	156.4	-----
3230	24967	7.64	156.4	-----
3220	24894	7.31	156.3	0.010
3210	24824	7.04	156.3	-----
3200	24750	7.34	156.3	-----
3190	24679	7.19	156.2	0.010
3180	24607	7.16	156.2	-----
3170	24540	6.69	155.8	0.040
3160	24472	6.79	155.4	0.040
3150	24424	4.82	154.9	0.050
3140	24394	2.96	154.4	0.050
3130	24375	1.93	154.3	0.010
3120	24354	2.08	154.3	-----

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

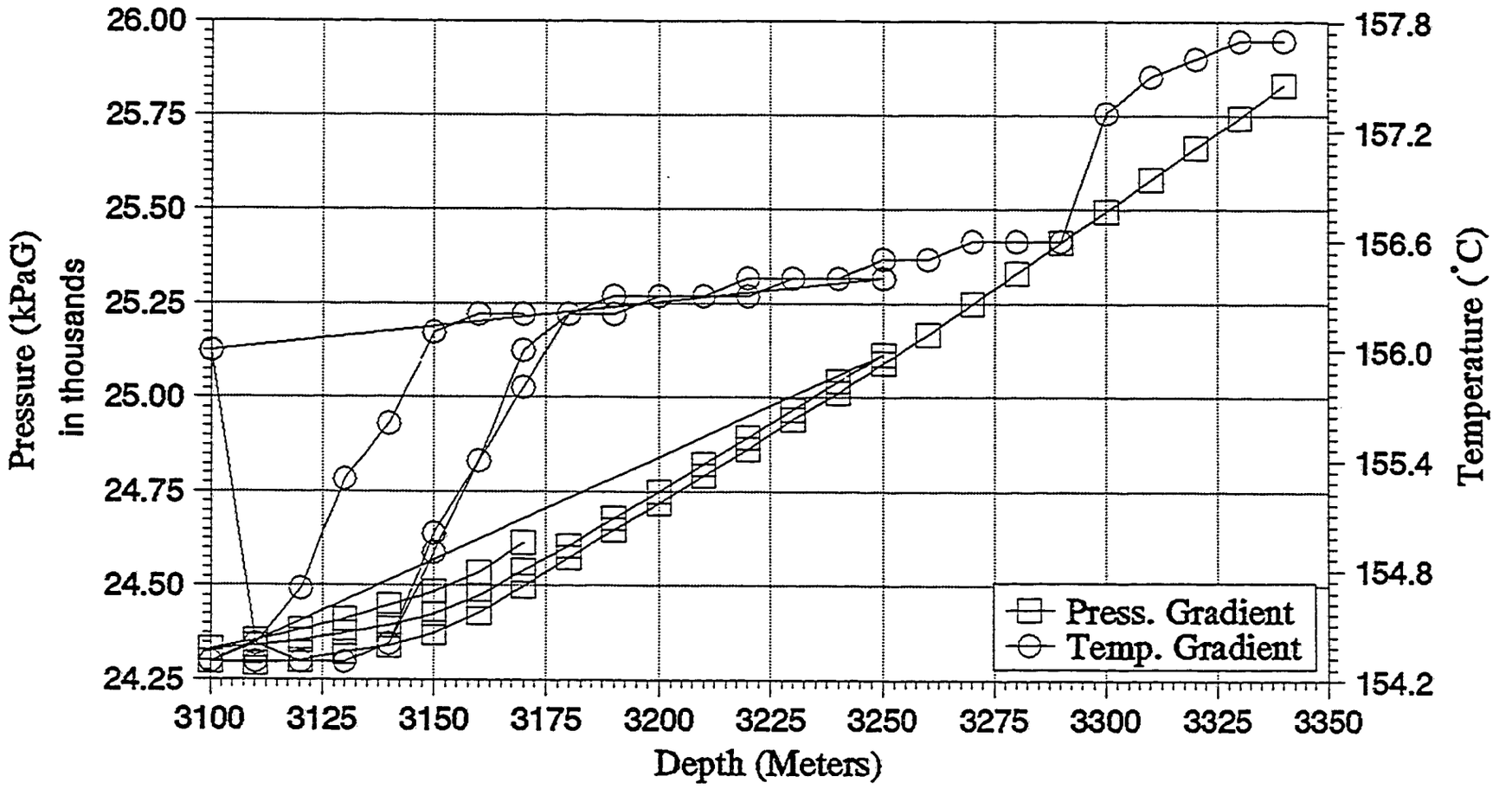
STATIC GRADIENT SURVEY

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Gradient (°C/m)
At Surface: 1998/07/16 14:55:00 (Running Out)				
3347	25884	-----	157.8	-----
3340	25831	7.49	157.7	0.014
3330	25744	8.71	157.7	-----
3320	25665	7.96	157.6	0.010
3310	25581	8.40	157.5	0.010
3300	25496	8.47	157.3	0.020
3290	25415	8.10	156.6	0.070
3280	25331	8.43	156.6	-----
3270	25251	7.97	156.6	-----
3260	25168	8.26	156.5	0.010
3250	25091	7.78	156.5	-----
3240	25014	7.66	156.4	0.010
3230	24941	7.27	156.4	-----
3220	24862	7.91	156.4	-----
3210	24791	7.09	156.3	0.010
3200	24719	7.19	156.3	-----
3190	24648	7.18	156.3	-----
3180	24575	7.30	156.2	0.010
3170	24498	7.66	156.0	0.020
3160	24427	7.09	155.4	0.060

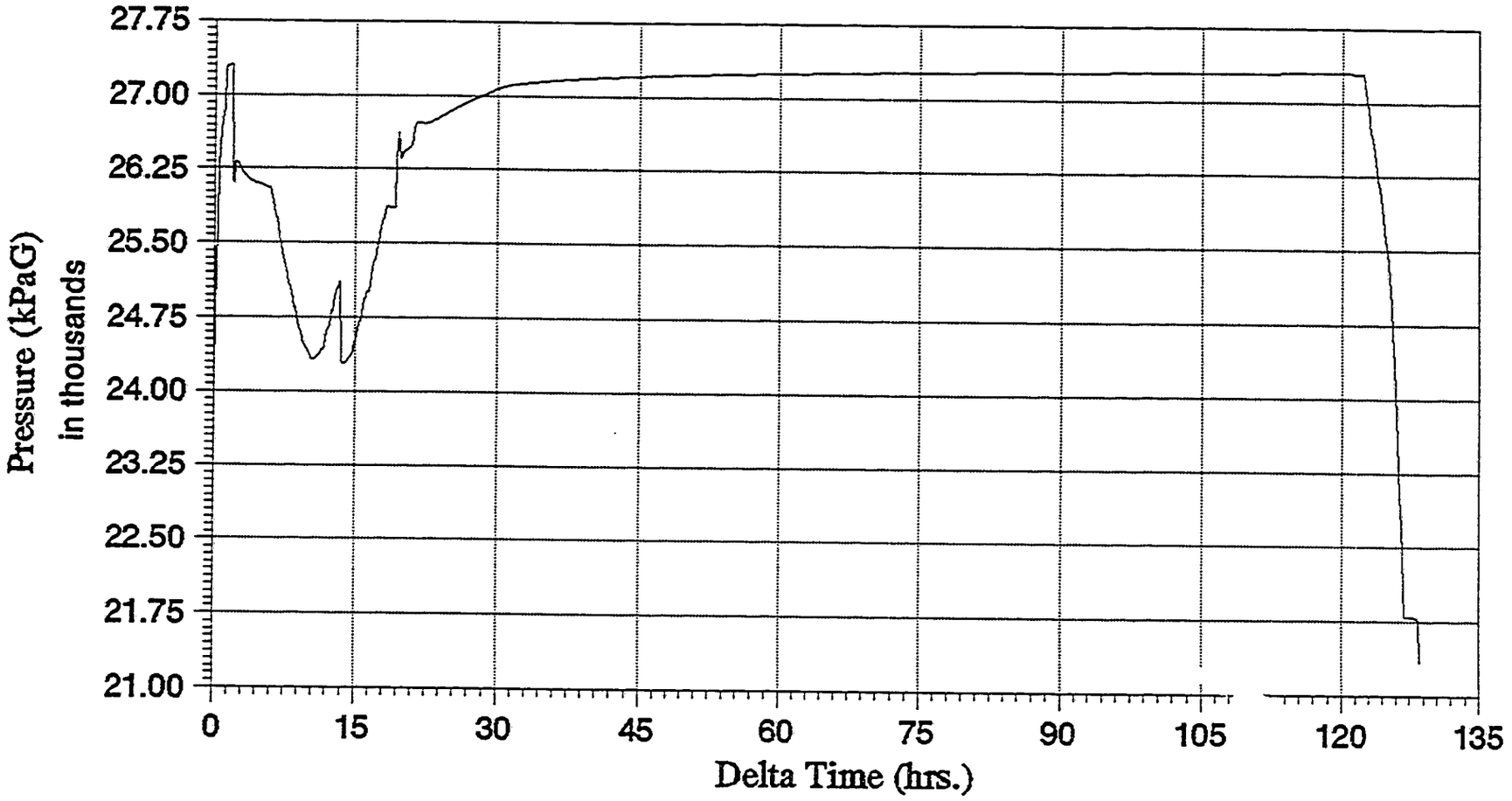
Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

Ranger Oil Limited
P-66-A
Gentronics Quartz Static Gradient Survey



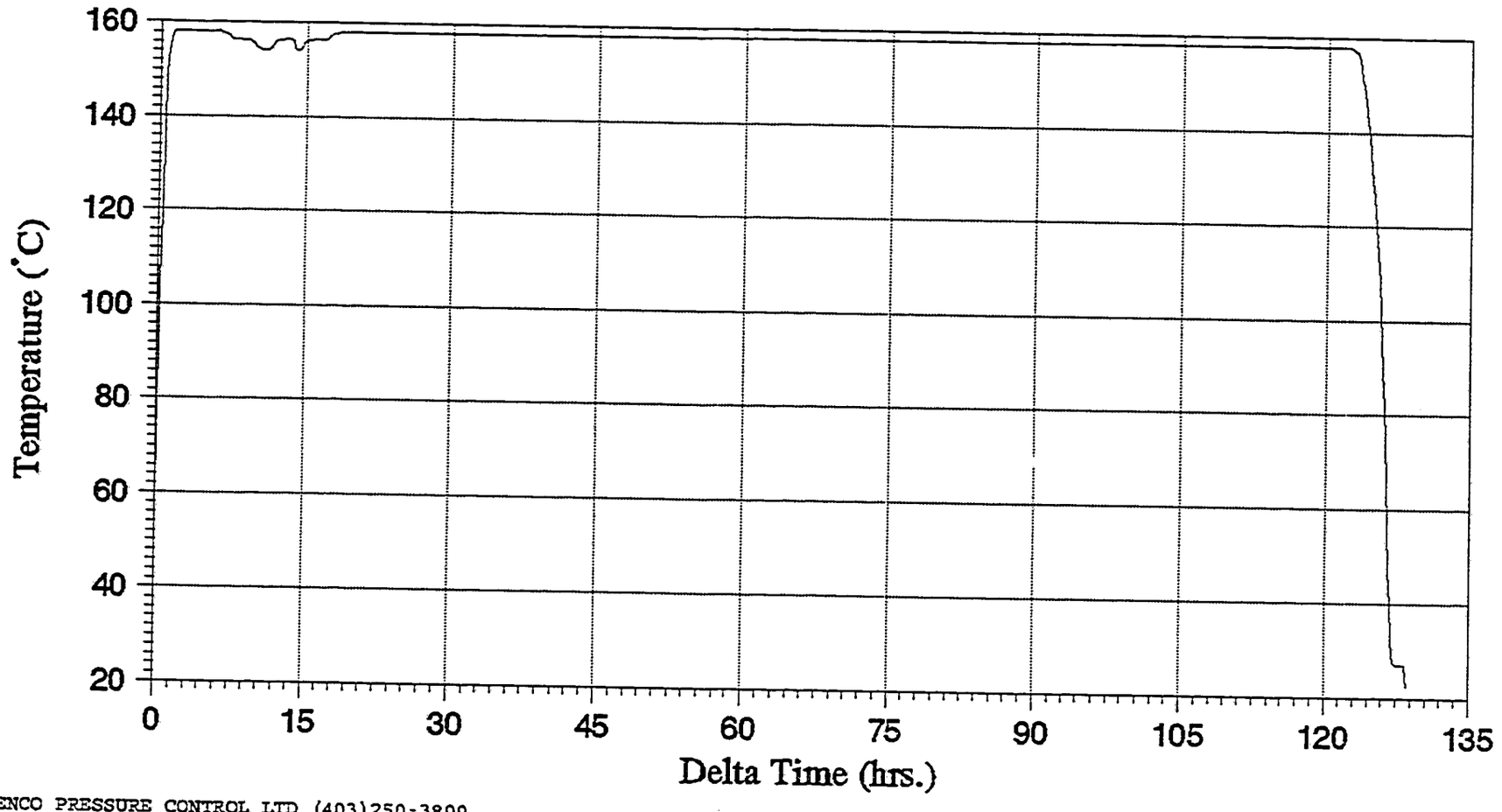
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/15 20:35:01
End Aquisition: 1998/07/21 05:20:00

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Pressures



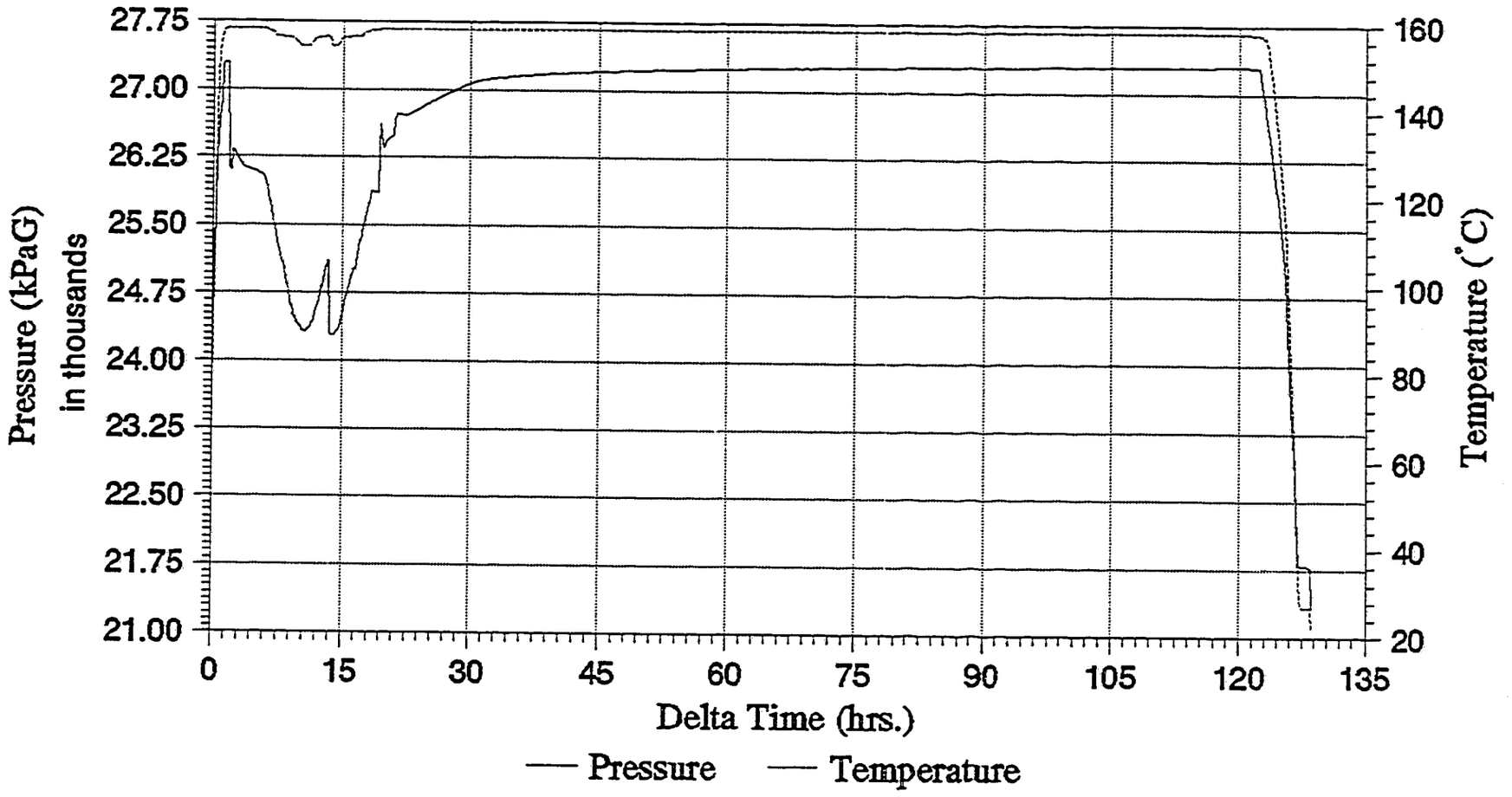
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/15 20:35:01
End Aquisition: 1998/07/21 05:20:00

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Temp.



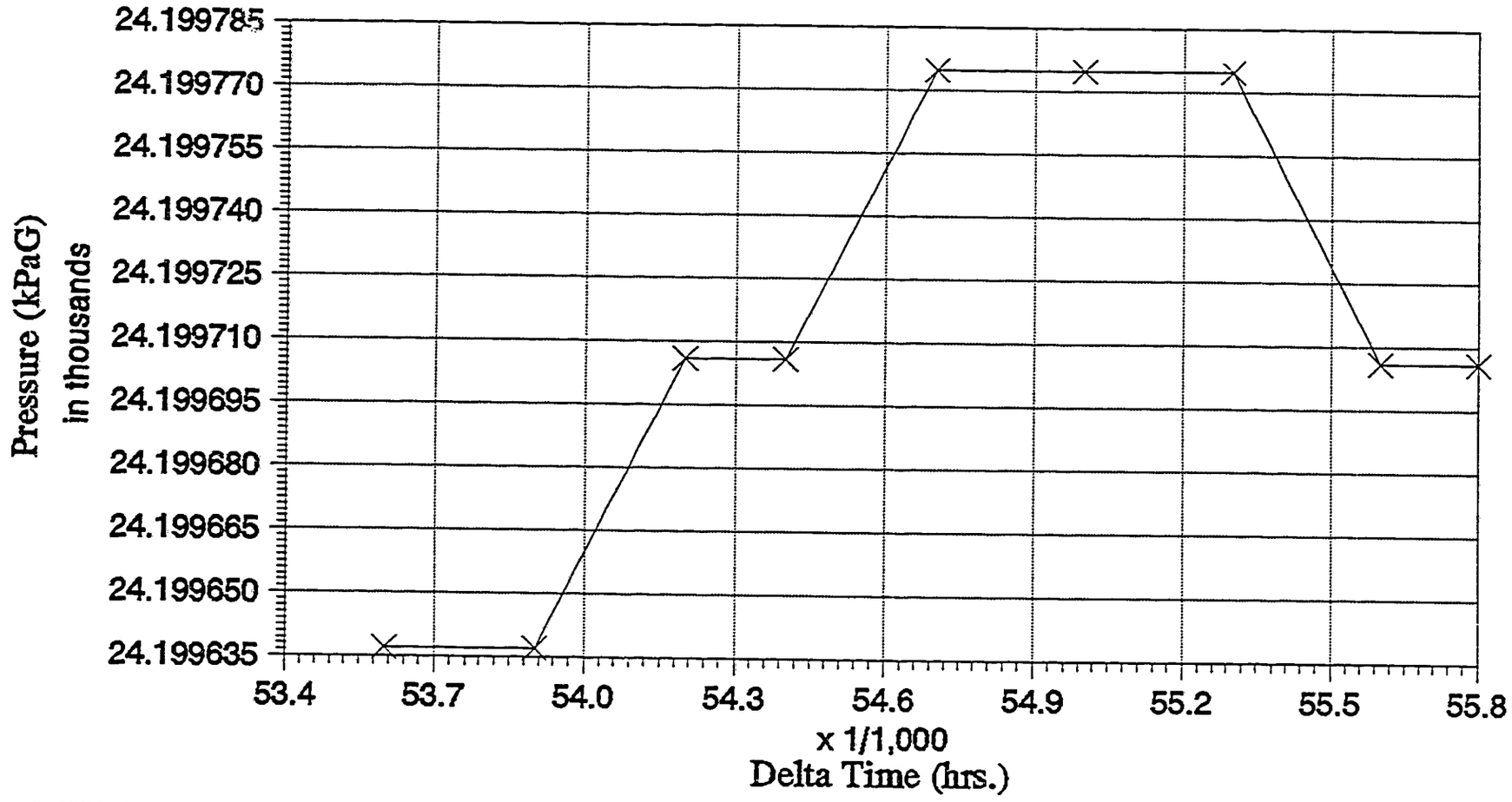
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/15 20:35:01
End Aquisition: 1998/07/21 05:20:00

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Pressure/Temp



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/15 20:35:01
End Aquisition: 1998/07/21 05:20:00

Ranger Oil Limited
P-66-A
Bottom Gauge Apparent Resolution



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/15 20:35:01
End Aquisition: 1998/07/21 05:20:00

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
				Begin Data Acquisition:			
1998/07/15	20:35:01	0.0000	24000.9	24000.9	59.4	59.4	0:
	20:35:17	0.0044	24028.6	27.8	60.4	1.0	17:
	20:35:34	0.0092	24033.8	5.2	61.4	1.1	34:
	20:35:51	0.0139	24035.9	2.1	62.5	1.1	51:
	20:36:08	0.0186	24057.5	21.7	63.4	0.9	68:
	20:36:25	0.0233	24084.5	27.0	64.4	1.0	85:
	20:36:42	0.0281	24113.4	28.9	65.4	1.0	102:
	20:36:59	0.0328	24142.5	29.2	66.4	1.0	119:
	20:37:16	0.0375	24173.3	30.8	67.4	1.0	136:
	20:37:33	0.0422	24199.4	26.1	68.4	0.9	153:
	20:37:50	0.0469	24200.7	1.4	69.4	1.0	170:
	20:38:07	0.0517	24200.0	-0.8	70.3	0.9	187:
	20:38:24	0.0564	24199.7	-0.3	71.2	0.9	204:
	20:38:41	0.0611	24199.6	-0.1	72.1	0.8	221:
	20:38:58	0.0658	24199.6	0.0	72.8	0.8	238:
	20:39:15	0.0706	24224.7	25.2	73.6	0.8	255:
	20:39:32	0.0753	24256.9	32.2	74.4	0.8	272:
	20:39:49	0.0800	24288.9	32.0	75.3	0.9	289:
	20:40:06	0.0847	24321.7	32.8	76.2	0.8	306:
	20:40:23	0.0894	24355.4	33.6	77.1	0.9	323:
	20:40:40	0.0942	24389.4	34.0	77.9	0.8	340:
	20:40:57	0.0989	24423.0	33.6	78.8	0.9	357:
	20:41:14	0.1036	24457.0	34.1	79.6	0.8	374:
	20:41:31	0.1083	24491.0	33.9	80.4	0.8	391:
	20:41:48	0.1131	24524.7	33.7	81.3	0.8	408:
	20:42:05	0.1178	24557.8	33.1	82.1	0.8	425:
	20:42:22	0.1225	24591.8	34.0	82.9	0.8	442:
	20:42:39	0.1272	24624.2	32.5	83.7	0.8	459:
	20:42:56	0.1319	24656.3	32.1	84.6	0.9	476:
	20:43:13	0.1367	24687.3	31.0	85.4	0.8	493:
	20:43:30	0.1414	24717.9	30.6	86.2	0.8	510:
	20:43:47	0.1461	24748.2	30.3	87.1	0.8	527:
	20:44:04	0.1508	24779.0	30.8	87.9	0.8	544:
	20:44:21	0.1556	24808.5	29.4	88.7	0.8	561:
	20:44:38	0.1603	24837.2	28.8	89.6	0.8	578:
	20:44:55	0.1650	24864.7	27.5	90.3	0.8	595:
	20:51:00	0.2664	25262.1	397.4	105.7	15.3	612:
	20:59:30	0.4081	25813.6	551.5	123.7	18.0	629:
	21:08:00	0.5497	26329.0	515.3	141.3	17.7	646:
	21:16:30	0.6914	26526.1	197.2	149.8	8.4	663:
	21:25:00	0.8331	26684.4	158.2	153.6	3.8	680:
	21:33:30	0.9747	26831.9	147.5	155.8	2.3	697:
	21:42:00	1.1164	27149.0	317.1	156.7	0.9	714:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	21:50:30	1.2581	27243.1	94.1	157.7	0.9	731:
	21:59:00	1.3997	27292.5	49.4	158.0	0.3	748:
	22:07:30	1.5414	27294.7	2.2	158.1	0.1	765:
	22:16:00	1.6831	27295.5	0.8	158.2	0.1	782:
	22:24:30	1.8247	27288.9	-6.6	158.2	0.0	799:
	22:33:00	1.9664	26388.5	-900.5	158.2	0.0	816:
	22:41:30	2.1081	26074.8	-313.7	158.2	0.0	833:
	22:50:00	2.2497	26321.3	246.5	158.2	0.0	850:
	22:58:30	2.3914	26318.6	-2.7	158.2	0.0	867:
	23:07:00	2.5331	26307.8	-10.8	158.2	0.0	884:
	23:15:30	2.6747	26286.0	-21.8	158.2	0.0	901:
	23:24:00	2.8164	26261.4	-24.5	158.2	0.0	918:
	23:32:30	2.9581	26236.6	-24.9	158.2	0.0	935:
	23:41:00	3.0997	26210.7	-25.9	158.2	0.0	952:
	23:49:30	3.2414	26194.6	-16.1	158.2	0.0	969:
	23:58:00	3.3831	26174.4	-20.2	158.2	0.0	986:
1998/07/16	00:06:30	3.5247	26159.5	-14.9	158.2	0.0	1003:
	00:15:00	3.6664	26147.2	-12.3	158.2	0.0	1020:
	00:23:30	3.8081	26137.3	-9.9	158.2	0.0	1037:
	00:32:00	3.9497	26131.3	-5.9	158.2	0.0	1054:
	00:40:30	4.0914	26122.7	-8.7	158.2	0.0	1071:
	00:49:00	4.2331	26113.0	-9.7	158.2	0.0	1088:
	00:57:30	4.3747	26106.4	-6.6	158.2	0.0	1105:
	01:06:00	4.5164	26103.1	-3.4	158.2	0.0	1122:
	01:14:30	4.6581	26098.0	-5.0	158.2	0.0	1139:
	01:23:00	4.7997	26096.7	-1.3	158.2	0.0	1156:
	01:31:30	4.9414	26092.8	-3.9	158.2	0.0	1173:
	01:40:00	5.0831	26086.5	-6.3	158.2	0.0	1190:
	01:48:30	5.2247	26081.1	-5.3	158.2	0.0	1207:
	01:57:00	5.3664	26073.6	-7.6	158.2	0.0	1224:
	02:05:30	5.5081	26071.6	-1.9	158.2	0.0	1241:
	02:14:00	5.6497	26064.6	-7.0	158.2	0.0	1258:
	02:22:30	5.7914	26058.3	-6.3	158.2	0.0	1275:
	02:31:00	5.9331	26055.5	-2.8	158.2	0.0	1292:
	02:39:30	6.0747	26027.1	-28.4	158.3	0.2	1309:
	02:48:00	6.2164	25940.5	-86.6	158.0	-0.3	1326:
	02:56:30	6.3581	25848.6	-91.8	157.8	-0.2	1343:
	03:05:00	6.4997	25756.9	-91.7	157.7	-0.1	1360:
	03:13:30	6.6414	25754.3	-2.7	157.7	-0.1	1377:
	03:22:00	6.7831	25667.2	-87.1	157.6	-0.1	1394:
	03:30:30	6.9247	25579.3	-87.8	157.5	-0.1	1411:
	03:39:00	7.0664	25501.3	-78.1	157.2	-0.3	1428:
	03:47:30	7.2081	25450.5	-50.7	156.7	-0.4	1445:
	03:56:00	7.3497	25401.8	-48.7	156.6	-0.2	1462:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
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Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	04:04:30	7.4914	25316.4	-85.4	156.5	-0.1	1479:
	04:13:00	7.6331	25238.1	-78.3	156.4	-0.1	1496:
	04:21:30	7.7747	25164.2	-73.9	156.4	0.0	1513:
	04:30:00	7.9164	25162.9	-1.2	156.4	0.0	1530:
	04:38:30	8.0581	25082.7	-80.2	156.4	-0.1	1547:
	04:47:00	8.1997	25002.6	-80.1	156.4	0.0	1564:
	04:55:30	8.3414	24925.1	-77.6	156.4	0.0	1581:
	05:04:00	8.4831	24921.5	-3.5	156.3	-0.1	1598:
	05:12:30	8.6247	24844.3	-77.2	156.3	0.0	1615:
	05:21:00	8.7664	24769.4	-74.9	156.3	-0.1	1632:
	05:29:30	8.9081	24693.0	-76.3	156.3	0.0	1649:
	05:38:00	9.0497	24618.2	-74.8	156.2	-0.1	1666:
	05:46:30	9.1914	24611.3	-7.0	156.2	-0.1	1683:
	05:55:00	9.3331	24535.8	-75.5	156.1	-0.1	1700:
	06:03:30	9.4747	24491.0	-44.7	155.8	-0.3	1717:
	06:12:00	9.6164	24447.2	-43.8	155.6	-0.3	1734:
	06:20:30	9.7581	24441.6	-5.7	155.3	-0.2	1751:
	06:29:00	9.8997	24413.9	-27.7	154.8	-0.5	1768:
	06:37:30	10.0414	24382.8	-31.1	154.6	-0.3	1785:
	06:46:00	10.1831	24354.7	-28.1	154.4	-0.2	1802:
	06:54:30	10.3247	24336.7	-18.0	154.3	-0.1	1819:
	07:03:00	10.4664	24325.1	-11.6	154.3	0.0	1836:
	07:11:30	10.6081	24323.2	-1.9	154.3	-0.1	1853:
	07:20:00	10.7497	24333.6	10.4	154.3	0.0	1870:
	07:28:30	10.8914	24353.1	19.5	154.3	0.1	1887:
	07:37:00	11.0331	24351.3	-1.8	154.3	0.0	1904:
	07:45:30	11.1747	24369.9	18.6	154.4	0.1	1921:
	07:54:00	11.3164	24387.2	17.2	154.8	0.4	1938:
	08:02:30	11.4581	24420.6	33.4	155.2	0.4	1955:
	08:11:00	11.5997	24463.5	43.0	155.4	0.2	1972:
	08:19:30	11.7414	24463.8	0.3	155.8	0.3	1989:
	08:28:00	11.8831	24540.0	76.3	156.1	0.3	2006:
	08:36:30	12.0247	24606.1	66.1	156.2	0.1	2023:
	08:45:00	12.1664	24676.5	70.4	156.2	0.1	2040:
	08:53:30	12.3081	24732.5	56.0	156.3	0.1	2057:
	09:02:00	12.4497	24749.7	17.2	156.3	0.1	2074:
	09:10:30	12.5914	24821.9	72.2	156.3	0.0	2091:
	09:19:00	12.7331	24893.3	71.4	156.4	0.1	2108:
	09:27:30	12.8747	24967.3	74.0	156.4	0.0	2125:
	09:36:00	13.0164	24965.6	-1.7	156.4	0.1	2142:
	09:44:30	13.1581	25042.1	76.5	156.4	0.0	2159:
	09:53:00	13.2997	25115.5	73.4	156.4	0.0	2176:
	10:01:30	13.4414	25112.3	-3.2	156.5	0.1	2193:
	10:10:00	13.5831	24321.5	-790.7	156.2	-0.3	2210:

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Company: Ranger Oil Limited
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Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	10:18:30	13.7247	24284.8	-36.8	154.7	-1.5	2227:
	10:27:00	13.8664	24285.1	0.3	154.4	-0.3	2244:
	10:35:30	14.0081	24302.8	17.7	154.3	-0.1	2261:
	10:44:00	14.1497	24298.6	-4.1	154.3	0.0	2278:
	10:52:30	14.2914	24319.1	20.4	154.3	0.0	2295:
	11:01:00	14.4331	24338.9	19.9	154.8	0.4	2312:
	11:09:30	14.5747	24373.3	34.3	155.2	0.4	2329:
	11:18:00	14.7164	24427.0	53.8	155.4	0.2	2346:
	11:26:30	14.8581	24425.8	-1.2	155.9	0.6	2363:
	11:35:00	14.9997	24497.9	72.1	156.2	0.2	2380:
	11:43:30	15.1414	24571.1	73.2	156.2	0.1	2397:
	11:52:00	15.2831	24645.4	74.3	156.3	0.1	2414:
	12:00:30	15.4247	24719.3	73.9	156.3	0.0	2431:
	12:09:00	15.5664	24719.0	-0.3	156.3	0.1	2448:
	12:17:30	15.7081	24789.4	70.3	156.4	0.1	2465:
	12:26:00	15.8497	24865.7	76.3	156.4	0.0	2482:
	12:34:30	15.9914	24937.7	72.0	156.4	0.1	2499:
	12:43:00	16.1331	24940.6	3.0	156.4	0.0	2516:
	12:51:30	16.2747	25014.7	74.1	156.5	0.1	2533:
	13:00:00	16.4164	25011.9	-2.8	156.5	0.0	2550:
	13:08:30	16.5581	25089.6	77.8	156.5	0.0	2567:
	13:17:00	16.6997	25167.8	78.1	156.5	0.0	2584:
	13:25:30	16.8414	25166.5	-1.2	156.6	0.1	2601:
	13:34:00	16.9831	25245.5	78.9	156.6	0.0	2618:
	13:42:30	17.1247	25334.2	88.7	156.6	0.0	2635:
	13:51:00	17.2664	25404.3	70.1	156.8	0.3	2652:
	13:59:30	17.4081	25412.6	8.3	157.3	0.4	2669:
	14:08:00	17.5497	25494.9	82.3	157.4	0.2	2686:
	14:16:30	17.6914	25584.1	89.2	157.6	0.1	2703:
	14:25:00	17.8331	25665.4	81.3	157.6	0.1	2720:
	14:33:30	17.9747	25744.2	78.8	157.7	0.1	2737:
	14:42:00	18.1164	25748.1	3.9	157.7	0.1	2754:
	14:50:30	18.2581	25828.0	79.9	157.8	0.1	2771:
	14:59:00	18.3997	25872.1	44.1	157.9	0.1	2788:
	15:07:30	18.5414	25869.8	-2.3	158.1	0.1	2805:
	15:16:00	18.6831	25869.3	-0.6	158.1	0.0	2822:
	15:24:30	18.8247	25865.0	-4.3	158.1	0.1	2839:
	15:33:00	18.9664	25863.3	-1.7	158.1	0.0	2856:
	15:41:30	19.1081	25861.2	-2.1	158.1	0.0	2873:
	15:50:00	19.2497	25860.1	-1.1	158.1	0.0	2890:
	15:58:30	19.3914	25858.3	-1.8	158.1	0.0	2907:
	16:07:00	19.5331	26714.5	856.2	158.2	0.1	2924:
	16:15:30	19.6747	26530.4	-184.1	158.2	0.0	2941:
	16:24:00	19.8164	26352.8	-177.6	158.2	0.0	2958:

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PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	16:32:30	19.9581	26398.5	45.7	158.2	0.0	2975:
	16:41:00	20.0997	26413.8	15.3	158.2	0.0	2992:
	16:49:30	20.2414	26426.8	13.0	158.2	0.0	3009:
	16:58:00	20.3831	26442.0	15.2	158.2	0.0	3026:
	17:06:30	20.5247	26452.9	10.8	158.2	0.0	3043:
	17:15:00	20.6664	26463.3	10.4	158.2	0.0	3060:
	17:23:30	20.8081	26473.5	10.2	158.2	0.0	3077:
	17:32:00	20.9497	26485.6	12.1	158.2	0.0	3094:
	17:40:30	21.0914	26491.7	6.1	158.2	0.0	3111:
	17:49:00	21.2331	26685.3	193.5	158.2	0.0	3128:
	17:57:30	21.3747	26712.7	27.4	158.2	0.0	3145:
	18:06:00	21.5164	26738.6	25.9	158.2	0.0	3162:
	18:14:30	21.6581	26731.1	-7.4	158.2	0.0	3179:
	18:23:00	21.7997	26723.6	-7.6	158.2	0.0	3196:
	18:31:30	21.9414	26722.7	-0.9	158.2	0.0	3213:
	18:40:00	22.0831	26718.9	-3.8	158.2	0.0	3230:
	18:48:30	22.2247	26716.0	-2.8	158.2	0.0	3247:
	18:57:00	22.3664	26715.0	-1.0	158.2	0.0	3264:
	19:05:30	22.5081	26715.8	0.8	158.2	0.0	3281:
	19:14:00	22.6497	26718.2	2.4	158.2	0.0	3298:
	19:22:30	22.7914	26721.8	3.5	158.2	0.0	3315:
	19:31:00	22.9331	26726.7	4.9	158.2	0.0	3332:
	19:39:30	23.0747	26732.3	5.7	158.2	0.0	3349:
	19:48:00	23.2164	26738.9	6.6	158.2	0.0	3366:
	19:56:30	23.3581	26746.2	7.4	158.2	0.0	3383:
	20:05:00	23.4997	26753.7	7.4	158.2	0.0	3400:
	20:13:30	23.6414	26761.5	7.9	158.2	0.0	3417:
	20:22:00	23.7831	26769.9	8.3	158.2	0.0	3434:
	20:30:30	23.9247	26778.0	8.1	158.2	0.0	3451:
	20:39:00	24.0664	26786.1	8.1	158.2	0.0	3468:
	20:47:30	24.2081	26794.2	8.1	158.2	0.0	3485:
	20:56:00	24.3497	26802.3	8.1	158.2	0.0	3502:
	21:04:30	24.4914	26810.4	8.1	158.2	0.0	3519:
	21:13:00	24.6331	26818.3	7.9	158.2	0.0	3536:
	21:21:30	24.7747	26826.0	7.7	158.2	0.0	3553:
	21:30:00	24.9164	26833.9	7.9	158.2	0.0	3570:
	21:38:30	25.0581	26841.7	7.8	158.2	0.0	3587:
	21:47:00	25.1997	26849.2	7.5	158.2	0.0	3604:
	21:55:30	25.3414	26856.8	7.7	158.2	0.0	3621:
	22:04:00	25.4831	26864.2	7.4	158.2	0.0	3638:
	22:12:30	25.6247	26871.7	7.5	158.2	0.0	3655:
	22:21:00	25.7664	26879.0	7.2	158.2	0.0	3672:
	22:29:30	25.9081	26886.3	7.4	158.2	0.0	3689:
	22:38:00	26.0497	26893.9	7.6	158.2	0.0	3706:

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PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
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Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	22:46:30	26.1914	26901.1	7.2	158.2	0.0	3723:
	22:55:00	26.3331	26908.1	7.0	158.2	0.0	3740:
	23:03:30	26.4747	26915.2	7.1	158.2	0.0	3757:
	23:12:00	26.6164	26922.3	7.0	158.2	0.0	3774:
	23:20:30	26.7581	26928.7	6.5	158.2	0.0	3791:
	23:29:00	26.8997	26935.3	6.6	158.2	0.0	3808:
	23:37:30	27.0414	26941.8	6.6	158.2	0.0	3825:
	23:46:00	27.1831	26948.1	6.3	158.2	0.0	3842:
	23:54:30	27.3247	26954.4	6.3	158.2	0.0	3859:
1998/07/17	00:03:00	27.4664	26960.7	6.3	158.2	0.0	3876:
	00:11:30	27.6081	26966.8	6.1	158.2	0.0	3893:
	00:20:00	27.7497	26972.9	6.1	158.2	0.0	3910:
	00:28:30	27.8914	26978.7	5.8	158.2	0.0	3927:
	00:37:00	28.0331	26984.7	6.0	158.2	0.0	3944:
	00:45:30	28.1747	26990.8	6.1	158.2	0.0	3961:
	00:54:00	28.3164	26996.9	6.1	158.2	0.0	3978:
	01:02:30	28.4581	27002.9	6.0	158.2	0.0	3995:
	01:11:00	28.5997	27008.7	5.9	158.2	0.0	4012:
	01:19:30	28.7414	27014.7	5.9	158.2	0.0	4029:
	01:28:00	28.8831	27020.7	6.1	158.2	0.0	4046:
	01:36:30	29.0247	27026.7	5.9	158.2	0.0	4063:
	01:45:00	29.1664	27032.5	5.9	158.2	0.0	4080:
	01:53:30	29.3081	27038.6	6.1	158.2	0.0	4097:
	02:02:00	29.4497	27044.6	6.0	158.2	0.0	4114:
	02:10:30	29.5914	27050.5	5.9	158.2	0.0	4131:
	02:19:00	29.7331	27056.6	6.1	158.2	0.0	4148:
	02:27:30	29.8747	27062.4	5.8	158.2	0.0	4165:
	02:36:00	30.0164	27068.3	5.9	158.2	0.0	4182:
	02:44:30	30.1581	27074.4	6.1	158.2	0.0	4199:
	02:53:00	30.2997	27080.2	5.8	158.2	0.0	4216:
	03:01:30	30.4414	27085.5	5.3	158.2	0.0	4233:
	03:10:00	30.5831	27090.2	4.7	158.2	0.0	4250:
	03:18:30	30.7247	27094.4	4.3	158.2	0.0	4267:
	03:27:00	30.8664	27098.0	3.6	158.2	0.0	4284:
	03:35:30	31.0081	27101.2	3.2	158.2	0.0	4301:
	03:44:00	31.1497	27103.9	2.7	158.2	0.0	4318:
	03:52:30	31.2914	27106.3	2.4	158.2	0.0	4335:
	04:01:00	31.4331	27108.6	2.3	158.2	0.0	4352:
	04:09:30	31.5747	27110.8	2.2	158.2	0.0	4369:
	04:18:00	31.7164	27112.8	2.0	158.2	0.0	4386:
	04:26:30	31.8581	27114.8	1.9	158.2	0.0	4403:
	04:35:00	31.9997	27116.8	2.1	158.2	0.0	4420:
	04:43:30	32.1414	27118.7	1.9	158.2	0.0	4437:
	04:52:00	32.2831	27120.5	1.8	158.2	0.0	4454:

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	05:00:30	32.4247	27122.4	1.9	158.2	0.0	4471:
	05:09:00	32.5664	27124.2	1.8	158.2	0.0	4488:
	05:17:30	32.7081	27125.8	1.7	158.2	0.0	4505:
	05:26:00	32.8497	27127.5	1.7	158.2	0.0	4522:
	05:34:30	32.9914	27129.0	1.5	158.2	0.0	4539:
	05:43:00	33.1331	27130.6	1.7	158.2	0.0	4556:
	05:51:30	33.2747	27132.4	1.7	158.2	0.0	4573:
	06:00:00	33.4164	27133.9	1.5	158.2	0.0	4590:
	06:08:30	33.5581	27135.3	1.4	158.2	0.0	4607:
	06:17:00	33.6997	27136.8	1.4	158.2	0.0	4624:
	06:25:30	33.8414	27138.2	1.4	158.2	0.0	4641:
	06:34:00	33.9831	27139.7	1.4	158.2	0.0	4658:
	06:42:30	34.1247	27141.0	1.4	158.2	0.0	4675:
	06:51:00	34.2664	27142.4	1.4	158.2	0.0	4692:
	06:59:30	34.4081	27143.7	1.3	158.2	0.0	4709:
	07:08:00	34.5497	27145.1	1.4	158.2	0.0	4726:
	07:16:30	34.6914	27146.3	1.2	158.2	0.0	4743:
	07:25:00	34.8331	27147.6	1.3	158.2	0.0	4760:
	07:33:30	34.9747	27148.8	1.2	158.2	0.0	4777:
	07:42:00	35.1164	27150.1	1.2	158.2	0.0	4794:
	07:50:30	35.2581	27151.3	1.2	158.2	0.0	4811:
	07:59:00	35.3997	27152.4	1.1	158.2	0.0	4828:
	08:07:30	35.5414	27153.7	1.2	158.2	0.0	4845:
	08:16:00	35.6831	27154.8	1.2	158.2	0.0	4862:
	08:24:30	35.8247	27155.9	1.0	158.2	0.0	4879:
	08:33:00	35.9664	27157.0	1.1	158.2	0.0	4896:
	08:41:30	36.1081	27158.1	1.1	158.2	0.0	4913:
	08:50:00	36.2497	27159.2	1.1	158.2	0.0	4930:
	08:58:30	36.3914	27160.2	1.0	158.2	0.0	4947:
	09:07:00	36.5331	27161.4	1.2	158.2	0.0	4964:
	09:15:30	36.6747	27162.3	1.0	158.2	0.0	4981:
	09:24:00	36.8164	27163.3	1.0	158.2	0.0	4998:
	09:32:30	36.9581	27164.3	1.0	158.2	0.0	5015:
	09:41:00	37.0997	27165.5	1.1	158.2	0.0	5032:
	09:49:30	37.2414	27166.4	1.0	158.2	0.0	5049:
	09:58:00	37.3831	27167.2	0.8	158.2	0.0	5066:
	10:06:30	37.5247	27168.3	1.1	158.2	0.0	5083:
	10:15:00	37.6664	27169.2	0.8	158.2	0.0	5100:
	10:23:30	37.8081	27170.2	1.0	158.2	0.0	5117:
	10:32:00	37.9497	27171.2	1.0	158.2	0.0	5134:
	10:40:30	38.0914	27172.2	1.0	158.2	0.0	5151:
	10:49:00	38.2331	27173.0	0.8	158.2	0.0	5168:
	10:57:30	38.3747	27173.9	0.9	158.2	0.0	5185:
	11:06:00	38.5164	27174.9	1.0	158.2	0.0	5202:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	11:14:30	38.6581	27175.7	0.8	158.2	0.0	5219:
	11:23:00	38.7997	27176.6	0.9	158.2	0.0	5236:
	11:31:30	38.9414	27177.4	0.8	158.2	0.0	5253:
	11:40:00	39.0831	27178.2	0.8	158.2	0.0	5270:
	11:48:30	39.2247	27179.1	0.9	158.2	0.0	5287:
	11:57:00	39.3664	27179.9	0.8	158.2	0.0	5304:
	12:05:30	39.5081	27180.8	0.9	158.2	0.0	5321:
	12:14:00	39.6497	27181.4	0.7	158.2	0.0	5338:
	12:22:30	39.7914	27182.3	0.8	158.2	0.0	5355:
	12:31:00	39.9331	27183.1	0.8	158.2	0.0	5372:
	12:39:30	40.0747	27183.9	0.8	158.2	0.0	5389:
	12:48:00	40.2164	27184.6	0.7	158.2	0.0	5406:
	12:56:30	40.3581	27185.3	0.8	158.2	0.0	5423:
	13:05:00	40.4997	27186.1	0.8	158.2	0.0	5440:
	13:13:30	40.6414	27186.8	0.8	158.2	0.0	5457:
	13:22:00	40.7831	27187.5	0.7	158.2	0.0	5474:
	13:30:30	40.9247	27188.2	0.7	158.2	0.0	5491:
	13:39:00	41.0664	27189.0	0.8	158.2	0.0	5508:
	13:47:30	41.2081	27189.7	0.7	158.2	0.0	5525:
	13:56:00	41.3497	27190.5	0.8	158.2	0.0	5542:
	14:04:30	41.4914	27191.2	0.8	158.2	0.0	5559:
	14:13:00	41.6331	27191.9	0.6	158.2	0.0	5576:
	14:21:30	41.7747	27192.5	0.6	158.2	0.0	5593:
	14:30:00	41.9164	27193.2	0.7	158.2	0.0	5610:
	14:38:30	42.0581	27193.9	0.7	158.2	0.0	5627:
	14:47:00	42.1997	27194.5	0.6	158.2	0.0	5644:
	14:55:30	42.3414	27195.1	0.6	158.2	0.0	5661:
	15:04:00	42.4831	27195.8	0.7	158.2	0.0	5678:
	15:12:30	42.6247	27196.4	0.6	158.2	0.0	5695:
	15:21:00	42.7664	27197.1	0.7	158.2	0.0	5712:
	15:29:30	42.9081	27197.7	0.6	158.2	0.0	5729:
	15:38:00	43.0497	27198.3	0.6	158.2	0.0	5746:
	15:46:30	43.1914	27198.9	0.6	158.2	0.0	5763:
	15:55:00	43.3331	27199.6	0.7	158.2	0.0	5780:
	16:03:30	43.4747	27200.1	0.6	158.2	0.0	5797:
	16:12:00	43.6164	27200.7	0.6	158.2	0.0	5814:
	16:20:30	43.7581	27201.3	0.6	158.2	0.0	5831:
	16:29:00	43.8997	27202.0	0.7	158.2	0.0	5848:
	16:37:30	44.0414	27202.6	0.6	158.2	0.0	5865:
	16:46:00	44.1831	27203.1	0.5	158.2	0.0	5882:
	16:54:30	44.3247	27203.7	0.6	158.2	0.0	5899:
	17:03:00	44.4664	27204.3	0.6	158.2	0.0	5916:
	17:11:30	44.6081	27204.8	0.6	158.2	0.0	5933:
	17:20:00	44.7497	27205.3	0.5	158.2	0.0	5950:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	17:28:30	44.8914	27206.1	0.8	158.2	0.0	5967:
	17:37:00	45.0331	27206.3	0.3	158.2	0.0	5984:
	17:45:30	45.1747	27207.0	0.6	158.2	0.0	6001:
	17:54:00	45.3164	27207.6	0.6	158.2	0.0	6018:
	18:02:30	45.4581	27208.2	0.6	158.2	0.0	6035:
	18:11:00	45.5997	27208.5	0.3	158.2	0.0	6052:
	18:19:30	45.7414	27209.2	0.6	158.2	0.0	6069:
	18:28:00	45.8831	27209.6	0.4	158.2	0.0	6086:
	18:36:30	46.0247	27210.1	0.5	158.2	0.0	6103:
	18:45:00	46.1664	27210.6	0.6	158.2	0.0	6120:
	18:53:30	46.3081	27211.1	0.5	158.2	0.0	6137:
	19:02:00	46.4497	27211.6	0.5	158.2	0.0	6154:
	19:10:30	46.5914	27212.2	0.6	158.2	0.0	6171:
	19:19:00	46.7331	27212.5	0.3	158.2	0.0	6188:
	19:27:30	46.8747	27213.2	0.6	158.2	0.0	6205:
	19:36:00	47.0164	27213.6	0.4	158.2	0.0	6222:
	19:44:30	47.1581	27214.1	0.6	158.2	0.0	6239:
	19:53:00	47.2997	27214.5	0.3	158.2	0.0	6256:
	20:01:30	47.4414	27214.9	0.4	158.2	0.0	6273:
	20:10:00	47.5831	27215.4	0.5	158.2	0.0	6290:
	20:18:30	47.7247	27215.9	0.5	158.2	0.0	6307:
	20:27:00	47.8664	27216.4	0.6	158.2	0.0	6324:
	20:35:30	48.0081	27216.8	0.3	158.2	0.0	6341:
	20:44:00	48.1497	27217.4	0.6	158.2	0.0	6358:
	20:52:30	48.2914	27217.6	0.3	158.2	0.0	6375:
	21:01:00	48.4331	27218.2	0.6	158.2	0.0	6392:
	21:09:30	48.5747	27218.6	0.4	158.2	0.0	6409:
	21:18:00	48.7164	27219.0	0.3	158.2	0.0	6426:
	21:26:30	48.8581	27219.4	0.5	158.2	0.0	6443:
	21:35:00	48.9997	27219.9	0.5	158.2	0.0	6460:
	21:43:30	49.1414	27220.3	0.3	158.2	0.0	6477:
	21:52:00	49.2831	27220.9	0.6	158.2	0.0	6494:
	22:00:30	49.4247	27221.3	0.4	158.2	0.0	6511:
	22:09:00	49.5664	27221.6	0.3	158.2	0.0	6528:
	22:17:30	49.7081	27221.9	0.3	158.2	0.0	6545:
	22:26:00	49.8497	27222.5	0.6	158.2	0.0	6562:
	22:34:30	49.9914	27222.8	0.3	158.2	0.0	6579:
	22:43:00	50.1331	27223.4	0.6	158.2	0.0	6596:
	22:51:30	50.2747	27223.8	0.4	158.2	0.0	6613:
	23:00:00	50.4164	27224.1	0.3	158.2	0.0	6630:
	23:08:30	50.5581	27224.5	0.3	158.2	0.0	6647:
	23:17:00	50.6997	27224.9	0.4	158.2	0.0	6664:
	23:25:30	50.8414	27225.2	0.3	158.2	0.0	6681:
	23:34:00	50.9831	27225.6	0.3	158.2	0.0	6698:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	23:42:30	51.1247	27226.1	0.5	158.2	0.0	6715:
	23:51:00	51.2664	27226.5	0.5	158.2	0.0	6732:
	23:59:30	51.4081	27226.9	0.3	158.2	0.0	6749:
1998/07/18	00:08:00	51.5497	27227.0	0.1	158.2	0.0	6766:
	00:16:30	51.6914	27227.5	0.5	158.2	0.0	6783:
	00:25:00	51.8331	27227.9	0.4	158.2	0.0	6800:
	00:33:30	51.9747	27228.3	0.3	158.2	0.0	6817:
	00:42:00	52.1164	27228.7	0.4	158.2	0.0	6834:
	00:50:30	52.2581	27229.0	0.3	158.2	0.0	6851:
	00:59:00	52.3997	27229.4	0.4	158.2	0.0	6868:
	01:07:30	52.5414	27229.8	0.3	158.2	0.0	6885:
	01:16:00	52.6831	27230.1	0.3	158.2	0.0	6902:
	01:24:30	52.8247	27230.5	0.4	158.2	0.0	6919:
	01:33:00	52.9664	27230.7	0.2	158.2	0.0	6936:
	01:41:30	53.1081	27231.2	0.4	158.2	0.0	6953:
	01:50:00	53.2497	27231.5	0.3	158.2	0.0	6970:
	01:58:30	53.3914	27232.0	0.5	158.2	0.0	6987:
	02:07:00	53.5331	27232.2	0.2	158.2	0.0	7004:
	02:15:30	53.6747	27232.5	0.3	158.2	0.0	7021:
	02:24:00	53.8164	27232.9	0.3	158.2	0.0	7038:
	02:32:30	53.9581	27233.2	0.3	158.2	0.0	7055:
	02:41:00	54.0997	27233.6	0.3	158.2	0.0	7072:
	02:49:30	54.2414	27233.9	0.3	158.2	0.0	7089:
	02:58:00	54.3831	27234.3	0.4	158.2	0.0	7106:
	03:06:30	54.5247	27234.5	0.2	158.2	0.0	7123:
	03:15:00	54.6664	27234.7	0.2	158.2	0.0	7140:
	03:23:30	54.8081	27235.2	0.4	158.2	0.0	7157:
	03:32:00	54.9497	27235.5	0.3	158.2	0.0	7174:
	03:40:30	55.0914	27236.0	0.5	158.2	0.0	7191:
	03:49:00	55.2331	27236.2	0.2	158.2	0.0	7208:
	03:57:30	55.3747	27236.5	0.3	158.2	0.0	7225:
	04:06:00	55.5164	27236.8	0.3	158.2	0.0	7242:
	04:14:30	55.6581	27237.2	0.4	158.2	0.0	7259:
	04:23:00	55.7997	27237.5	0.3	158.2	0.0	7276:
	04:31:30	55.9414	27237.8	0.3	158.2	0.0	7293:
	04:40:00	56.0831	27238.1	0.3	158.2	0.0	7310:
	04:48:30	56.2247	27238.4	0.3	158.2	0.0	7327:
	04:57:00	56.3664	27238.7	0.3	158.2	0.0	7344:
	05:05:30	56.5081	27239.0	0.3	158.2	0.0	7361:
	05:14:00	56.6497	27239.2	0.3	158.2	0.0	7378:
	05:22:30	56.7914	27239.5	0.3	158.2	0.0	7395:
	05:31:00	56.9331	27239.9	0.4	158.2	0.0	7412:
	05:39:30	57.0747	27240.3	0.3	158.2	0.0	7429:
	05:48:00	57.2164	27240.5	0.3	158.2	0.0	7446:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	05:56:30	57.3581	27240.8	0.3	158.2	0.0	7463:
	06:05:00	57.4997	27241.0	0.2	158.2	0.0	7480:
	06:13:30	57.6414	27241.3	0.3	158.2	0.0	7497:
	06:22:00	57.7831	27241.6	0.3	158.2	0.0	7514:
	06:30:30	57.9247	27241.9	0.3	158.2	0.0	7531:
	06:39:00	58.0664	27242.2	0.3	158.2	0.0	7548:
	06:47:30	58.2081	27242.5	0.3	158.2	0.0	7565:
	06:56:00	58.3497	27242.6	0.1	158.2	0.0	7582:
	07:04:30	58.4914	27243.0	0.3	158.2	0.0	7599:
	07:13:00	58.6331	27243.3	0.3	158.2	0.0	7616:
	07:21:30	58.7747	27243.6	0.3	158.2	0.0	7633:
	07:30:00	58.9164	27243.8	0.2	158.2	0.0	7650:
	07:38:30	59.0581	27244.2	0.3	158.2	0.0	7667:
	07:47:00	59.1997	27244.3	0.1	158.2	0.0	7684:
	07:55:30	59.3414	27244.6	0.3	158.2	0.0	7701:
	08:04:00	59.4831	27244.9	0.3	158.2	0.0	7718:
	08:12:30	59.6247	27245.0	0.1	158.2	0.0	7735:
	08:21:00	59.7664	27245.3	0.3	158.2	0.0	7752:
	08:29:30	59.9081	27245.6	0.3	158.2	0.0	7769:
	08:38:00	60.0497	27245.8	0.3	158.2	0.0	7786:
	08:46:30	60.1914	27246.1	0.3	158.2	0.0	7803:
	08:55:00	60.3331	27246.2	0.1	158.2	0.0	7820:
	09:03:30	60.4747	27246.6	0.4	158.2	0.0	7837:
	09:12:00	60.6164	27247.1	0.5	158.2	0.0	7854:
	09:20:30	60.7581	27247.4	0.3	158.2	0.0	7871:
	09:29:00	60.8997	27247.6	0.2	158.2	0.0	7888:
	09:37:30	61.0414	27247.8	0.2	158.2	0.0	7905:
	09:46:00	61.1831	27248.1	0.3	158.2	0.0	7922:
	09:54:30	61.3247	27248.5	0.4	158.2	0.0	7939:
	10:03:00	61.4664	27250.7	2.3	158.2	0.0	7956:
	10:11:30	61.6081	27249.8	-1.0	158.2	0.0	7973:
	10:20:00	61.7497	27249.5	-0.3	158.2	0.0	7990:
	10:28:30	61.8914	27249.5	0.0	158.2	0.0	8007:
	10:37:00	62.0331	27249.6	0.1	158.2	0.0	8024:
	10:45:30	62.1747	27249.8	0.1	158.2	0.0	8041:
	10:54:00	62.3164	27250.0	0.2	158.2	0.0	8058:
	11:02:30	62.4581	27251.7	1.7	158.2	0.0	8075:
	11:11:00	62.5997	27251.8	0.1	158.2	0.0	8092:
	11:19:30	62.7414	27251.2	-0.6	158.2	0.0	8109:
	11:28:00	62.8831	27251.2	-0.1	158.2	0.0	8126:
	11:36:30	63.0247	27251.2	0.0	158.2	0.0	8143:
	11:45:00	63.1664	27251.3	0.1	158.2	0.0	8160:
	11:53:30	63.3081	27251.5	0.2	158.2	0.0	8177:
	12:02:00	63.4497	27251.6	0.1	158.2	0.0	8194:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	12:10:30	63.5914	27255.4	3.9	158.2	0.0	8211:
	12:19:00	63.7331	27253.5	-1.9	158.2	0.0	8228:
	12:27:30	63.8747	27253.0	-0.5	158.2	0.0	8245:
	12:36:00	64.0164	27252.9	-0.1	158.2	0.0	8262:
	12:44:30	64.1581	27252.9	0.0	158.2	0.0	8279:
	12:53:00	64.2997	27253.2	0.2	158.2	0.0	8296:
	13:01:30	64.4414	27253.2	0.1	158.2	0.0	8313:
	13:10:00	64.5831	27253.4	0.2	158.2	0.0	8330:
	13:18:30	64.7247	27253.6	0.1	158.2	0.0	8347:
	13:27:00	64.8664	27254.1	0.5	158.2	0.0	8364:
	13:35:30	65.0081	27254.3	0.3	158.2	0.0	8381:
	13:44:00	65.1497	27254.5	0.1	158.2	0.0	8398:
	13:52:30	65.2914	27254.5	0.1	158.2	0.0	8415:
	14:01:00	65.4331	27254.7	0.1	158.2	0.0	8432:
	14:09:30	65.5747	27254.9	0.3	158.2	0.0	8449:
	14:18:00	65.7164	27255.0	0.1	158.2	0.0	8466:
	14:26:30	65.8581	27255.3	0.3	158.2	0.0	8483:
	14:35:00	65.9997	27255.6	0.3	158.2	0.0	8500:
	14:43:30	66.1414	27255.7	0.1	158.2	0.0	8517:
	14:52:00	66.2831	27255.9	0.2	158.2	0.0	8534:
	15:00:30	66.4247	27256.1	0.2	158.2	0.0	8551:
	15:09:00	66.5664	27256.4	0.3	158.2	0.0	8568:
	15:17:30	66.7081	27256.6	0.2	158.2	0.0	8585:
	15:26:00	66.8497	27256.8	0.2	158.2	0.0	8602:
	15:34:30	66.9914	27256.9	0.1	158.2	0.0	8619:
	15:43:00	67.1331	27257.4	0.4	158.2	0.0	8636:
	15:51:30	67.2747	27257.4	0.0	158.2	0.0	8653:
	16:00:00	67.4164	27257.6	0.3	158.2	0.0	8670:
	16:08:30	67.5581	27257.8	0.2	158.2	0.0	8687:
	16:17:00	67.6997	27257.9	0.1	158.2	0.0	8704:
	16:25:30	67.8414	27258.2	0.3	158.2	0.0	8721:
	16:34:00	67.9831	27262.7	4.5	158.2	0.0	8738:
	16:42:30	68.1247	27262.1	-0.6	158.2	0.0	8755:
	16:51:00	68.2664	27260.5	-1.6	158.2	0.0	8772:
	16:59:30	68.4081	27260.1	-0.3	158.2	0.0	8789:
	17:08:00	68.5497	27260.1	-0.1	158.2	0.0	8806:
	17:16:30	68.6914	27259.9	-0.1	158.2	0.0	8823:
	17:25:00	68.8331	27260.1	0.2	158.2	0.0	8840:
	17:33:30	68.9747	27260.2	0.1	158.2	0.0	8857:
	17:42:00	69.1164	27262.3	2.1	158.2	0.0	8874:
	17:50:30	69.2581	27262.3	-0.1	158.2	0.0	8891:
	17:59:00	69.3997	27262.1	-0.2	158.2	0.0	8908:
	18:07:30	69.5414	27261.6	-0.4	158.2	0.0	8925:
	18:16:00	69.6831	27261.5	-0.1	158.2	0.0	8942:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	18:24:30	69.8247	27261.4	-0.1	158.2	0.0	8959:
	18:33:00	69.9664	27261.5	0.1	158.2	0.0	8976:
	18:41:30	70.1081	27264.3	2.8	158.2	0.0	8993:
	18:50:00	70.2497	27261.1	-3.2	158.2	0.0	9010:
	18:58:30	70.3914	27263.4	2.3	158.2	0.0	9027:
	19:07:00	70.5331	27260.7	-2.7	158.2	0.0	9044:
	19:15:30	70.6747	27260.9	0.3	158.2	0.0	9061:
	19:24:00	70.8164	27264.6	3.7	158.2	0.0	9078:
	19:32:30	70.9581	27263.4	-1.2	158.2	0.0	9095:
	19:41:00	71.0997	27262.7	-0.6	158.2	0.0	9112:
	19:49:30	71.2414	27262.6	-0.1	158.2	0.0	9129:
	19:58:00	71.3831	27262.9	0.3	158.2	0.0	9146:
	20:06:30	71.5247	27262.9	0.0	158.2	0.0	9163:
	20:15:00	71.6664	27263.0	0.1	158.2	0.0	9180:
	20:23:30	71.8081	27263.3	0.3	158.2	0.0	9197:
	20:32:00	71.9497	27263.4	0.1	158.2	0.0	9214:
	20:40:30	72.0914	27263.6	0.1	158.2	0.0	9231:
	20:49:00	72.2331	27263.8	0.3	158.2	0.0	9248:
	20:57:30	72.3747	27263.8	-0.1	158.2	0.0	9265:
	21:06:00	72.5164	27266.8	3.0	158.2	0.0	9282:
	21:14:30	72.6581	27265.9	-0.9	158.2	0.0	9299:
	21:23:00	72.7997	27265.4	-0.6	158.2	0.0	9316:
	21:31:30	72.9414	27265.3	-0.1	158.2	0.0	9333:
	21:40:00	73.0831	27265.2	-0.1	158.2	0.0	9350:
	21:48:30	73.2247	27265.5	0.3	158.2	0.0	9367:
	21:57:00	73.3664	27265.6	0.1	158.2	0.0	9384:
	22:05:30	73.5081	27268.1	2.5	158.2	0.0	9401:
	22:14:00	73.6497	27266.9	-1.2	158.2	0.0	9418:
	22:22:30	73.7914	27266.7	-0.2	158.2	0.0	9435:
	22:31:00	73.9331	27266.7	0.0	158.2	0.0	9452:
	22:39:30	74.0747	27266.8	0.1	158.2	0.0	9469:
	22:48:00	74.2164	27266.9	0.1	158.2	0.0	9486:
	22:56:30	74.3581	27271.4	4.4	158.2	0.0	9503:
	23:05:00	74.4997	27269.0	-2.3	158.2	0.0	9520:
	23:13:30	74.6414	27268.2	-0.8	158.2	0.0	9537:
	23:22:00	74.7831	27268.0	-0.2	158.2	0.0	9554:
	23:30:30	74.9247	27268.0	0.0	158.2	0.0	9571:
	23:39:00	75.0664	27268.1	0.1	158.2	0.0	9588:
	23:47:30	75.2081	27267.8	-0.3	158.2	0.0	9605:
	23:56:00	75.3497	27268.0	0.1	158.2	0.0	9622:
1998/07/19	00:04:30	75.4914	27268.3	0.3	158.2	0.0	9639:
	00:13:00	75.6331	27268.4	0.1	158.2	0.0	9656:
	00:21:30	75.7747	27268.5	0.1	158.2	0.0	9673:
	00:30:00	75.9164	27268.6	0.1	158.2	0.0	9690:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	00:38:30	76.0581	27268.7	0.1	158.2	0.0	9707:
	00:47:00	76.1997	27268.9	0.2	158.2	0.0	9724:
	00:55:30	76.3414	27269.0	0.1	158.2	0.0	9741:
	01:04:00	76.4831	27269.3	0.3	158.2	0.0	9758:
	01:12:30	76.6247	27269.3	0.0	158.2	0.0	9775:
	01:21:00	76.7664	27269.5	0.2	158.2	0.0	9792:
	01:29:30	76.9081	27269.6	0.1	158.2	0.0	9809:
	01:38:00	77.0497	27269.8	0.3	158.2	0.0	9826:
	01:46:30	77.1914	27269.8	-0.1	158.2	0.0	9843:
	01:55:00	77.3331	27270.0	0.3	158.2	0.0	9860:
	02:03:30	77.4747	27270.3	0.2	158.2	0.0	9877:
	02:12:00	77.6164	27270.9	0.7	158.2	0.0	9894:
	02:20:30	77.7581	27270.3	-0.7	158.2	0.0	9911:
	02:29:00	77.8997	27270.5	0.2	158.2	0.0	9928:
	02:37:30	78.0414	27270.5	0.1	158.2	0.0	9945:
	02:46:00	78.1831	27270.7	0.1	158.2	0.0	9962:
	02:54:30	78.3247	27270.8	0.1	158.2	0.0	9979:
	03:03:00	78.4664	27271.0	0.2	158.2	0.0	9996:
	03:11:30	78.6081	27271.1	0.1	158.2	0.0	10013:
	03:20:00	78.7497	27271.3	0.2	158.2	0.0	10030:
	03:28:30	78.8914	27271.4	0.1	158.2	0.0	10047:
	03:37:00	79.0331	27271.5	0.1	158.2	0.0	10064:
	03:45:30	79.1747	27271.6	0.1	158.2	0.0	10081:
	03:54:00	79.3164	27271.8	0.2	158.2	0.0	10098:
	04:02:30	79.4581	27272.0	0.2	158.2	0.0	10115:
	04:11:00	79.5997	27272.1	0.1	158.2	0.0	10132:
	04:19:30	79.7414	27272.3	0.1	158.2	0.0	10149:
	04:28:00	79.8831	27272.3	0.0	158.2	0.0	10166:
	04:36:30	80.0247	27272.5	0.3	158.2	0.0	10183:
	04:45:00	80.1664	27272.6	0.1	158.2	0.0	10200:
	04:53:30	80.3081	27272.7	0.1	158.2	0.0	10217:
	05:02:00	80.4497	27272.9	0.3	158.2	0.0	10234:
	05:10:30	80.5914	27273.0	0.1	158.2	0.0	10251:
	05:19:00	80.7331	27273.2	0.2	158.2	0.0	10268:
	05:27:30	80.8747	27273.4	0.2	158.2	0.0	10285:
	05:36:00	81.0164	27273.6	0.1	158.2	0.0	10302:
	05:44:30	81.1581	27273.7	0.1	158.2	0.0	10319:
	05:53:00	81.2997	27273.8	0.1	158.2	0.0	10336:
	06:01:30	81.4414	27274.0	0.1	158.2	0.0	10353:
	06:10:00	81.5831	27274.1	0.1	158.2	0.0	10370:
	06:18:30	81.7247	27274.3	0.1	158.2	0.0	10387:
	06:27:00	81.8664	27274.5	0.2	158.2	0.0	10404:
	06:35:30	82.0081	27274.5	0.0	158.2	0.0	10421:
	06:44:00	82.1497	27274.6	0.1	158.2	0.0	10438:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	06:52:30	82.2914	27274.7	0.1	158.2	0.0	10455:
	07:01:00	82.4331	27274.8	0.1	158.2	0.0	10472:
	07:09:30	82.5747	27275.0	0.2	158.2	0.0	10489:
	07:18:00	82.7164	27275.1	0.1	158.2	0.0	10506:
	07:26:30	82.8581	27275.1	0.0	158.2	0.0	10523:
	07:35:00	82.9997	27275.2	0.1	158.2	0.0	10540:
	07:43:30	83.1414	27275.4	0.2	158.2	0.0	10557:
	07:52:00	83.2831	27275.6	0.1	158.2	0.0	10574:
	08:00:30	83.4247	27275.8	0.2	158.2	0.0	10591:
	08:09:00	83.5664	27276.0	0.3	158.2	0.0	10608:
	08:17:30	83.7081	27276.1	0.1	158.2	0.0	10625:
	08:26:00	83.8497	27276.1	0.0	158.2	0.0	10642:
	08:34:30	83.9914	27276.2	0.1	158.2	0.0	10659:
	08:43:00	84.1331	27276.3	0.1	158.2	0.0	10676:
	08:51:30	84.2747	27276.5	0.1	158.2	0.0	10693:
	09:00:00	84.4164	27276.6	0.1	158.2	0.0	10710:
	09:08:30	84.5581	27276.7	0.1	158.2	0.0	10727:
	09:17:00	84.6997	27276.9	0.3	158.2	0.0	10744:
	09:25:30	84.8414	27276.9	-0.1	158.2	0.0	10761:
	09:34:00	84.9831	27276.9	0.1	158.2	0.0	10778:
	09:42:30	85.1247	27277.1	0.1	158.2	0.0	10795:
	09:51:00	85.2664	27277.3	0.2	158.2	0.0	10812:
	09:59:30	85.4081	27277.2	-0.1	158.2	0.0	10829:
	10:08:00	85.5497	27277.3	0.1	158.2	0.0	10846:
	10:16:30	85.6914	27277.7	0.4	158.2	0.0	10863:
	10:25:00	85.8331	27277.6	-0.1	158.2	0.0	10880:
	10:33:30	85.9747	27277.7	0.1	158.2	0.0	10897:
	10:42:00	86.1164	27277.8	0.1	158.2	0.0	10914:
	10:50:30	86.2581	27278.0	0.1	158.2	0.0	10931:
	10:59:00	86.3997	27278.2	0.2	158.2	0.0	10948:
	11:07:30	86.5414	27278.3	0.1	158.2	0.0	10965:
	11:16:00	86.6831	27278.5	0.1	158.2	0.0	10982:
	11:24:30	86.8247	27278.5	0.0	158.2	0.0	10999:
	11:33:00	86.9664	27278.7	0.2	158.2	0.0	11016:
	11:41:30	87.1081	27278.7	0.1	158.2	0.0	11033:
	11:50:00	87.2497	27278.9	0.2	158.2	0.0	11050:
	11:58:30	87.3914	27278.9	0.0	158.2	0.0	11067:
	12:07:00	87.5331	27279.2	0.2	158.2	0.0	11084:
	12:15:30	87.6747	27279.2	0.0	158.2	0.0	11101:
	12:24:00	87.8164	27279.4	0.2	158.2	0.0	11118:
	12:32:30	87.9581	27279.4	0.1	158.2	0.0	11135:
	12:41:00	88.0997	27279.6	0.1	158.2	0.0	11152:
	12:49:30	88.2414	27279.7	0.1	158.2	0.0	11169:
	12:58:00	88.3831	27279.7	0.0	158.2	0.0	11186:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	13:06:30	88.5247	27279.9	0.2	158.2	0.0	11203:
	13:15:00	88.6664	27280.0	0.1	158.2	0.0	11220:
	13:23:30	88.8081	27280.0	0.1	158.2	0.0	11237:
	13:32:00	88.9497	27280.3	0.3	158.2	0.0	11254:
	13:40:30	89.0914	27280.3	0.0	158.2	0.0	11271:
	13:49:00	89.2331	27280.4	0.1	158.2	0.0	11288:
	13:57:30	89.3747	27280.6	0.2	158.2	0.0	11305:
	14:06:00	89.5164	27280.6	0.0	158.2	0.0	11322:
	14:14:30	89.6581	27280.8	0.2	158.2	0.0	11339:
	14:23:00	89.7997	27280.9	0.1	158.2	0.0	11356:
	14:31:30	89.9414	27280.9	0.1	158.2	0.0	11373:
	14:40:00	90.0831	27281.2	0.2	158.2	0.0	11390:
	14:48:30	90.2247	27281.3	0.1	158.2	0.0	11407:
	14:57:00	90.3664	27281.4	0.1	158.2	0.0	11424:
	15:05:30	90.5081	27281.6	0.2	158.2	0.0	11441:
	15:14:00	90.6497	27281.6	0.1	158.2	0.0	11458:
	15:22:30	90.7914	27281.6	0.0	158.2	0.0	11475:
	15:31:00	90.9331	27281.6	0.0	158.2	0.0	11492:
	15:39:30	91.0747	27281.8	0.2	158.2	0.0	11509:
	15:48:00	91.2164	27281.9	0.1	158.2	0.0	11526:
	15:56:30	91.3581	27282.0	0.1	158.2	0.0	11543:
	16:05:00	91.4997	27282.1	0.1	158.2	0.0	11560:
	16:13:30	91.6414	27282.3	0.2	158.2	0.0	11577:
	16:22:00	91.7831	27282.5	0.1	158.2	0.0	11594:
	16:30:30	91.9247	27282.4	-0.1	158.2	0.0	11611:
	16:39:00	92.0664	27282.6	0.2	158.2	0.0	11628:
	16:47:30	92.2081	27282.7	0.1	158.2	0.0	11645:
	16:56:00	92.3497	27282.6	-0.1	158.2	0.0	11662:
	17:04:30	92.4914	27282.8	0.2	158.2	0.0	11679:
	17:13:00	92.6331	27282.8	0.0	158.2	0.0	11696:
	17:21:30	92.7747	27282.9	0.1	158.2	0.0	11713:
	17:30:00	92.9164	27283.1	0.1	158.2	0.0	11730:
	17:38:30	93.0581	27283.2	0.1	158.2	0.0	11747:
	17:47:00	93.1997	27283.4	0.2	158.2	0.0	11764:
	17:55:30	93.3414	27283.3	-0.1	158.2	0.0	11781:
	18:04:00	93.4831	27283.4	0.1	158.2	0.0	11798:
	18:12:30	93.6247	27283.6	0.2	158.2	0.0	11815:
	18:21:00	93.7664	27283.6	0.1	158.2	0.0	11832:
	18:29:30	93.9081	27283.6	0.0	158.2	0.0	11849:
	18:38:00	94.0497	27283.8	0.2	158.2	0.0	11866:
	18:46:30	94.1914	27284.0	0.1	158.2	0.0	11883:
	18:55:00	94.3331	27284.0	0.1	158.2	0.0	11900:
	19:03:30	94.4747	27284.1	0.1	158.2	0.0	11917:
	19:12:00	94.6164	27284.1	0.0	158.2	0.0	11934:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3600 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	19:20:30	94.7581	27284.3	0.1	158.2	0.0	11951:
	19:29:00	94.8997	27284.3	0.1	158.2	0.0	11968:
	19:37:30	95.0414	27284.5	0.1	158.2	0.0	11985:
	19:46:00	95.1831	27284.7	0.2	158.2	0.0	12002:
	19:54:30	95.3247	27284.8	0.1	158.2	0.0	12019:
	20:03:00	95.4664	27284.9	0.1	158.2	0.0	12036:
	20:11:30	95.6081	27285.0	0.1	158.2	0.0	12053:
	20:20:00	95.7497	27285.1	0.1	158.2	0.0	12070:
	20:28:30	95.8914	27285.1	0.1	158.2	0.0	12087:
	20:37:00	96.0331	27285.2	0.1	158.2	0.0	12104:
	20:45:30	96.1747	27285.3	0.1	158.2	0.0	12121:
	20:54:00	96.3164	27285.5	0.2	158.2	0.0	12138:
	21:02:30	96.4581	27285.5	0.0	158.2	0.0	12155:
	21:11:00	96.5997	27285.5	0.0	158.2	0.0	12172:
	21:19:30	96.7414	27285.7	0.2	158.2	0.0	12189:
	21:28:00	96.8831	27285.8	0.1	158.2	0.0	12206:
	21:36:30	97.0247	27285.8	0.0	158.2	0.0	12223:
	21:45:00	97.1664	27285.9	0.1	158.2	0.0	12240:
	21:53:30	97.3081	27286.0	0.1	158.2	0.0	12257:
	22:02:00	97.4497	27286.0	0.0	158.2	0.0	12274:
	22:10:30	97.5914	27286.3	0.3	158.2	0.0	12291:
	22:19:00	97.7331	27286.4	0.1	158.2	0.0	12308:
	22:27:30	97.8747	27286.5	0.1	158.2	0.0	12325:
	22:36:00	98.0164	27286.5	0.1	158.2	0.0	12342:
	22:44:30	98.1581	27286.6	0.1	158.2	0.0	12359:
	22:53:00	98.2997	27286.7	0.1	158.2	0.0	12376:
	23:01:30	98.4414	27286.7	0.1	158.2	0.0	12393:
	23:10:00	98.5831	27286.8	0.1	158.2	0.0	12410:
	23:18:30	98.7247	27286.8	0.0	158.2	0.0	12427:
	23:27:00	98.8664	27286.9	0.1	158.2	0.0	12444:
	23:35:30	99.0081	27287.0	0.1	158.2	0.0	12461:
	23:44:00	99.1497	27287.1	0.1	158.2	0.0	12478:
	23:52:30	99.2914	27287.4	0.2	158.2	0.0	12495:
1998/07/20	00:01:00	99.4331	27287.4	0.0	158.2	0.0	12512:
	00:09:30	99.5747	27287.4	0.0	158.2	0.0	12529:
	00:18:00	99.7164	27287.5	0.1	158.2	0.0	12546:
	00:26:30	99.8581	27287.8	0.3	158.2	0.0	12563:
	00:35:00	99.9997	27287.8	0.0	158.2	0.0	12580:
	00:43:30	100.1414	27287.8	0.0	158.2	0.0	12597:
	00:52:00	100.2831	27287.8	0.0	158.2	0.0	12614:
	01:00:30	100.4247	27288.0	0.2	158.2	0.0	12631:
	01:09:00	100.5664	27288.1	0.1	158.2	0.0	12648:
	01:17:30	100.7081	27288.2	0.1	158.2	0.0	12665:
	01:26:00	100.8497	27288.3	0.1	158.2	0.0	12682:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	01:34:30	100.9914	27288.3	0.1	158.2	0.0	12699:
	01:43:00	101.1331	27288.4	0.1	158.2	0.0	12716:
	01:51:30	101.2747	27288.5	0.1	158.2	0.0	12733:
	02:00:00	101.4164	27288.6	0.1	158.2	0.0	12750:
	02:08:30	101.5581	27288.7	0.1	158.2	0.0	12767:
	02:17:00	101.6997	27288.9	0.2	158.2	0.0	12784:
	02:25:30	101.8414	27288.9	0.0	158.2	0.0	12801:
	02:34:00	101.9831	27288.9	0.0	158.2	0.0	12818:
	02:42:30	102.1247	27289.0	0.1	158.2	0.0	12835:
	02:51:00	102.2664	27289.1	0.1	158.2	0.0	12852:
	02:59:30	102.4081	27289.2	0.1	158.2	0.0	12869:
	03:08:00	102.5497	27289.2	0.0	158.2	0.0	12886:
	03:16:30	102.6914	27289.4	0.2	158.2	0.0	12903:
	03:25:00	102.8331	27289.5	0.1	158.2	0.0	12920:
	03:33:30	102.9747	27289.6	0.1	158.2	0.0	12937:
	03:42:00	103.1164	27289.7	0.1	158.2	0.0	12954:
	03:50:30	103.2581	27289.8	0.1	158.2	0.0	12971:
	03:59:00	103.3997	27289.8	0.0	158.2	0.0	12988:
	04:07:30	103.5414	27289.8	0.1	158.2	0.0	13005:
	04:16:00	103.6831	27290.0	0.1	158.2	0.0	13022:
	04:24:30	103.8247	27290.0	0.1	158.2	0.0	13039:
	04:33:00	103.9664	27290.1	0.1	158.2	0.0	13056:
	04:41:30	104.1081	27290.2	0.1	158.2	0.0	13073:
	04:50:00	104.2497	27290.2	0.0	158.2	0.0	13090:
	04:58:30	104.3914	27290.4	0.2	158.2	0.0	13107:
	05:07:00	104.5331	27290.5	0.1	158.2	0.0	13124:
	05:15:30	104.6747	27290.6	0.1	158.2	0.0	13141:
	05:24:00	104.8164	27290.5	-0.1	158.2	0.0	13158:
	05:32:30	104.9581	27290.5	0.0	158.2	0.0	13175:
	05:41:00	105.0997	27290.8	0.3	158.2	0.0	13192:
	05:49:30	105.2414	27290.9	0.1	158.2	0.0	13209:
	05:58:00	105.3831	27291.1	0.2	158.2	0.0	13226:
	06:06:30	105.5247	27291.0	-0.1	158.2	0.0	13243:
	06:15:00	105.6664	27291.1	0.1	158.2	0.0	13260:
	06:23:30	105.8081	27291.1	0.1	158.2	0.0	13277:
	06:32:00	105.9497	27291.5	0.3	158.2	0.0	13294:
	06:40:30	106.0914	27291.5	0.0	158.2	0.0	13311:
	06:49:00	106.2331	27291.5	0.0	158.2	0.0	13328:
	06:57:30	106.3747	27291.6	0.1	158.2	0.0	13345:
	07:06:00	106.5164	27291.7	0.1	158.2	0.0	13362:
	07:14:30	106.6581	27291.8	0.1	158.2	0.0	13379:
	07:23:00	106.7997	27291.8	0.1	158.2	0.0	13396:
	07:31:30	106.9414	27291.8	0.0	158.2	0.0	13413:
	07:40:00	107.0831	27292.0	0.1	158.2	0.0	13430:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	07:48:30	107.2247	27292.0	0.0	158.2	0.0	13447:
	07:57:00	107.3664	27292.1	0.1	158.2	0.0	13464:
	08:05:30	107.5081	27292.1	0.0	158.2	0.0	13481:
	08:14:00	107.6497	27292.3	0.1	158.2	0.0	13498:
	08:22:30	107.7914	27292.3	0.0	158.2	0.0	13515:
	08:31:00	107.9331	27292.4	0.1	158.2	0.0	13532:
	08:39:30	108.0747	27292.5	0.1	158.2	0.0	13549:
	08:48:00	108.2164	27292.5	0.0	158.2	0.0	13566:
	08:56:30	108.3581	27292.6	0.1	158.2	0.0	13583:
	09:05:00	108.4997	27292.7	0.1	158.2	0.0	13600:
	09:13:30	108.6414	27292.8	0.1	158.2	0.0	13617:
	09:22:00	108.7831	27292.9	0.1	158.2	0.0	13634:
	09:30:30	108.9247	27293.0	0.1	158.2	0.0	13651:
	09:39:00	109.0664	27293.0	0.0	158.2	0.0	13668:
	09:47:30	109.2081	27293.0	0.0	158.2	0.0	13685:
	09:56:00	109.3497	27293.4	0.3	158.2	0.0	13702:
	10:04:30	109.4914	27293.4	0.0	158.2	0.0	13719:
	10:13:00	109.6331	27293.4	0.1	158.2	0.0	13736:
	10:21:30	109.7747	27293.5	0.1	158.2	0.0	13753:
	10:30:00	109.9164	27293.5	0.0	158.2	0.0	13770:
	10:38:30	110.0581	27293.7	0.2	158.2	0.0	13787:
	10:47:00	110.1997	27293.7	0.0	158.2	0.0	13804:
	10:55:30	110.3414	27293.8	0.1	158.2	0.0	13821:
	11:04:00	110.4831	27293.8	0.0	158.2	0.0	13838:
	11:12:30	110.6247	27294.0	0.1	158.2	0.0	13855:
	11:21:00	110.7664	27294.0	0.0	158.2	0.0	13872:
	11:29:30	110.9081	27294.2	0.2	158.2	0.0	13889:
	11:38:00	111.0497	27294.3	0.1	158.2	0.0	13906:
	11:46:30	111.1914	27294.3	0.0	158.2	0.0	13923:
	11:55:00	111.3331	27294.3	0.0	158.2	0.0	13940:
	12:03:30	111.4747	27294.5	0.2	158.2	0.0	13957:
	12:12:00	111.6164	27294.5	0.0	158.2	0.0	13974:
	12:20:30	111.7581	27294.5	0.1	158.2	0.0	13991:
	12:29:00	111.8997	27294.7	0.1	158.2	0.0	14008:
	12:37:30	112.0414	27294.7	0.0	158.2	0.0	14025:
	12:46:00	112.1831	27294.7	0.0	158.2	0.0	14042:
	12:54:30	112.3247	27294.9	0.2	158.2	0.0	14059:
	13:03:00	112.4664	27294.9	0.1	158.2	0.0	14076:
	13:11:30	112.6081	27294.9	0.0	158.2	0.0	14093:
	13:20:00	112.7497	27295.1	0.2	158.2	0.0	14110:
	13:28:30	112.8914	27295.1	-0.1	158.2	0.0	14127:
	13:37:00	113.0331	27295.2	0.1	158.2	0.0	14144:
	13:45:30	113.1747	27295.2	0.0	158.2	0.0	14161:
	13:54:00	113.3164	27295.4	0.2	158.2	0.0	14178:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	14:02:30	113.4581	27295.5	0.1	158.2	0.0	14195:
	14:11:00	113.5597	27295.6	0.1	158.2	0.0	14212:
	14:19:30	113.7414	27295.6	0.0	158.2	0.0	14229:
	14:28:00	113.8831	27295.7	0.1	158.2	0.0	14246:
	14:36:30	114.0247	27295.8	0.1	158.2	0.0	14263:
	14:45:00	114.1664	27295.8	0.1	158.2	0.0	14280:
	14:53:30	114.3081	27295.9	0.1	158.2	0.0	14297:
	15:02:00	114.4497	27295.9	0.0	158.2	0.0	14314:
	15:10:30	114.5914	27296.0	0.1	158.2	0.0	14331:
	15:19:00	114.7331	27296.1	0.1	158.2	0.0	14348:
	15:27:30	114.8747	27296.0	-0.1	158.2	0.0	14365:
	15:36:00	115.0164	27296.2	0.1	158.2	0.0	14382:
	15:44:30	115.1581	27296.3	0.1	158.2	0.0	14399:
	15:53:00	115.2997	27296.3	0.0	158.2	0.0	14416:
	16:01:30	115.4414	27296.5	0.1	158.2	0.0	14433:
	16:10:00	115.5831	27296.5	0.0	158.2	0.0	14450:
	16:18:30	115.7247	27296.6	0.1	158.2	0.0	14467:
	16:27:00	115.8664	27296.7	0.1	158.2	0.0	14484:
	16:35:30	116.0081	27296.7	0.0	158.2	0.0	14501:
	16:44:00	116.1497	27296.8	0.1	158.2	0.0	14518:
	16:52:30	116.2914	27296.9	0.1	158.2	0.0	14535:
	17:01:00	116.4331	27296.9	0.1	158.2	0.0	14552:
	17:09:30	116.5747	27296.9	0.0	158.2	0.0	14569:
	17:18:00	116.7164	27296.9	0.0	158.2	0.0	14586:
	17:26:30	116.8581	27296.9	0.0	158.2	0.0	14603:
	17:35:00	116.9997	27297.2	0.3	158.2	0.0	14620:
	17:43:30	117.1414	27297.4	0.1	158.2	0.0	14637:
	17:52:00	117.2831	27297.4	0.1	158.2	0.0	14654:
	18:00:30	117.4247	27297.4	0.0	158.2	0.0	14671:
	18:09:00	117.5664	27297.5	0.1	158.2	0.0	14688:
	18:17:30	117.7081	27297.6	0.1	158.2	0.0	14705:
	18:26:00	117.8497	27297.6	-0.1	158.2	0.0	14722:
	18:34:30	117.9914	27297.8	0.3	158.2	0.0	14739:
	18:43:00	118.1331	27297.9	0.1	158.2	0.0	14756:
	18:51:30	118.2747	27298.0	0.1	158.2	0.0	14773:
	19:00:00	118.4164	27298.0	0.0	158.2	0.0	14790:
	19:08:30	118.5581	27298.2	0.1	158.2	0.0	14807:
	19:17:00	118.6997	27298.2	0.0	158.2	0.0	14824:
	19:25:30	118.8414	27298.3	0.1	158.2	0.0	14841:
	19:34:00	118.9831	27298.3	0.0	158.2	0.0	14858:
	19:42:30	119.1247	27298.3	-0.1	158.2	0.0	14875:
	19:51:00	119.2664	27297.6	-0.6	158.2	0.0	14892:
	19:59:30	119.4081	27297.9	0.3	158.2	0.0	14909:
	20:08:00	119.5497	27298.0	0.1	158.2	0.0	14926:

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	20:16:30	119.6914	27298.1	0.1	158.2	0.0	14943:
	20:25:00	119.8331	27298.2	0.1	158.2	0.0	14960:
	20:33:30	119.9747	27298.3	0.1	158.2	0.0	14977:
	20:42:00	120.1164	27298.4	0.1	158.2	0.0	14994:
	20:50:30	120.2581	27298.4	0.0	158.2	0.0	15011:
	20:59:00	120.3997	27298.5	0.1	158.2	0.0	15028:
	21:07:30	120.5414	27298.9	0.3	158.2	0.0	15045:
	21:16:00	120.6831	27298.9	0.1	158.2	0.0	15062:
	21:24:30	120.8247	27298.9	0.0	158.2	0.0	15079:
	21:33:00	120.9664	27298.9	0.0	158.2	0.0	15096:
	21:41:30	121.1081	27295.6	-3.3	158.2	0.0	15113:
	21:50:00	121.2497	27290.7	-5.0	158.2	0.0	15130:
	21:58:30	121.3914	27290.4	-0.3	158.1	-0.1	15147:
	22:07:00	121.5331	27290.1	-0.3	158.1	0.0	15164:
	22:15:30	121.6747	27290.3	0.2	158.1	0.0	15181:
	22:24:00	121.8164	27290.3	-0.1	158.1	0.0	15198:
	22:32:30	121.9581	27288.8	-1.4	158.1	0.0	15215:
	22:41:00	122.0997	27288.7	-0.1	158.1	0.0	15232:
	22:49:30	122.2414	27288.9	0.2	158.1	0.0	15249:
	22:58:00	122.3831	27289.1	0.1	158.1	0.0	15266:
	23:06:30	122.5247	27116.7	-172.4	157.8	-0.3	15283:
	23:15:00	122.6664	26993.6	-123.1	157.7	-0.1	15300:
	23:23:30	122.8081	26960.9	-32.7	157.3	-0.3	15317:
	23:32:00	122.9497	26958.6	-2.3	157.3	-0.1	15334:
	23:40:30	123.0914	26750.7	-207.9	156.8	-0.4	15351:
	23:49:00	123.2331	26676.7	-74.1	156.1	-0.8	15368:
	23:57:30	123.3747	26610.9	-65.8	155.1	-1.0	15385:
1998/07/21	00:06:00	123.5164	26561.5	-49.4	153.0	-2.1	15402:
	00:14:30	123.6581	26442.5	-118.9	150.8	-2.2	15419:
	00:23:00	123.7997	26348.9	-93.6	149.2	-1.6	15436:
	00:31:30	123.9414	26256.0	-92.9	147.3	-1.9	15453:
	00:40:00	124.0831	26155.9	-100.1	145.3	-2.0	15470:
	00:48:30	124.2247	26059.0	-96.9	142.9	-2.4	15487:
	00:57:00	124.3664	25958.3	-100.7	139.7	-3.2	15504:
	01:05:30	124.5081	25843.5	-114.7	136.1	-3.6	15521:
	01:14:00	124.6497	25722.7	-120.8	132.8	-3.3	15538:
	01:22:30	124.7914	25600.5	-122.2	129.6	-3.3	15555:
	01:31:00	124.9331	25475.8	-124.7	126.3	-3.2	15572:
	01:39:30	125.0747	25345.2	-130.5	122.8	-3.5	15589:
	01:48:00	125.2164	25207.6	-137.6	119.5	-3.3	15606:
	01:56:30	125.3581	25072.6	-135.0	116.4	-3.1	15623:
	02:05:00	125.4997	24864.5	-208.1	112.3	-4.2	15640:
	02:13:30	125.6414	24529.7	-334.8	106.1	-6.2	15657:
	02:22:00	125.7831	24209.4	-320.3	98.8	-7.3	15674:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	02:30:30	125.9247	23934.2	-275.2	92.2	-6.6	15691:
	02:39:00	126.0664	23665.8	-268.5	84.9	-7.3	15708:
	02:47:30	126.2081	23385.9	-279.9	77.0	-7.9	15725:
	02:56:00	126.3497	23092.6	-293.3	68.1	-8.9	15742:
	03:04:30	126.4914	22781.1	-311.4	58.1	-10.0	15759:
	03:13:00	126.6331	22456.8	-324.3	48.5	-9.6	15776:
	03:21:30	126.7747	22113.8	-343.0	40.3	-8.2	15793:
	03:30:00	126.9164	21803.2	-310.6	33.0	-7.3	15810:
	03:38:30	127.0581	21800.7	-2.6	29.0	-3.9	15827:
	03:47:00	127.1997	21798.9	-1.8	27.7	-1.4	15844:
	03:55:30	127.3414	21797.5	-1.4	27.2	-0.4	15861:
	04:04:00	127.4831	21796.2	-1.3	27.1	-0.2	15878:
	04:12:30	127.6247	21794.9	-1.2	27.0	-0.1	15895:
	04:21:00	127.7664	21793.5	-1.4	27.0	-0.0	15912:
	04:29:30	127.9081	21792.2	-1.2	27.0	-0.0	15929:
	04:38:00	128.0497	21790.8	-1.4	26.9	-0.0	15946:
	04:46:30	128.1914	21789.2	-1.7	26.9	-0.0	15963:
	04:55:00	128.3331	21787.4	-1.7	26.9	0.0	15980:
	05:03:30	128.4747	21344.1	-443.3	24.4	-2.5	15997:
	05:12:30	128.6247	45.4	-21298.7	14.4	-10.0	16014:
1998/07/21	05:20:00	128.7497	0.0	-45.4	10.5	-3.9	16029:
							End Data Acquisition:

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

RANGER OIL LIMITED

RANGER FORT LIARD
P-66-A
STATIC GRADIENT & FLOW / BUILD-UP

1. GENTRONIC METZLINE QUARTZ - BOTTOM DATA
2. GENTRONIC METZLINE QUARTZ - STATIC GRADIENT PLOT
3. GENTRONIC METZLINE QUARTZ - BOTTOM PLOTS
4. GENTRONIC METZLINE QUARTZ - TOP PLOTS
5. COMPARISON PLOT
6. GENTRONIC METZLINE QUARTZ - BOTTOM TRANSIENT DATA

Test Date: July 21 - 23, 1998
Report By: Pat Mulgrew

GENCO Pressure Control Limited

(403) 250-3800 — CALGARY, AB.

SUBSURFACE PRESSURE MEASUREMENTS

Basic Data:

Company Ranger Oil Limited
Address #1600, 321 - 6Th. Ave. S.W.
Calgary, AB.
T2P 3H3

Gentronics Electronic Gauge
c/w Memory Recorder
S/N: GMQ-9812

Well Name Ranger Fort Liard	Field & Pool Liard / Nihanni
Well Identifier P-66-A	Type of Test St. Grad. & Flow / B.U.
Status Shut in Gas	Date of Test Jul 21 - 23, 1998
DWG Tubing Pressure N/A kPa	DWG Casing Pressure N/A kPa
Tubing 88.9 mm @ 3082.4 m KB	Casing 177.8 mm @ 3499.0 m KB
Producing Interval 3115 - 3334 m KB	Producing Through Tubing
Elevation 449.54 m CF, 459.89 m KB	MPP Interval 3214.2 m CF
Datum Depth of Well ____ m CF	Run Depth 3347 m CF
Temperature at Run Depth 157.8 °C	Pool Datum ____ m (subsea)
Pressure at Run Depth 27287 kPaG	Gradient at Run Depth 8.71 kPa/m
MPP Pressure 26656 kPaG	Datum Depth Pressure ____ kPaG
Final Buildup Pressure 27251 kPaG	Date on Bottom July 21, 1998
Date off Bottom July 23, 1998	Shut in Date July 22, 1998

Summary:

Tandem LMR Quartz Recorders ran within Specifications.

First 2 - 3 Hours of run data not available. High Temp batteries failed to power up until sufficient temperature was attained.

Preparation Data:

Tested By GENCO Computed By P. Mulgrew Report Date Jul 30, 1998

BOTTOM GAUGE

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 — Calgary, AB.

OPERATIONS SUMMARY

Company: **Ranger Oil Limited**
Ranger Fort Liard

LSD: **P-66-A**
Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/07/21	15:50:04	0.0000	24404.8	79.3	1 :	Begin Data Acquisition
	15:50:04	0.0000	24404.8	79.3	3 :	@ 1500 mCF
	16:04:38	0.2428	25138.0	100.4	627:	@ 2000 mCF
	16:23:40	0.5600	25730.9	118.6	741:	@ 2500 mCF
	16:39:01	0.8156	26283.9	135.1	833:	@ 3000 mCF
	16:49:38	0.9928	26432.0	146.6	897:	@ 3080 mCF
	17:00:30	1.1739	26490.3	149.7	962:	@ 3090 mCF
	17:11:00	1.3489	26502.4	150.4	1025:	@ 3100 mCF
	17:22:49	1.5458	26515.9	151.1	1096:	@ 3110 mCF
	17:32:29	1.7069	26529.9	151.4	1154:	@ 3120 mCF
	17:43:38	1.8928	26549.4	151.6	1221:	@ 3130 mCF
	17:52:10	2.0350	26562.1	151.2	1272:	@ 3140 mCF
	18:02:50	2.2128	26570.4	151.3	1336:	@ 3150 mCF
	18:13:38	2.3928	26578.3	152.6	1401:	@ 3160 mCF
	18:24:08	2.5678	26594.6	153.3	1464:	@ 3170 mCF
	18:34:49	2.7458	26610.3	153.7	1528:	@ 3180 mCF
	18:44:22	2.9050	26624.1	153.9	1585:	@ 3190 mCF
	18:57:19	3.1208	26637.2	154.1	1663:	@ 3200 mCF
	19:07:38	3.2928	26650.0	154.2	1725:	@ 3210 mCF
	19:18:52	3.4800	26662.8	154.4	1792:	@ 3220 mCF
	19:29:40	3.6600	26675.6	154.7	1857:	@ 3230 mCF
	19:40:31	3.8408	26688.4	154.9	1922:	@ 3240 mCF
	19:51:41	4.0269	26702.7	155.2	1989:	@ 3250 mCF

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

OPERATIONS SUMMARY

Company: **Ranger Oil Limited**
Ranger Fort Liard

LSD: **P-66-A**
Bottom Gauge

Date	Time	dt(hrs)	P(kpaG)	T(°C)	Pt. #	Remarks
1998/07/21	20:02:29	4.2069	26715.7	155.4	2054:	@ 3260 mCF
	20:13:31	4.3908	26728.8	155.7	2120:	@ 3270 mCF
	20:24:59	4.5819	26742.4	155.9	2189:	@ 3280 mCF
	20:35:50	4.7628	26802.6	155.8	2254:	@ 3290 mCF
	20:46:31	4.9408	26880.6	156.4	2318:	@ 3300 mCF
	20:57:52	5.1300	26968.0	156.9	2386:	@ 3310 mCF
	21:08:50	5.3128	27054.3	157.2	2452:	@ 3320 mCF
	21:20:22	5.5050	27138.8	157.4	2521:	@ 3330 mCF
	21:31:31	5.6908	27225.6	157.7	2588:	@ 3340 mCF
	21:41:29	5.8569	27286.6	157.8	2648:	@ 3347 mCF (run depth)
	21:57:59	6.1319	27270.3	158.0	2747:	Well Open to Flow
1998/07/22	08:06:01	16.2658	26872.8	158.2	6395:	Well Shut in.
1998/07/23	06:41:50	38.8628	27251.0	158.2	14530:	Recorders Off Bottom
	11:30:41	43.6769	21539.5	29.5	16263 :	Recorders in Lubricator
					:	BOP Closed
	11:39:41	43.8269	15.8	20.8	16312 :	End Data Acquisition

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

STATIC GRADIENT SURVEY

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard

Bottom Gauge

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Gradient (°C/m)
At Surface: 1998/07/21 15:50:04 (Running In)				
1500	24405	-----	79.3	-----
2000	25138	1.47	100.4	0.042
2500	25731	1.19	118.6	0.036
3000	26284	1.11	135.1	0.033
3080	26432	1.85	146.6	0.144
3090	26490	5.83	149.7	0.310
3100	26502	1.21	150.4	0.070
3110	26516	1.35	151.1	0.070
3120	26530	1.40	151.4	0.030
3130	26549	1.95	151.6	0.020
3140	26562	1.27	151.2	-----
3150	26570	0.83	151.3	0.010
3160	26578	0.79	152.6	0.130
3170	26595	1.63	153.3	0.070
3180	26610	1.57	153.7	0.040
3190	26624	1.38	153.9	0.020
3200	26637	1.31	154.1	0.020
3210	26650	1.28	154.2	0.010
3220	26663	1.28	154.4	0.020
3230	26676	1.28	154.7	0.030

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

STATIC GRADIENT SURVEY

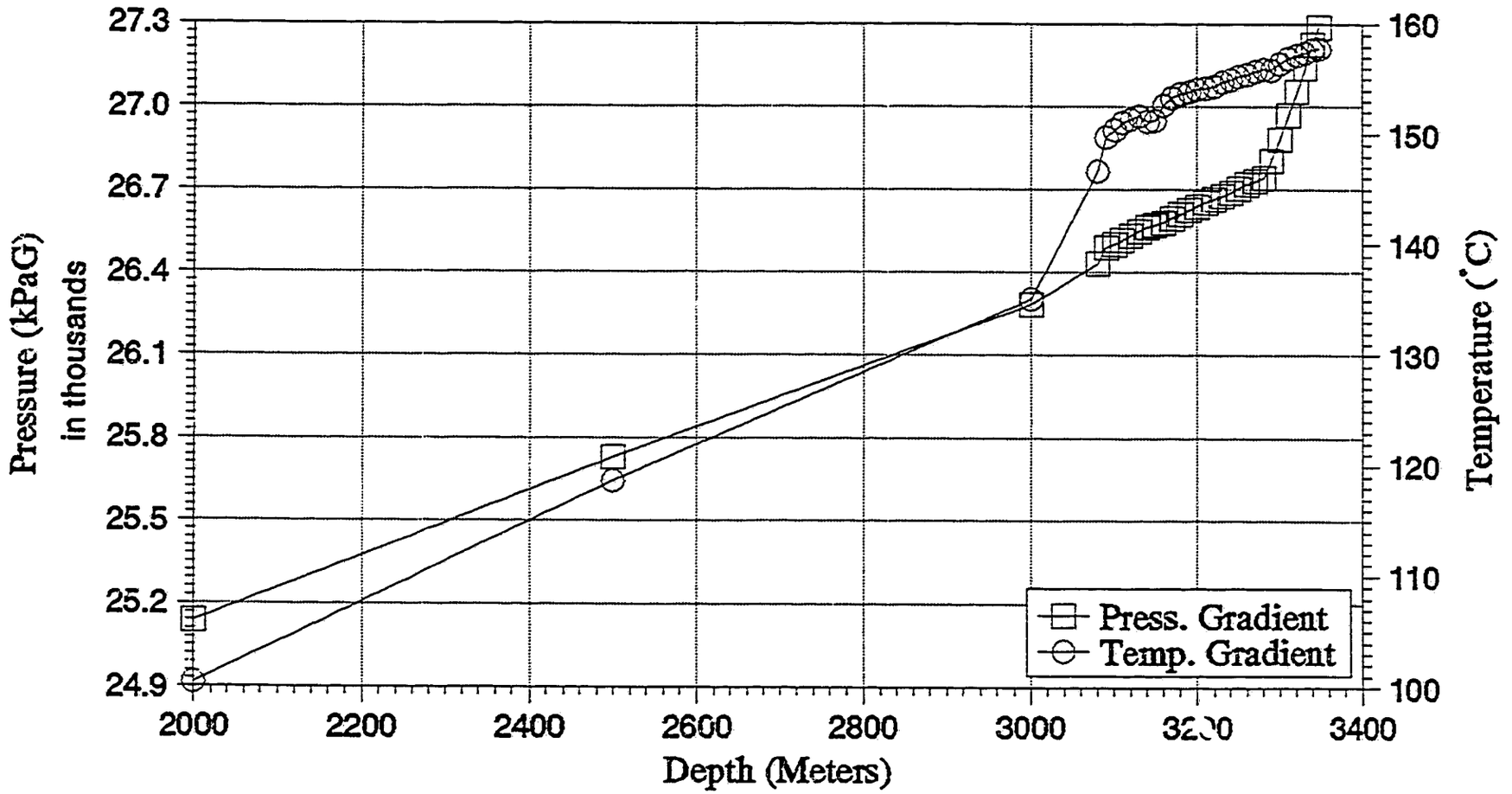
Company: **Ranger Oil Limited**
Ranger Fort Liard

LSD: **P-66-A**

Depth (meters)	Pressure (kPaG)	Gradient (kPa/m)	Temp (°C)	Bottom Gauge Gradient (°C/m)
At Surface: 1998/07/21 15:50:04 (Running In)				
3240	26688	1.28	154.9	0.020
3250	26703	1.43	155.2	0.030
3260	26716	1.30	155.4	0.020
3270	26729	1.31	155.7	0.030
3280	26742	1.36	155.9	0.020
3290	26803	6.02	155.8	-----
3300	26881	7.80	156.4	0.060
3310	26968	8.74	156.9	0.050
3320	27054	8.63	157.2	0.030
3330	27139	8.45	157.4	0.020
3340	27226	8.68	157.7	0.030
3347	27287	8.71	157.8	0.014

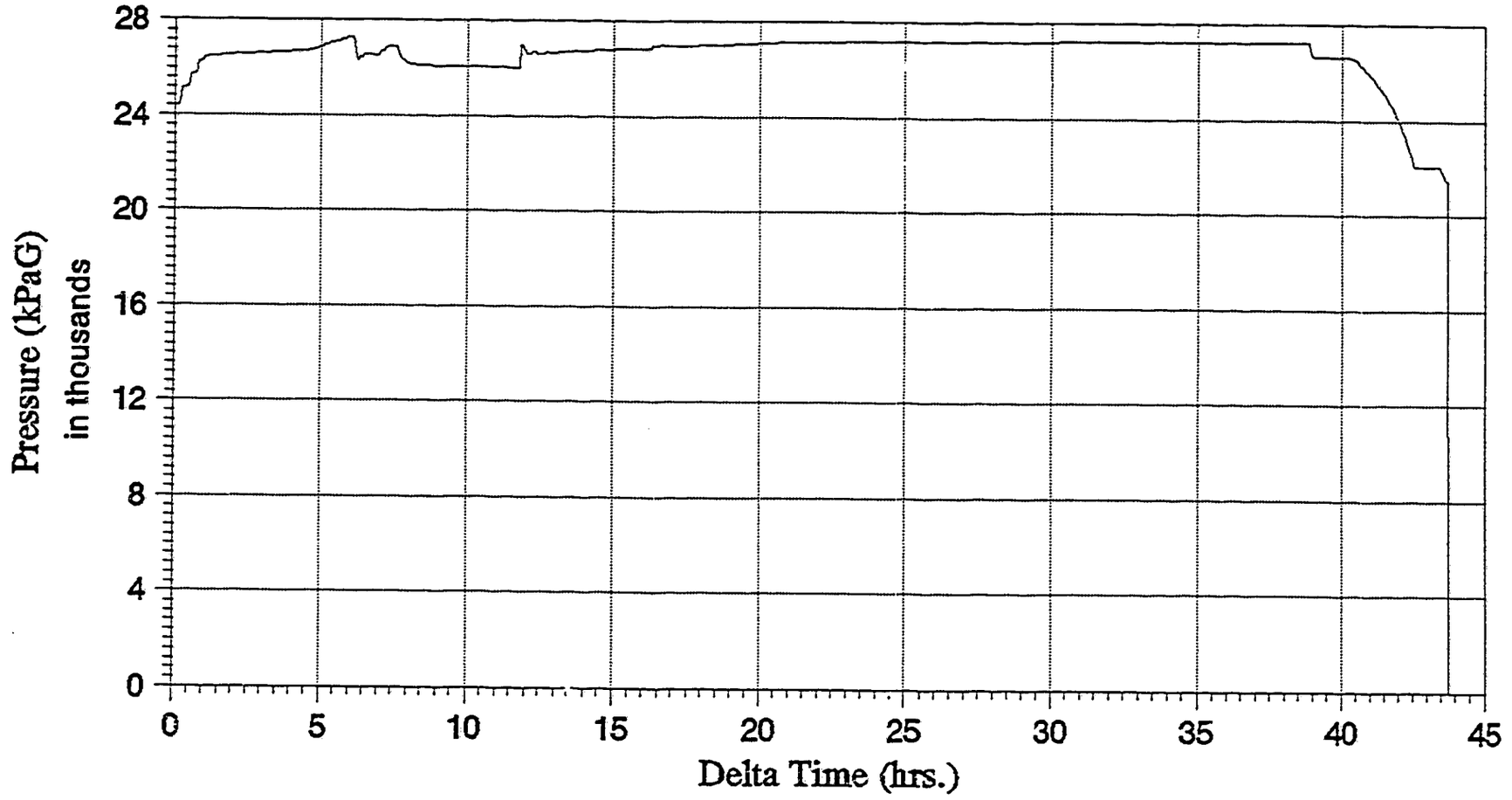
Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.

Ranger Oil Limited
P-66-A
Gentronics Quartz Static Gradient Survey



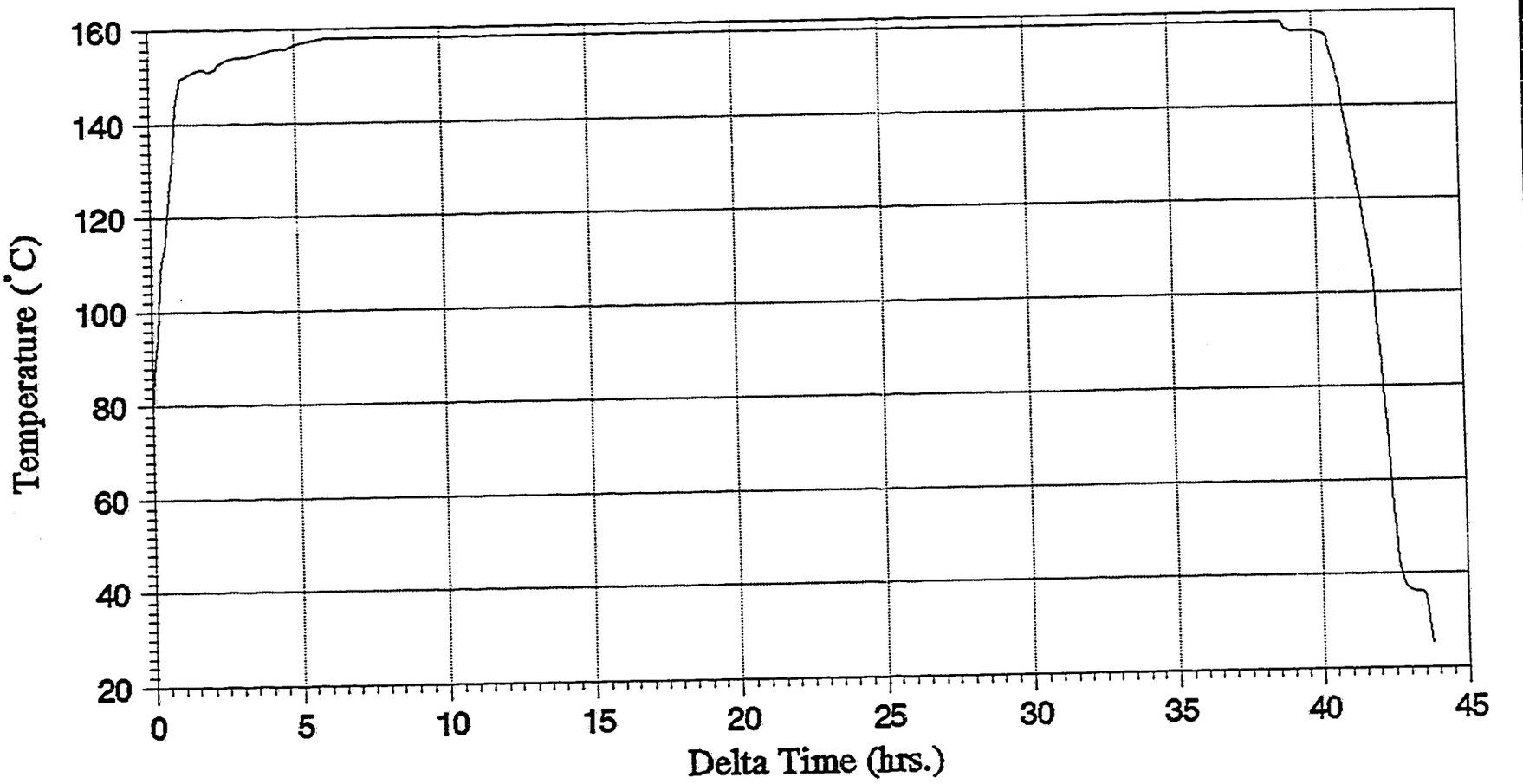
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/21 15:50:04
End Aquisition: 1998/07/23 11:39:41

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Pressures

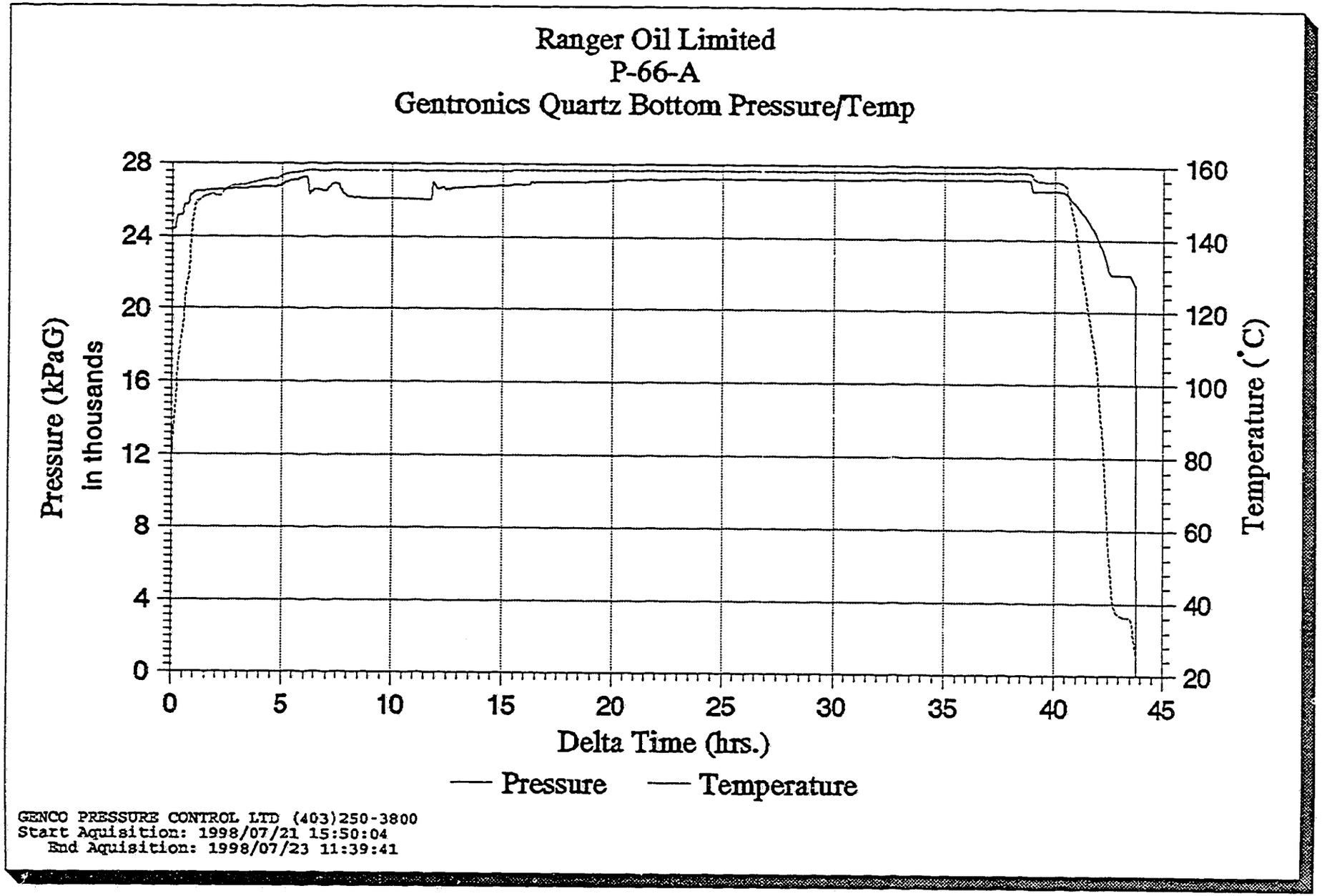


GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/21 15:50:04
End Aquisition: 1998/07/23 11:39:41

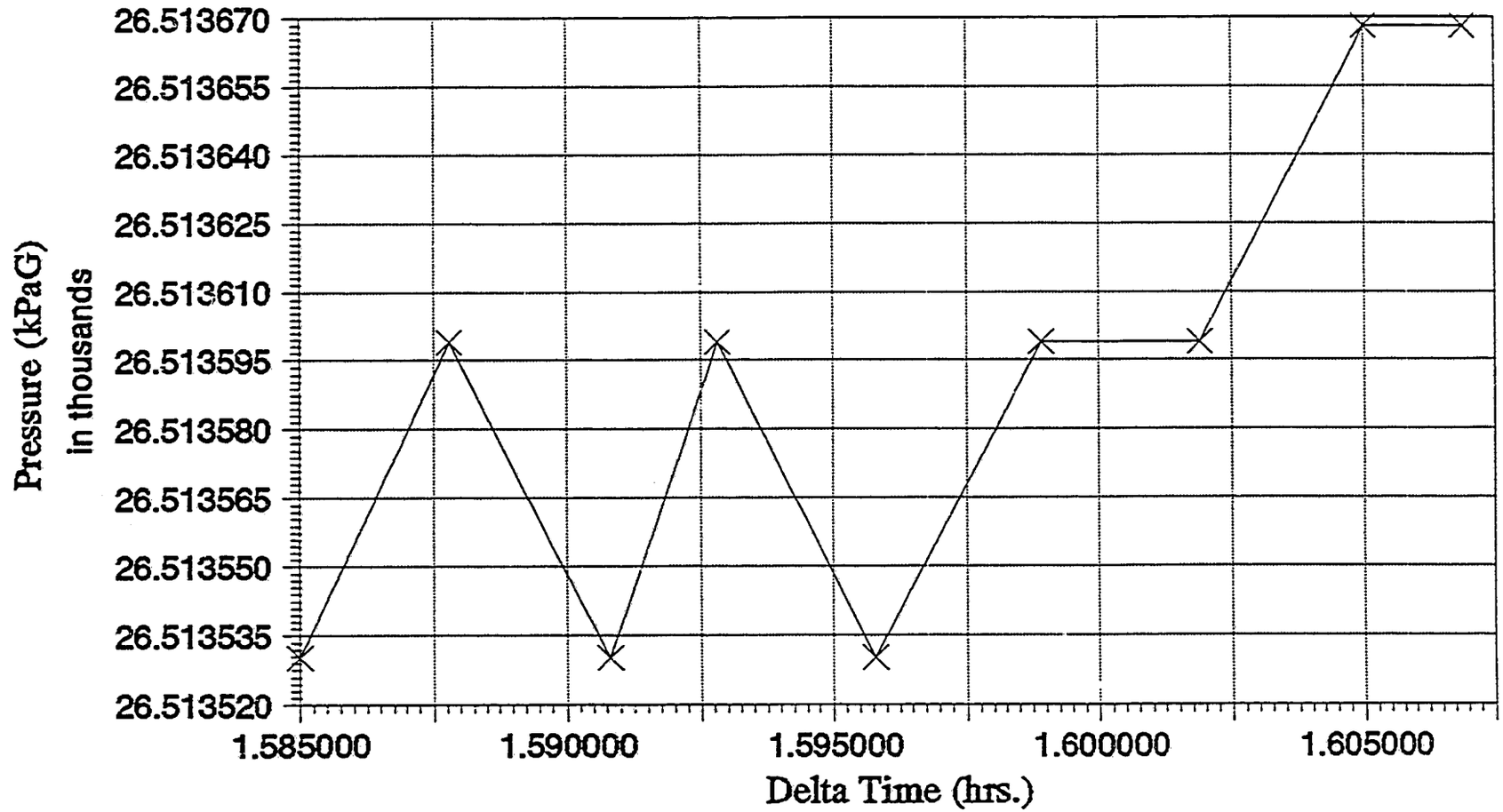
Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Gauge Temp.



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/21 15:50:04
End Aquisition: 1998/07/23 11:39:41

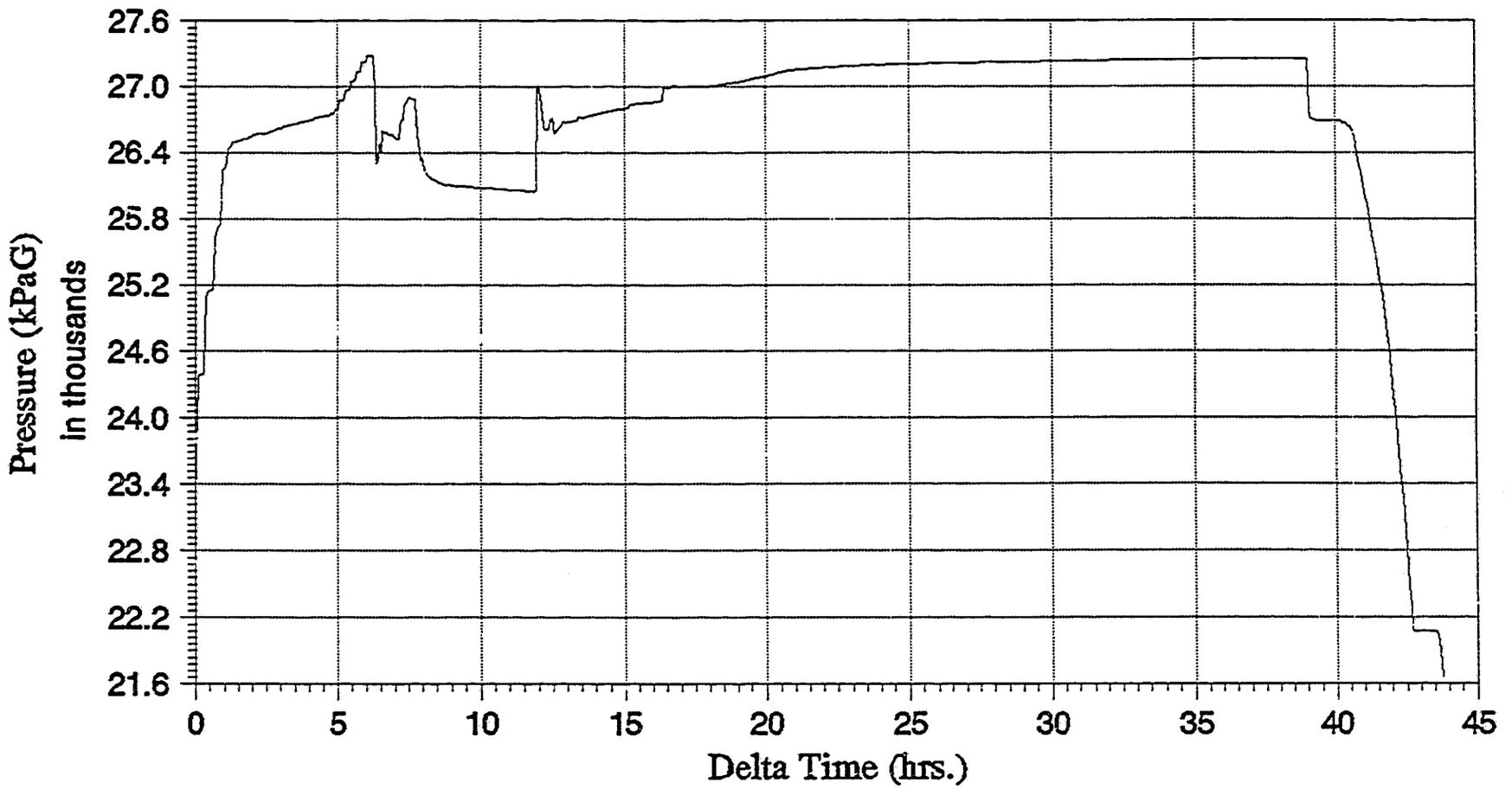

Ranger Oil Limited
P-66-A
Gentronics Quartz Bottom Pressure/Temp
Pressure (kPaG)
In thousands
28
24
20
16
12
8
4
0
160
140
120
100
80
60
40
20
Temperature (°C)
0
5
10
15
20
25
30
35
40
45
Delta Time (hrs.)
— Pressure
— Temperature
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/21 15:50:04
End Aquisition: 1998/07/23 11:39:41

Ranger Oil Limited
P-66-A
Bottom Gauge Apparent Resolution



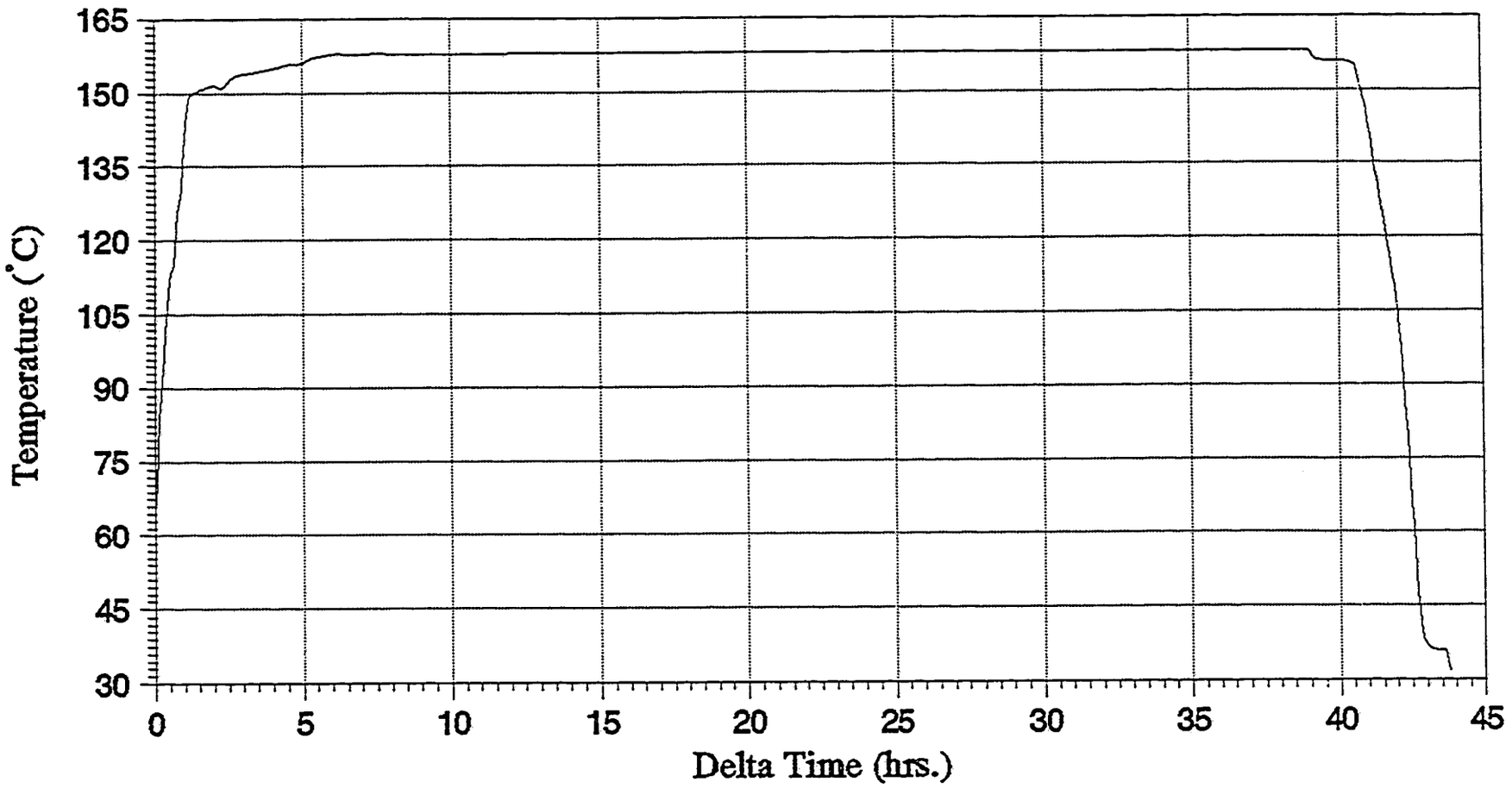
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/21 15:50:04
End Aquisition: 1998/07/23 11:39:41

Ranger Oil Limited
P-66-A
Gentronics Quartz Top Gauge Pressures



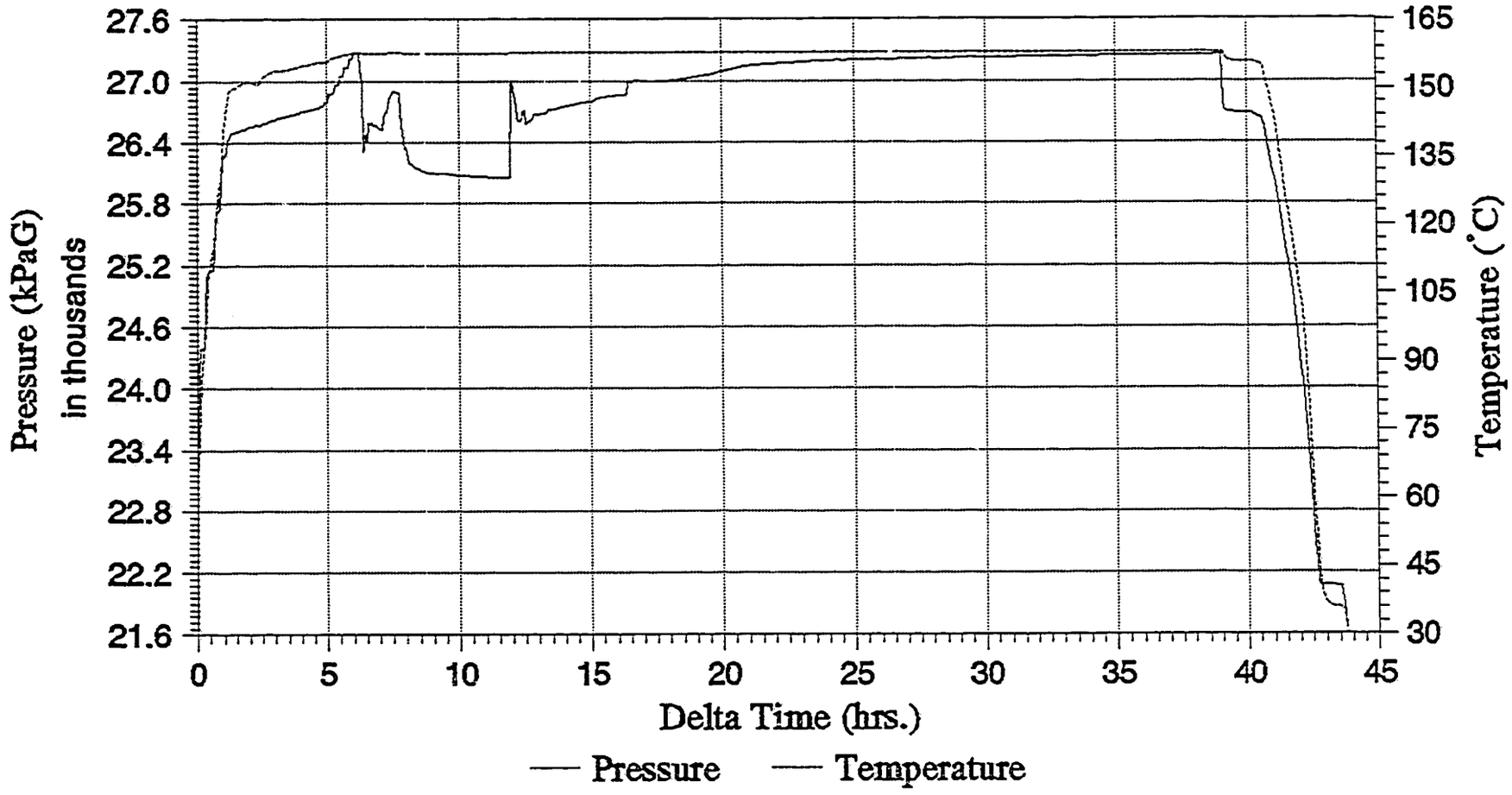
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/21 15:50:04
End Aquisition: 1998/07/23 11:39:41

Ranger Oil Limited
P-66-A
Gentronics Quartz Top Gauge Temp.

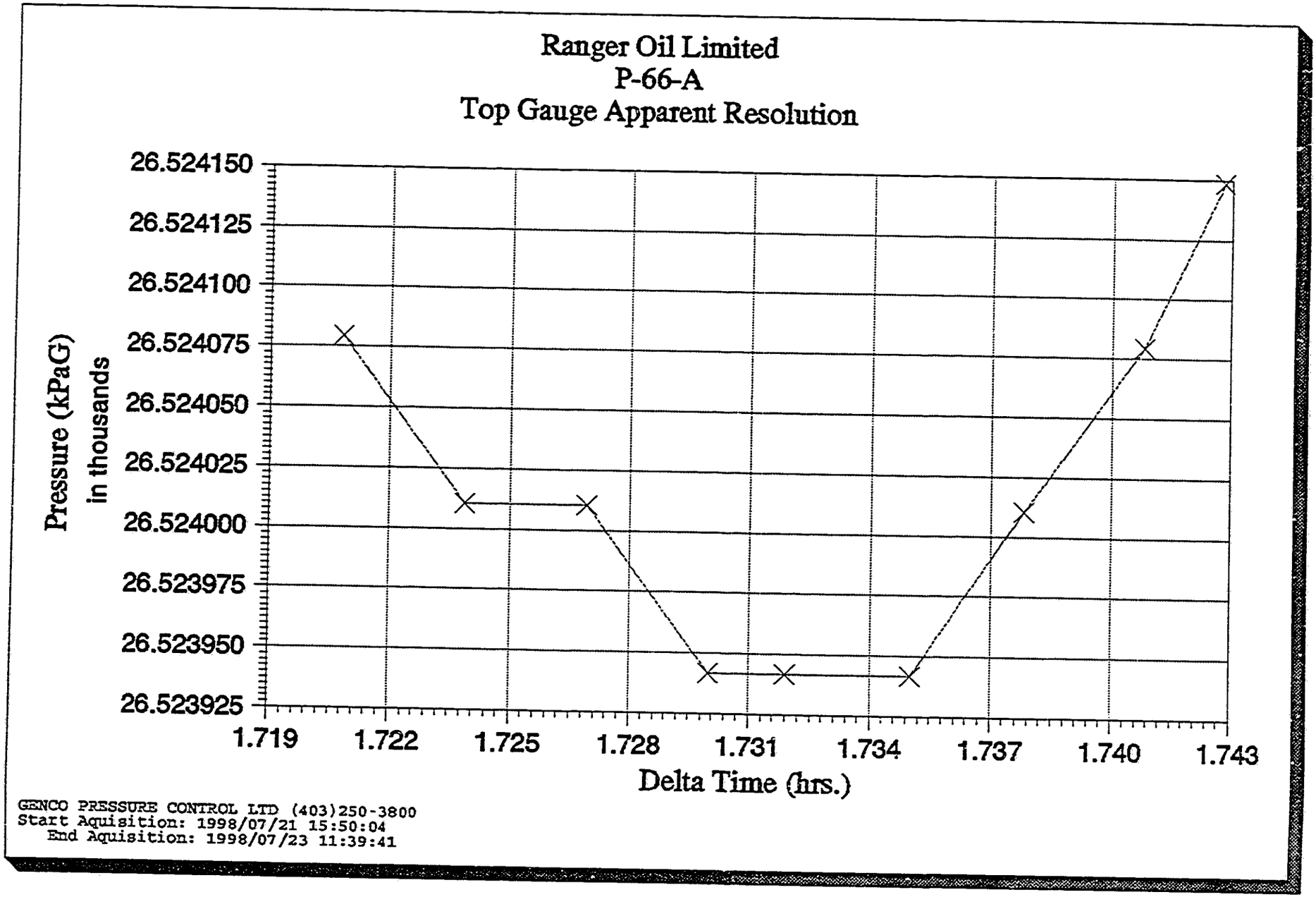


GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/21 15:50:04
End Aquisition: 1998/07/23 11:39:41

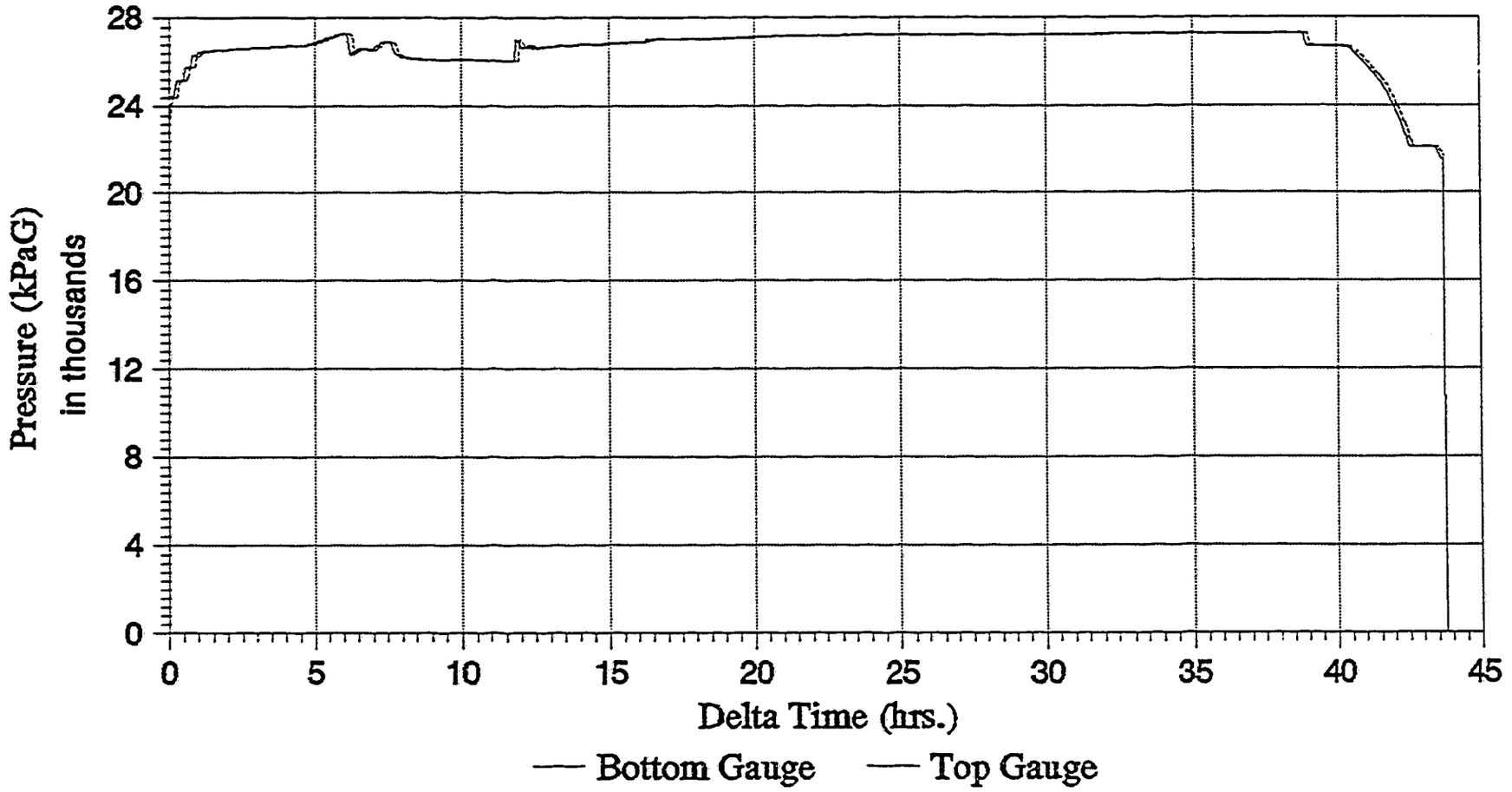
Ranger Oil Limited
P-66-A
Gentronic Quartz Top Pressure/Temp



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/21 15:50:04
End Aquisition: 1998/07/23 11:39:41


Ranger Oil Limited
P-66-A
Top Gauge Apparent Resolution
Pressure (kPaG)
in thousands
26.524150
26.524125
26.524100
26.524075
26.524050
26.524025
26.524000
26.523975
26.523950
26.523925
1.719
1.722
1.725
1.728
1.731
1.734
1.737
1.740
1.743
Delta Time (hrs.)
GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/21 15:50:04
End Aquisition: 1998/07/23 11:39:41

Ranger Oil Limited
P-66-A
Gentronics Quartz Gauge Press. Tracking



GENCO PRESSURE CONTROL LTD (403)250-3800
Start Aquisition: 1998/07/21 15:50:04
End Aquisition: 1998/07/23 11:39:41

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
				Begin Data Acquisition:			
1998/07/21	15:50:04	0.0000	24404.8	24404.8	79.3	79.3	0:
	15:50:18	0.0039	24404.8	0.0	79.9	0.6	17:
	15:50:36	0.0089	24404.8	0.1	80.5	0.6	34:
	15:50:50	0.0128	24404.9	0.1	81.1	0.6	51:
	15:51:08	0.0178	24405.0	0.1	81.6	0.6	68:
	15:51:26	0.0228	24405.2	0.3	82.2	0.6	85:
	15:51:44	0.0278	24405.2	0.0	82.7	0.6	102:
	15:51:59	0.0319	24405.4	0.1	83.2	0.5	119:
	15:52:17	0.0369	24405.7	0.3	83.7	0.5	136:
	15:52:35	0.0419	24405.7	0.1	84.2	0.5	153:
	15:52:53	0.0469	24405.9	0.1	84.7	0.4	170:
	15:53:07	0.0508	24406.1	0.3	85.1	0.4	187:
	15:53:25	0.0558	24406.4	0.3	85.6	0.4	204:
	15:53:43	0.0608	24406.6	0.1	85.9	0.4	221:
	15:53:58	0.0650	24406.8	0.2	86.4	0.4	238:
	15:54:16	0.0700	24407.0	0.3	86.8	0.4	255:
	15:54:34	0.0750	24407.2	0.2	87.2	0.4	272:
	15:54:52	0.0800	24407.7	0.4	87.5	0.3	289:
	15:55:06	0.0839	24408.1	0.4	87.8	0.3	306:
	15:55:24	0.0889	24408.2	0.1	88.2	0.4	323:
	15:55:42	0.0939	24408.7	0.5	88.6	0.3	340:
	15:55:56	0.0978	24408.8	0.1	88.8	0.3	357:
	15:56:14	0.1028	24409.0	0.3	89.2	0.3	374:
	15:56:32	0.1078	24409.5	0.4	89.4	0.3	391:
	15:56:50	0.1128	24409.7	0.2	89.8	0.3	408:
	15:57:05	0.1169	24410.1	0.4	90.1	0.3	425:
	15:57:23	0.1219	24410.3	0.2	90.3	0.2	442:
	15:57:41	0.1269	24410.7	0.4	90.6	0.3	459:
	15:57:59	0.1319	24410.7	0.0	90.8	0.3	476:
	15:58:13	0.1358	24410.8	0.1	91.1	0.2	493:
	15:58:31	0.1408	24410.8	0.1	91.3	0.3	510:
	15:58:49	0.1458	24439.2	28.3	91.6	0.2	527:
	15:59:04	0.1500	24482.2	43.0	91.8	0.2	544:
	15:59:22	0.1550	24525.0	42.8	92.1	0.3	561:
	15:59:40	0.1600	24567.0	42.0	92.3	0.3	578:
	15:59:58	0.1650	24608.0	41.0	92.7	0.3	595:
	16:02:11	0.2019	24895.1	287.0	95.7	3.1	612:
	16:05:00	0.2489	25136.6	241.5	101.1	5.3	629:
	16:07:49	0.2958	25141.8	5.2	105.7	4.6	646:
	16:10:38	0.3428	25147.1	5.3	109.0	3.3	663:
	16:13:31	0.3908	25153.9	6.8	111.3	2.3	680:
	16:16:20	0.4378	25157.4	3.5	112.9	1.6	697:
	16:19:10	0.4850	25219.5	62.1	114.1	1.1	714:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	16:21:59	0.5319	25555.1	335.6	116.2	2.1	731:
	16:24:52	0.5800	25724.1	169.0	120.6	4.4	748:
	16:27:41	0.6269	25732.8	8.7	124.2	3.7	765:
	16:30:30	0.6739	25745.8	13.0	126.8	2.6	782:
	16:33:19	0.7208	25757.4	11.6	128.3	1.6	799:
	16:36:08	0.7678	26004.2	246.8	130.1	1.8	816:
	16:39:01	0.8158	26283.9	279.7	135.1	4.9	833:
	16:41:50	0.8628	26276.3	-7.6	139.9	4.9	850:
	16:44:40	0.9100	26302.6	26.3	143.2	3.3	867:
	16:47:29	0.9569	26328.5	25.9	145.3	2.1	884:
	16:50:22	1.0050	26427.5	99.0	147.1	1.7	901:
	16:53:11	1.0519	26436.0	8.5	148.7	1.6	918:
	16:56:00	1.0989	26456.0	20.1	149.6	0.9	935:
	16:58:49	1.1458	26476.2	20.2	149.6	0.1	952:
	17:01:38	1.1928	26485.8	9.6	149.8	0.2	969:
	17:04:31	1.2408	26484.8	-1.0	150.1	0.3	986:
	17:07:20	1.2878	26486.8	2.0	150.3	0.2	1003:
	17:10:10	1.3350	26489.0	2.1	150.4	0.1	1020:
	17:12:59	1.3819	26497.9	9.0	150.6	0.2	1037:
	17:15:52	1.4300	26498.9	1.0	150.8	0.3	1054:
	17:18:41	1.4769	26501.2	2.3	150.9	0.1	1071:
	17:21:30	1.5239	26502.8	1.6	151.1	0.1	1088:
	17:24:19	1.5708	26513.9	11.1	151.2	0.1	1105:
	17:27:08	1.6178	26513.9	0.1	151.3	0.1	1122:
	17:30:01	1.6658	26515.3	1.3	151.4	0.1	1139:
	17:32:50	1.7128	26530.3	15.0	151.4	0.1	1156:
	17:35:40	1.7600	26530.4	0.1	151.6	0.1	1173:
	17:38:29	1.8069	26531.5	1.0	151.6	0.1	1190:
	17:41:22	1.8550	26532.2	0.8	151.6	0.0	1207:
	17:44:11	1.9019	26550.8	18.5	151.6	-0.1	1224:
	17:47:00	1.9489	26551.2	0.4	151.3	-0.2	1241:
	17:49:49	1.9958	26549.6	-1.6	151.2	-0.1	1258:
	17:52:38	2.0428	26561.9	12.3	151.2	-0.1	1275:
	17:55:31	2.0908	26558.3	-3.6	151.2	0.0	1292:
	17:58:20	2.1378	26557.5	-0.8	151.2	0.1	1309:
	18:01:10	2.1850	26557.3	-0.1	151.3	0.1	1326:
	18:03:59	2.2319	26561.7	4.3	151.5	0.2	1343:
	18:06:52	2.2800	26558.3	-3.3	151.9	0.4	1360:
	18:09:41	2.3269	26561.2	2.9	152.3	0.3	1377:
	18:12:30	2.3739	26564.5	3.2	152.6	0.3	1394:
	18:15:19	2.4208	26576.0	11.5	152.8	0.2	1411:
	18:18:08	2.4678	26577.4	1.4	153.1	0.3	1428:
	18:21:01	2.5158	26579.8	2.3	153.2	0.2	1445:
	18:23:50	2.5628	26581.7	1.9	153.3	0.1	1462:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	18:26:40	2.6100	26594.3	12.6	153.5	0.2	1479:
	18:29:29	2.6569	26595.2	1.0	153.6	0.1	1496:
	18:32:22	2.7050	26596.2	1.0	153.7	0.1	1513:
	18:35:11	2.7519	26610.1	13.9	153.7	0.1	1530:
	18:38:00	2.7989	26610.1	0.0	153.8	0.1	1547:
	18:40:49	2.8458	26610.7	0.6	153.8	0.1	1564:
	18:43:38	2.8928	26611.1	0.4	153.9	0.1	1581:
	18:46:31	2.9408	26624.1	13.0	153.9	0.1	1598:
	18:49:20	2.9878	26624.3	0.1	153.9	0.0	1615:
	18:52:10	3.0350	26624.4	0.1	154.0	0.1	1632:
	18:54:59	3.0819	26624.5	0.1	154.1	0.1	1649:
	18:57:52	3.1300	26637.2	12.8	154.1	0.0	1666:
	19:00:41	3.1769	26636.7	-0.5	154.1	0.1	1683:
	19:03:30	3.2239	26636.7	-0.1	154.2	0.1	1700:
	19:06:19	3.2708	26637.1	0.4	154.2	0.1	1717:
	19:09:08	3.3178	26649.1	12.0	154.3	0.1	1734:
	19:12:01	3.3658	26648.8	-0.3	154.3	0.1	1751:
	19:14:50	3.4128	26649.2	0.4	154.4	0.1	1768:
	19:17:40	3.4600	26649.7	0.5	154.4	0.1	1785:
	19:20:29	3.5069	26662.0	12.3	154.5	0.1	1802:
	19:23:22	3.5550	26662.3	0.2	154.6	0.1	1819:
	19:26:11	3.6019	26662.7	0.5	154.6	0.1	1836:
	19:29:00	3.6489	26663.1	0.3	154.6	0.0	1853:
	19:31:49	3.6958	26674.9	11.8	154.7	0.1	1870:
	19:34:38	3.7428	26674.9	0.1	154.8	0.1	1887:
	19:37:31	3.7908	26675.5	0.6	154.8	0.1	1904:
	19:40:20	3.8378	26683.4	7.9	154.9	0.1	1921:
	19:43:10	3.8850	26687.4	3.9	154.9	0.1	1938:
	19:45:59	3.9319	26687.7	0.3	155.1	0.1	1955:
	19:48:52	3.9800	26688.6	0.9	155.1	0.1	1972:
	19:51:41	4.0269	26702.7	14.1	155.2	0.1	1989:
	19:54:30	4.0739	26700.7	-2.0	155.3	0.1	2006:
	19:57:19	4.1208	26701.2	0.6	155.3	0.1	2023:
	20:00:08	4.1678	26702.0	0.8	155.4	0.1	2040:
	20:03:01	4.2158	26715.3	13.3	155.4	0.1	2057:
	20:05:50	4.2628	26714.1	-1.2	155.6	0.1	2074:
	20:08:40	4.3100	26714.7	0.6	155.6	0.1	2091:
	20:11:29	4.3569	26715.4	0.7	155.7	0.1	2108:
	20:14:22	4.4050	26728.0	12.6	155.7	0.1	2125:
	20:17:11	4.4519	26727.6	-0.4	155.8	0.1	2142:
	20:20:00	4.4989	26728.2	0.6	155.9	0.1	2159:
	20:22:49	4.5458	26729.0	0.8	155.9	0.1	2176:
	20:25:38	4.5928	26743.8	14.8	155.9	0.0	2193:
	20:28:31	4.6408	26745.9	2.1	155.9	-0.1	2210:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	20:31:20	4.6878	26745.8	-0.1	155.8	-0.1	2227:
	20:34:10	4.7350	26745.3	-0.4	155.8	0.0	2244:
	20:36:59	4.7819	26795.1	49.7	155.9	0.1	2261:
	20:39:52	4.8300	26792.4	-2.6	156.1	0.2	2278:
	20:42:41	4.8769	26794.2	1.7	156.3	0.2	2295:
	20:45:30	4.9239	26796.1	1.9	156.4	0.1	2312:
	20:48:19	4.9708	26878.6	82.5	156.6	0.2	2329:
	20:51:08	5.0178	26879.7	1.2	156.7	0.1	2346:
	20:54:01	5.0658	26881.3	1.6	156.8	0.1	2363:
	20:56:50	5.1128	26882.4	1.1	156.8	0.1	2380:
	20:59:40	5.1600	26966.4	84.0	156.9	0.1	2397:
	21:02:29	5.2069	26967.3	0.9	157.1	0.1	2414:
	21:05:22	5.2550	26968.5	1.2	157.1	0.1	2431:
	21:08:11	5.3019	26969.2	0.8	157.2	0.1	2448:
	21:11:00	5.3489	27052.6	83.4	157.3	0.1	2465:
	21:13:49	5.3958	27053.4	0.8	157.3	0.1	2482:
	21:16:38	5.4428	27054.2	0.8	157.4	0.1	2499:
	21:19:31	5.4908	27054.9	0.7	157.4	0.0	2516:
	21:22:20	5.5378	27137.3	82.4	157.5	0.1	2533:
	21:25:10	5.5850	27137.9	0.6	157.6	0.1	2550:
	21:27:59	5.6319	27138.6	0.7	157.6	0.1	2567:
	21:30:52	5.6800	27155.7	17.0	157.6	0.0	2584:
	21:33:41	5.7269	27224.4	68.7	157.7	0.1	2601:
	21:36:30	5.7739	27225.0	0.6	157.8	0.1	2618:
	21:39:19	5.8208	27225.6	0.7	157.8	0.0	2635:
	21:42:08	5.8678	27284.9	59.2	157.8	0.1	2652:
	21:45:01	5.9158	27284.2	-0.7	157.9	0.1	2669:
	21:47:50	5.9628	27284.6	0.4	157.9	0.1	2686:
	21:50:40	6.0100	27284.9	0.3	157.9	0.0	2703:
	21:53:29	6.0569	27285.1	0.3	158.0	0.1	2720:
	21:56:22	6.1050	27285.3	0.1	158.0	0.0	2737:
	21:59:11	6.1519	27061.0	-224.3	158.0	0.0	2754:
	22:02:00	6.1989	26624.0	-437.0	158.0	0.0	2771:
	22:04:49	6.2458	26297.3	-326.7	158.0	0.0	2788:
	22:07:38	6.2928	26376.2	78.9	158.0	0.0	2805:
	22:10:31	6.3408	26481.2	105.0	158.1	0.1	2822:
	22:13:20	6.3878	26436.0	-45.2	158.1	0.0	2839:
	22:16:10	6.4350	26565.0	129.0	158.1	0.0	2856:
	22:18:59	6.4819	26591.1	26.1	158.1	0.0	2873:
	22:21:52	6.5300	26579.7	-11.4	158.1	0.0	2890:
	22:24:41	6.5769	26603.6	23.9	158.1	0.0	2907:
	22:27:30	6.6239	26577.7	-25.9	158.1	0.0	2924:
	22:30:19	6.6708	26567.4	-10.3	158.1	0.0	2941:
	22:33:08	6.7178	26567.1	-0.3	158.1	0.0	2958:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	22:36:01	6.7658	26560.6	-6.6	158.1	0.0	2975:
	22:38:50	6.8128	26553.7	-6.9	158.1	0.0	2992:
	22:41:40	6.8600	26543.1	-10.5	158.1	0.0	3009:
	22:44:29	6.9069	26534.9	-8.2	158.1	0.0	3026:
	22:47:22	6.9550	26527.7	-7.2	158.1	0.0	3043:
	22:50:11	7.0019	26525.1	-2.6	158.1	0.0	3060:
	22:53:00	7.0489	26667.6	142.5	158.1	0.0	3077:
	22:55:49	7.0958	26691.1	23.4	158.1	0.0	3094:
	22:58:38	7.1428	26691.8	0.7	158.1	0.0	3111:
	23:01:31	7.1908	26739.5	47.7	158.1	0.0	3128:
	23:04:20	7.2378	26861.7	122.2	158.1	0.0	3145:
	23:07:10	7.2850	26867.3	5.7	158.1	0.0	3162:
	23:09:59	7.3319	26890.1	22.8	158.1	0.0	3179:
	23:12:52	7.3800	26898.5	8.4	158.1	0.0	3196:
	23:15:41	7.4269	26908.9	10.4	158.1	0.0	3213:
	23:18:30	7.4739	26893.0	-15.9	158.1	0.0	3230:
	23:21:19	7.5208	26889.0	-3.9	158.1	0.0	3247:
	23:24:08	7.5678	26890.6	1.6	158.1	0.0	3264:
	23:27:01	7.6158	26887.8	-2.8	158.1	0.0	3281:
	23:29:50	7.6628	26634.3	-253.5	158.1	0.0	3298:
	23:32:40	7.7100	26574.1	-60.2	158.1	0.0	3315:
	23:35:29	7.7569	26368.9	-205.1	158.1	0.0	3332:
	23:38:22	7.8050	26347.6	-21.4	158.1	0.0	3349:
	23:41:11	7.8519	26340.9	-6.7	158.1	0.0	3366:
	23:44:00	7.8989	26273.0	-67.8	158.1	0.0	3383:
	23:46:49	7.9458	26233.0	-40.0	158.1	0.0	3400:
	23:49:38	7.9928	26197.9	-35.2	158.1	0.0	3417:
	23:52:31	8.0408	26190.2	-7.7	158.1	0.0	3434:
	23:55:20	8.0878	26183.1	-7.1	158.1	0.0	3451:
	23:58:10	8.1350	26173.7	-9.3	158.1	0.0	3468:
1998/07/22	00:00:59	8.1819	26162.9	-10.8	158.1	0.0	3485:
	00:03:52	8.2300	26155.9	-7.0	158.1	0.0	3502:
	00:06:41	8.2769	26150.9	-5.0	158.1	0.0	3519:
	00:09:30	8.3239	26140.9	-10.0	158.1	0.0	3536:
	00:12:19	8.3708	26136.5	-4.4	158.1	0.0	3553:
	00:15:08	8.4178	26131.3	-5.2	158.1	0.0	3570:
	00:18:01	8.4658	26122.8	-8.5	158.1	0.0	3587:
	00:20:50	8.5128	26120.2	-2.6	158.1	0.0	3604:
	00:23:40	8.5600	26113.2	-7.0	158.1	0.0	3621:
	00:26:29	8.6069	26111.7	-1.5	158.1	0.0	3638:
	00:29:22	8.6550	26108.0	-3.7	158.1	0.0	3655:
	00:32:11	8.7019	26107.8	-0.2	158.1	0.0	3672:
	00:35:00	8.7489	26104.2	-3.6	158.1	0.0	3689:
	00:37:49	8.7958	26102.9	-1.3	158.1	0.0	3706:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	00:40:38	8.8428	26103.8	0.9	158.1	0.0	3723:
	00:43:31	8.8908	26100.2	-3.6	158.1	0.0	3740:
	00:46:20	8.9378	26097.3	-2.8	158.1	0.0	3757:
	00:49:10	8.9850	26096.5	-0.9	158.1	0.0	3774:
	00:51:59	9.0319	26094.6	-1.9	158.1	0.0	3791:
	00:54:52	9.0800	26096.1	1.5	158.1	0.0	3808:
	00:57:41	9.1269	26094.8	-1.3	158.1	0.0	3825:
	01:00:30	9.1739	26099.2	4.4	158.1	0.0	3842:
	01:03:19	9.2208	26096.5	-2.8	158.1	0.0	3859:
	01:06:08	9.2678	26095.1	-1.3	158.1	0.0	3876:
	01:09:01	9.3158	26094.1	-1.0	158.1	0.0	3893:
	01:11:50	9.3628	26095.5	1.4	158.1	0.0	3910:
	01:14:40	9.4100	26092.7	-2.8	158.1	0.0	3927:
	01:17:29	9.4569	26091.6	-1.1	158.1	0.0	3944:
	01:20:22	9.5050	26087.6	-3.9	158.1	0.0	3961:
	01:23:11	9.5519	26086.7	-1.0	158.1	0.0	3978:
	01:26:00	9.5989	26090.6	3.9	158.1	0.0	3995:
	01:28:49	9.6458	26087.1	-3.5	158.1	0.0	4012:
	01:31:38	9.6928	26085.8	-1.3	158.1	0.0	4029:
	01:34:31	9.7408	26084.2	-1.6	158.1	0.0	4046:
	01:37:20	9.7878	26083.1	-1.0	158.1	0.0	4063:
	01:40:10	9.8350	26081.2	-1.9	158.1	0.0	4080:
	01:42:59	9.8819	26079.1	-2.1	158.1	0.0	4097:
	01:45:52	9.9300	26083.9	4.8	158.1	0.0	4114:
	01:48:41	9.9769	26078.1	-5.8	158.1	0.0	4131:
	01:51:30	10.0239	26079.3	1.2	158.1	0.0	4148:
	01:54:19	10.0708	26079.0	-0.3	158.1	0.0	4165:
	01:57:08	10.1178	26077.1	-1.9	158.1	0.0	4182:
	02:00:01	10.1658	26075.4	-1.7	158.1	0.0	4199:
	02:02:50	10.2128	26076.0	0.6	158.1	0.0	4216:
	02:05:40	10.2600	26075.5	-0.6	158.1	0.0	4233:
	02:08:29	10.3069	26074.0	-1.5	158.1	0.0	4250:
	02:11:22	10.3550	26074.4	0.4	158.1	0.0	4267:
	02:14:11	10.4019	26070.5	-3.9	158.1	0.0	4284:
	02:17:00	10.4489	26070.5	-0.1	158.1	0.0	4301:
	02:19:49	10.4958	26069.9	-0.6	158.1	0.0	4318:
	02:22:38	10.5428	26067.1	-2.8	158.1	0.0	4335:
	02:25:31	10.5908	26067.2	0.1	158.1	0.0	4352:
	02:28:20	10.6378	26069.0	1.8	158.1	0.0	4369:
	02:31:10	10.6850	26067.7	-1.3	158.1	0.0	4386:
	02:33:59	10.7319	26066.7	-1.0	158.1	0.0	4403:
	02:36:52	10.7800	26065.4	-1.3	158.1	0.0	4420:
	02:39:41	10.8269	26063.8	-1.6	158.1	0.0	4437:
	02:42:30	10.8739	26063.6	-0.2	158.1	0.0	4454:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	02:45:19	10.9208	26063.4	-0.2	158.1	0.0	4471:
	02:48:08	10.9678	26063.2	-0.1	158.1	0.0	4488:
	02:51:01	11.0158	26061.2	-2.0	158.1	0.0	4505:
	02:53:50	11.0628	26060.9	-0.3	158.1	0.0	4522:
	02:56:40	11.1100	26062.5	1.5	158.1	0.0	4539:
	02:59:29	11.1569	26058.0	-4.4	158.1	0.0	4556:
	03:02:22	11.2050	26059.5	1.4	158.1	0.0	4573:
	03:05:11	11.2519	26057.7	-1.8	158.1	0.0	4590:
	03:08:00	11.2989	26056.5	-1.2	158.1	0.0	4607:
	03:10:49	11.3458	26058.1	1.7	158.1	0.0	4624:
	03:13:38	11.3928	26058.2	0.1	158.1	0.0	4641:
	03:16:31	11.4408	26056.0	-2.2	158.1	0.0	4658:
	03:19:20	11.4878	26054.9	-1.0	158.1	0.0	4675:
	03:22:10	11.5350	26054.6	-0.3	158.1	0.0	4692:
	03:24:59	11.5819	26054.0	-0.6	158.1	0.0	4709:
	03:27:52	11.6300	26051.6	-2.4	158.1	0.0	4726:
	03:30:41	11.6769	26055.3	3.7	158.1	0.0	4743:
	03:33:30	11.7239	26055.4	0.1	158.1	0.0	4760:
	03:36:19	11.7708	26052.0	-3.4	158.1	0.0	4777:
	03:39:08	11.8178	26775.8	723.8	158.1	0.0	4794:
	03:42:01	11.8658	27021.9	246.1	158.1	0.1	4811:
	03:44:50	11.9128	26927.9	-94.0	158.1	0.0	4828:
	03:47:40	11.9600	26829.3	-98.7	158.1	0.0	4845:
	03:50:29	12.0069	26753.8	-75.4	158.1	0.0	4862:
	03:53:22	12.0550	26654.1	-99.8	158.1	0.0	4879:
	03:56:11	12.1019	26608.9	-45.2	158.1	0.0	4896:
	03:59:00	12.1489	26620.1	11.2	158.1	0.0	4913:
	04:01:49	12.1958	26614.7	-5.4	158.1	0.0	4930:
	04:04:38	12.2428	26675.8	61.0	158.1	0.0	4947:
	04:07:31	12.2908	26703.8	28.1	158.1	0.0	4964:
	04:10:20	12.3378	26711.0	7.2	158.1	0.0	4981:
	04:13:10	12.3850	26627.5	-83.5	158.1	0.0	4998:
	04:15:59	12.4319	26582.7	-44.8	158.1	0.0	5015:
	04:18:52	12.4800	26600.8	18.1	158.1	0.0	5032:
	04:21:41	12.5269	26611.0	10.3	158.1	0.0	5049:
	04:24:30	12.5739	26620.1	9.0	158.1	0.0	5066:
	04:27:19	12.6208	26628.1	8.1	158.1	0.0	5083:
	04:30:08	12.6678	26670.0	41.9	158.1	0.0	5100:
	04:33:01	12.7158	26673.6	3.6	158.1	0.0	5117:
	04:35:50	12.7628	26677.6	4.0	158.1	0.0	5134:
	04:38:40	12.8100	26672.9	-4.6	158.1	0.0	5151:
	04:41:29	12.8569	26670.9	-2.1	158.1	0.0	5168:
	04:44:22	12.9050	26675.1	4.2	158.1	0.0	5185:
	04:47:11	12.9519	26679.4	4.3	158.1	0.0	5202:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	04:50:00	12.9989	26680.9	1.5	158.1	0.0	5219:
	04:52:49	13.0458	26684.4	3.4	158.1	0.0	5236:
	04:55:38	13.0928	26688.9	4.6	158.1	0.0	5253:
	04:58:31	13.1408	26691.4	2.5	158.1	0.0	5270:
	05:01:20	13.1878	26694.4	3.0	158.1	0.0	5287:
	05:04:10	13.2350	26722.2	27.8	158.1	0.0	5304:
	05:06:59	13.2819	26725.1	3.0	158.1	0.0	5321:
	05:09:52	13.3300	26720.3	-4.8	158.1	0.0	5338:
	05:12:41	13.3769	26719.9	-0.4	158.1	0.0	5355:
	05:15:30	13.4239	26720.4	0.5	158.1	0.0	5372:
	05:18:19	13.4708	26723.1	2.7	158.1	0.0	5389:
	05:21:08	13.5178	26726.4	3.3	158.1	0.0	5406:
	05:24:01	13.5658	26729.9	3.5	158.1	0.0	5423:
	05:26:50	13.6128	26734.0	4.1	158.1	0.0	5440:
	05:29:40	13.6600	26736.2	2.2	158.1	0.0	5457:
	05:32:29	13.7069	26739.8	3.7	158.1	0.0	5474:
	05:35:22	13.7550	26743.8	4.0	158.1	0.0	5491:
	05:38:11	13.8019	26746.6	2.8	158.1	0.0	5508:
	05:41:00	13.8489	26750.5	3.9	158.1	0.0	5525:
	05:43:49	13.8958	26753.6	3.1	158.1	0.0	5542:
	05:46:38	13.9428	26755.3	1.7	158.1	0.0	5559:
	05:49:31	13.9908	26757.8	2.6	158.1	0.0	5576:
	05:52:20	14.0378	26761.3	3.4	158.1	0.0	5593:
	05:55:10	14.0850	26763.5	2.3	158.1	0.0	5610:
	05:57:59	14.1319	26768.2	4.7	158.1	0.0	5627:
	06:00:52	14.1800	26769.0	0.8	158.1	0.0	5644:
	06:03:41	14.2269	26771.3	2.3	158.1	0.0	5661:
	06:06:30	14.2739	26774.2	2.9	158.1	0.0	5678:
	06:09:19	14.3208	26776.4	2.1	158.1	0.0	5695:
	06:12:08	14.3678	26779.8	3.4	158.1	0.0	5712:
	06:15:01	14.4158	26781.1	1.3	158.1	0.0	5729:
	06:17:50	14.4628	26783.7	2.6	158.1	0.0	5746:
	06:20:40	14.5100	26786.5	2.8	158.1	0.0	5763:
	06:23:29	14.5569	26788.0	1.4	158.1	0.0	5780:
	06:26:22	14.6050	26791.1	3.2	158.1	0.0	5797:
	06:29:11	14.6519	26793.1	1.9	158.1	0.0	5814:
	06:32:00	14.6989	26796.0	3.0	158.1	0.0	5831:
	06:34:49	14.7458	26798.2	2.2	158.1	0.0	5848:
	06:37:38	14.7928	26796.0	-2.2	158.1	0.0	5865:
	06:40:31	14.8408	26801.8	5.8	158.1	0.0	5882:
	06:43:20	14.8878	26803.9	2.1	158.1	0.0	5899:
	06:46:10	14.9350	26805.4	1.4	158.1	0.0	5916:
	06:48:59	14.9819	26807.7	2.3	158.1	0.0	5933:
	06:51:52	15.0300	26809.0	1.3	158.1	0.0	5950:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	06:54:41	15.0769	26828.9	19.9	158.1	0.0	5967:
	06:57:30	15.1239	26837.0	8.1	158.1	0.0	5984:
	07:00:19	15.1708	26837.1	0.1	158.1	0.0	6001:
	07:03:08	15.2178	26839.5	2.3	158.1	0.0	6018:
	07:06:01	15.2658	26840.5	1.0	158.1	0.0	6035:
	07:08:50	15.3128	26842.1	1.6	158.1	0.0	6052:
	07:11:40	15.3600	26843.7	1.6	158.1	0.0	6069:
	07:14:29	15.4069	26844.8	1.1	158.1	0.0	6086:
	07:17:22	15.4550	26846.5	1.7	158.2	0.1	6103:
	07:20:11	15.5019	26849.7	3.2	158.2	0.0	6120:
	07:23:00	15.5489	26849.8	0.1	158.2	0.0	6137:
	07:25:49	15.5958	26851.2	1.4	158.2	0.0	6154:
	07:28:38	15.6428	26853.7	2.5	158.2	0.0	6171:
	07:31:31	15.6908	26854.3	0.6	158.2	0.0	6188:
	07:34:20	15.7378	26856.9	2.6	158.2	0.0	6205:
	07:37:10	15.7850	26857.0	0.1	158.2	0.0	6222:
	07:39:59	15.8319	26859.2	2.1	158.2	0.0	6239:
	07:42:52	15.8800	26859.7	0.6	158.2	0.0	6256:
	07:45:41	15.9269	26863.4	3.7	158.2	0.0	6273:
	07:48:30	15.9739	26862.3	-1.1	158.2	0.0	6290:
	07:51:19	16.0208	26864.3	2.0	158.2	0.0	6307:
	07:54:08	16.0678	26865.2	1.0	158.2	0.0	6324:
	07:57:01	16.1158	26867.1	1.9	158.2	0.0	6341:
	07:59:50	16.1628	26868.6	1.5	158.2	0.0	6358:
	08:02:40	16.2100	26870.5	1.9	158.2	0.0	6375:
	08:05:29	16.2569	26872.7	2.2	158.2	0.0	6392:
	08:08:22	16.3050	27010.9	138.2	158.2	0.0	6409:
	08:11:11	16.3519	26989.7	-21.2	158.2	0.0	6426:
	08:14:00	16.3989	26984.8	-4.9	158.2	0.0	6443:
	08:16:49	16.4458	26987.9	3.1	158.2	0.0	6460:
	08:19:38	16.4928	26993.7	5.8	158.2	0.0	6477:
	08:22:31	16.5408	26999.8	6.1	158.2	0.0	6494:
	08:25:20	16.5878	27008.2	8.5	158.2	0.0	6511:
	08:28:10	16.6350	27008.9	0.7	158.2	0.0	6528:
	08:30:59	16.6819	27006.7	-2.2	158.2	0.0	6545:
	08:33:52	16.7300	27004.5	-2.3	158.2	0.0	6562:
	08:36:41	16.7769	27003.9	-0.6	158.2	0.0	6579:
	08:39:30	16.8239	27002.7	-1.2	158.2	0.0	6596:
	08:42:19	16.8708	27002.5	-0.3	158.2	0.0	6613:
	08:45:08	16.9178	27002.5	0.1	158.2	0.0	6630:
	08:48:01	16.9658	27003.6	1.0	158.2	0.0	6647:
	08:50:50	17.0128	27004.4	0.8	158.2	0.0	6664:
	08:53:40	17.0600	27004.5	0.1	158.2	0.0	6681:
	08:56:29	17.1069	27003.8	-0.8	158.2	0.0	6698:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	08:59:22	17.1550	27002.9	-0.8	158.2	0.0	6715:
	09:02:11	17.2019	27002.2	-0.8	158.2	0.0	6732:
	09:05:00	17.2489	27001.4	-0.8	158.2	0.0	6749:
	09:07:49	17.2958	27000.8	-0.6	158.2	0.0	6766:
	09:10:38	17.3428	27000.4	-0.4	158.2	0.0	6783:
	09:13:31	17.3908	27000.2	-0.2	158.2	0.0	6800:
	09:16:20	17.4378	27000.1	-0.1	158.2	0.0	6817:
	09:19:10	17.4850	26999.6	-0.6	158.2	0.0	6834:
	09:21:59	17.5319	27000.2	0.7	158.2	0.0	6851:
	09:24:52	17.5800	27000.3	0.1	158.2	0.0	6868:
	09:27:41	17.6269	27000.8	0.5	158.2	0.0	6885:
	09:30:30	17.6739	27001.4	0.6	158.2	0.0	6902:
	09:33:19	17.7208	27002.1	0.8	158.2	0.0	6919:
	09:36:08	17.7678	26996.7	-5.4	158.2	0.0	6936:
	09:39:01	17.8158	27003.9	7.2	158.2	0.0	6953:
	09:41:50	17.8628	27004.7	0.8	158.2	0.0	6970:
	09:44:40	17.9100	27006.0	1.2	158.2	0.0	6987:
	09:47:29	17.9569	27007.1	1.1	158.2	0.0	7004:
	09:50:22	18.0050	27008.4	1.3	158.2	0.0	7021:
	09:53:11	18.0519	27009.6	1.2	158.2	0.0	7038:
	09:56:00	18.0989	27010.9	1.3	158.2	0.0	7055:
	09:58:49	18.1458	27012.2	1.3	158.2	0.0	7072:
	10:01:38	18.1928	27013.8	1.6	158.2	0.0	7089:
	10:04:31	18.2408	27015.5	1.7	158.2	0.0	7106:
	10:07:20	18.2878	27017.2	1.7	158.2	0.0	7123:
	10:10:10	18.3350	27018.9	1.7	158.2	0.0	7140:
	10:12:59	18.3819	27020.6	1.7	158.2	0.0	7157:
	10:15:52	18.4300	27022.6	2.0	158.2	0.0	7174:
	10:18:41	18.4769	27024.5	1.9	158.2	0.0	7191:
	10:21:30	18.5239	27026.5	2.0	158.2	0.0	7208:
	10:24:19	18.5708	27028.4	1.9	158.2	0.0	7225:
	10:27:08	18.6178	27030.6	2.1	158.2	0.0	7242:
	10:30:01	18.6658	27032.7	2.1	158.2	0.0	7259:
	10:32:50	18.7128	27034.9	2.1	158.2	0.0	7276:
	10:35:40	18.7600	27036.9	2.1	158.2	0.0	7293:
	10:38:29	18.8069	27038.9	2.0	158.2	0.0	7310:
	10:41:22	18.8550	27041.1	2.1	158.2	0.0	7327:
	10:44:11	18.9019	27043.3	2.2	158.2	0.0	7344:
	10:47:00	18.9489	27045.3	2.1	158.2	0.0	7361:
	10:49:49	18.9958	27047.6	2.3	158.2	0.0	7378:
	10:52:38	19.0428	27049.8	2.2	158.2	0.0	7395:
	10:55:31	19.0908	27052.2	2.4	158.2	0.0	7412:
	10:58:20	19.1378	27054.4	2.1	158.2	0.0	7429:
	11:01:10	19.1850	27056.8	2.4	158.2	0.0	7446:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	11:03:59	19.2319	27059.1	2.3	158.2	0.0	7463:
	11:06:52	19.2800	27061.5	2.4	158.2	0.0	7480:
	11:09:41	19.3269	27064.2	2.7	158.2	0.0	7497:
	11:12:30	19.3739	27066.4	2.2	158.2	0.0	7514:
	11:15:19	19.4208	27068.9	2.4	158.2	0.0	7531:
	11:18:08	19.4678	27071.2	2.3	158.2	0.0	7548:
	11:21:01	19.5158	27073.7	2.6	158.2	0.0	7565:
	11:23:50	19.5628	27076.3	2.6	158.2	0.0	7582:
	11:26:40	19.6100	27078.9	2.6	158.2	0.0	7599:
	11:29:29	19.6569	27081.5	2.6	158.2	0.0	7616:
	11:32:22	19.7050	27084.0	2.6	158.2	0.0	7633:
	11:35:11	19.7519	27086.8	2.8	158.2	0.0	7650:
	11:38:00	19.7989	27089.6	2.8	158.2	0.0	7667:
	11:40:49	19.8458	27092.4	2.8	158.2	0.0	7684:
	11:43:38	19.8928	27095.2	2.8	158.2	0.0	7701:
	11:46:31	19.9408	27098.0	2.8	158.2	0.0	7718:
	11:49:20	19.9878	27101.0	3.0	158.2	0.0	7735:
	11:52:10	20.0350	27104.0	3.0	158.2	0.0	7752:
	11:54:59	20.0819	27106.8	2.8	158.2	0.0	7769:
	11:57:52	20.1300	27109.9	3.1	158.2	0.0	7786:
	12:00:41	20.1769	27113.0	3.0	158.2	0.0	7803:
	12:03:30	20.2239	27116.0	3.0	158.2	0.0	7820:
	12:06:19	20.2708	27119.2	3.2	158.2	0.0	7837:
	12:09:08	20.3178	27122.3	3.1	158.2	0.0	7854:
	12:12:01	20.3658	27125.4	3.1	158.2	0.0	7871:
	12:14:50	20.4128	27128.4	3.0	158.2	0.0	7888:
	12:17:40	20.4600	27131.4	3.0	158.2	0.0	7905:
	12:20:29	20.5069	27134.2	2.8	158.2	0.0	7922:
	12:23:22	20.5550	27137.0	2.8	158.2	0.0	7939:
	12:26:11	20.6019	27139.7	2.6	158.2	0.0	7956:
	12:29:00	20.6489	27141.9	2.3	158.2	0.0	7973:
	12:31:49	20.6958	27144.2	2.3	158.2	0.0	7990:
	12:34:38	20.7428	27146.1	1.9	158.2	0.0	8007:
	12:37:31	20.7908	27147.9	1.8	158.2	0.0	8024:
	12:40:20	20.8378	27149.5	1.6	158.2	0.0	8041:
	12:43:10	20.8850	27150.9	1.4	158.2	0.0	8058:
	12:45:59	20.9319	27152.1	1.2	158.2	0.0	8075:
	12:48:52	20.9800	27153.2	1.1	158.2	0.0	8092:
	12:51:41	21.0269	27154.5	1.2	158.2	0.0	8109:
	12:54:30	21.0739	27155.4	0.9	158.2	0.0	8126:
	12:57:19	21.1208	27156.6	1.2	158.2	0.0	8143:
	13:00:08	21.1678	27157.6	1.0	158.2	0.0	8160:
	13:03:01	21.2158	27158.7	1.1	158.2	0.0	8177:
	13:05:50	21.2628	27159.6	0.9	158.2	0.0	8194:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	13:08:40	21.3100	27160.6	1.0	158.2	0.0	8211:
	13:11:29	21.3569	27161.5	1.0	158.2	0.0	8228:
	13:14:22	21.4050	27162.4	0.9	158.2	0.0	8245:
	13:17:11	21.4519	27163.3	0.9	158.2	0.0	8262:
	13:20:00	21.4989	27164.1	0.8	158.2	0.0	8279:
	13:22:49	21.5458	27165.0	0.9	158.2	0.0	8296:
	13:25:38	21.5928	27165.8	0.8	158.2	0.0	8313:
	13:28:31	21.6408	27166.8	1.0	158.2	0.0	8330:
	13:31:20	21.6878	27167.7	0.9	158.2	0.0	8347:
	13:34:10	21.7350	27168.4	0.7	158.2	0.0	8364:
	13:36:59	21.7819	27169.2	0.8	158.2	0.0	8381:
	13:39:52	21.8300	27169.9	0.7	158.2	0.0	8398:
	13:42:41	21.8769	27170.8	0.9	158.2	0.0	8415:
	13:45:30	21.9239	27171.6	0.8	158.2	0.0	8432:
	13:48:19	21.9708	27172.4	0.8	158.2	0.0	8449:
	13:51:08	22.0178	27173.2	0.8	158.2	0.0	8466:
	13:54:01	22.0658	27173.9	0.8	158.2	0.0	8483:
	13:56:50	22.1128	27174.8	0.8	158.2	0.0	8500:
	13:59:40	22.1600	27175.5	0.7	158.2	0.0	8517:
	14:02:29	22.2069	27176.1	0.6	158.2	0.0	8534:
	14:05:22	22.2550	27177.0	0.9	158.2	0.0	8551:
	14:08:11	22.3019	27177.7	0.8	158.2	0.0	8568:
	14:11:00	22.3489	27178.7	1.0	158.2	0.0	8585:
	14:13:49	22.3958	27179.2	0.5	158.2	0.0	8602:
	14:16:38	22.4428	27180.0	0.8	158.2	0.0	8619:
	14:19:31	22.4908	27180.7	0.7	158.2	0.0	8636:
	14:22:20	22.5378	27181.3	0.6	158.2	0.0	8653:
	14:25:10	22.5850	27182.0	0.7	158.2	0.0	8670:
	14:27:59	22.6319	27182.7	0.7	158.2	0.0	8687:
	14:30:52	22.6800	27183.5	0.8	158.2	0.0	8704:
	14:33:41	22.7269	27184.1	0.6	158.2	0.0	8721:
	14:36:30	22.7739	27184.8	0.7	158.2	0.0	8738:
	14:39:19	22.8208	27185.3	0.6	158.2	0.0	8755:
	14:42:08	22.8678	27185.9	0.6	158.2	0.0	8772:
	14:45:01	22.9158	27186.3	0.5	158.2	0.0	8789:
	14:47:50	22.9628	27187.2	0.8	158.2	0.0	8806:
	14:50:40	23.0100	27187.8	0.6	158.2	0.0	8823:
	14:53:29	23.0569	27188.2	0.4	158.2	0.0	8840:
	14:56:22	23.1050	27188.9	0.7	158.2	0.0	8857:
	14:59:11	23.1519	27189.7	0.8	158.2	0.0	8874:
	15:02:00	23.1989	27191.4	1.7	158.2	0.0	8891:
	15:04:49	23.2458	27193.2	1.9	158.2	0.0	8908:
	15:07:38	23.2928	27195.7	2.4	158.2	0.0	8925:
	15:10:31	23.3408	27196.1	0.4	158.2	0.0	8942:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	15:13:20	23.3878	27194.3	-1.7	158.2	0.0	8959:
	15:16:10	23.4350	27195.5	1.2	158.2	0.0	8976:
	15:18:59	23.4819	27196.7	1.2	158.2	0.0	8993:
	15:21:52	23.5300	27199.0	2.3	158.2	0.0	9010:
	15:24:41	23.5769	27201.4	2.4	158.2	0.0	9027:
	15:27:30	23.6239	27199.2	-2.2	158.2	0.0	9044:
	15:30:19	23.6708	27198.1	-1.2	158.2	0.0	9061:
	15:33:08	23.7178	27197.7	-0.4	158.2	0.0	9078:
	15:36:01	23.7658	27197.7	0.0	158.2	0.0	9095:
	15:38:50	23.8128	27197.7	0.0	158.2	0.0	9112:
	15:41:40	23.8600	27197.9	0.2	158.2	0.0	9129:
	15:44:29	23.9069	27198.1	0.2	158.2	0.0	9146:
	15:47:22	23.9550	27198.3	0.2	158.2	0.0	9163:
	15:50:11	24.0019	27198.7	0.4	158.2	0.0	9180:
	15:53:00	24.0489	27199.9	1.2	158.2	0.0	9197:
	15:55:49	24.0958	27202.5	2.6	158.2	0.0	9214:
	15:58:38	24.1428	27203.8	1.3	158.2	0.0	9231:
	16:01:31	24.1908	27205.1	1.3	158.2	0.0	9248:
	16:04:20	24.2378	27206.4	1.3	158.2	0.0	9265:
	16:07:10	24.2850	27203.7	-2.8	158.2	0.0	9282:
	16:09:59	24.3319	27203.7	0.1	158.2	0.0	9299:
	16:12:52	24.3800	27203.3	-0.4	158.2	0.0	9316:
	16:15:41	24.4269	27203.3	0.0	158.2	0.0	9333:
	16:18:30	24.4739	27203.3	0.0	158.2	0.0	9350:
	16:21:19	24.5208	27203.4	0.1	158.2	0.0	9367:
	16:24:08	24.5678	27203.5	0.1	158.2	0.0	9384:
	16:27:01	24.6158	27203.6	0.1	158.2	0.0	9401:
	16:29:50	24.6628	27204.0	0.4	158.2	0.0	9418:
	16:32:40	24.7100	27204.0	0.0	158.2	0.0	9435:
	16:35:29	24.7569	27204.4	0.4	158.2	0.0	9452:
	16:38:22	24.8050	27204.6	0.2	158.2	0.0	9469:
	16:41:11	24.8519	27204.9	0.3	158.2	0.0	9486:
	16:44:00	24.8989	27204.9	0.0	158.2	0.0	9503:
	16:46:49	24.9458	27205.2	0.3	158.2	0.0	9520:
	16:49:38	24.9928	27205.6	0.3	158.2	0.0	9537:
	16:52:31	25.0408	27205.8	0.2	158.2	0.0	9554:
	16:55:20	25.0878	27206.3	0.5	158.2	0.0	9571:
	16:58:10	25.1350	27206.5	0.2	158.2	0.0	9588:
	17:00:59	25.1819	27206.8	0.3	158.2	0.0	9605:
	17:03:52	25.2300	27207.0	0.3	158.2	0.0	9622:
	17:06:41	25.2769	27207.3	0.3	158.2	0.0	9639:
	17:09:30	25.3239	27207.6	0.3	158.2	0.0	9656:
	17:12:19	25.3708	27207.9	0.3	158.2	0.0	9673:
	17:15:08	25.4178	27208.1	0.2	158.2	0.0	9690:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	17:18:01	25.4658	27208.6	0.5	158.2	0.0	9707:
	17:20:50	25.5128	27208.8	0.2	158.2	0.0	9724:
	17:23:40	25.5600	27209.2	0.4	158.2	0.0	9741:
	17:26:29	25.6069	27210.1	0.9	158.2	0.0	9758:
	17:29:22	25.6550	27211.0	0.9	158.2	0.0	9775:
	17:32:11	25.7019	27212.6	1.6	158.2	0.0	9792:
	17:35:00	25.7489	27215.4	2.8	158.2	0.0	9809:
	17:37:49	25.7958	27214.4	-1.0	158.2	0.0	9826:
	17:40:38	25.8428	27212.7	-1.7	158.2	0.0	9843:
	17:43:31	25.8908	27211.9	-0.8	158.2	0.0	9860:
	17:46:20	25.9378	27211.6	-0.3	158.2	0.0	9877:
	17:49:10	25.9850	27211.7	0.1	158.2	0.0	9894:
	17:51:59	26.0319	27211.7	0.0	158.2	0.0	9911:
	17:54:52	26.0800	27211.9	0.2	158.2	0.0	9928:
	17:57:41	26.1269	27212.0	0.1	158.2	0.0	9945:
	18:00:30	26.1739	27212.2	0.2	158.2	0.0	9962:
	18:03:19	26.2208	27212.5	0.3	158.2	0.0	9979:
	18:06:08	26.2678	27212.7	0.1	158.2	0.0	9996:
	18:09:01	26.3158	27213.0	0.3	158.2	0.0	10013:
	18:11:50	26.3628	27213.2	0.1	158.2	0.0	10030:
	18:14:40	26.4100	27213.4	0.3	158.2	0.0	10047:
	18:17:29	26.4569	27213.6	0.1	158.2	0.0	10064:
	18:20:22	26.5050	27213.9	0.3	158.2	0.0	10081:
	18:23:11	26.5519	27214.2	0.3	158.2	0.0	10098:
	18:26:00	26.5989	27214.4	0.2	158.2	0.0	10115:
	18:28:49	26.6458	27214.8	0.4	158.2	0.0	10132:
	18:31:38	26.6928	27215.0	0.2	158.2	0.0	10149:
	18:34:31	26.7408	27215.2	0.1	158.2	0.0	10166:
	18:37:20	26.7878	27215.9	0.8	158.2	0.0	10183:
	18:40:10	26.8350	27215.6	-0.3	158.2	0.0	10200:
	18:42:59	26.8819	27215.9	0.3	158.2	0.0	10217:
	18:45:52	26.9300	27216.1	0.2	158.2	0.0	10234:
	18:48:41	26.9769	27216.5	0.3	158.2	0.0	10251:
	18:51:30	27.0239	27216.8	0.3	158.2	0.0	10268:
	18:54:19	27.0708	27217.0	0.2	158.2	0.0	10285:
	18:57:08	27.1178	27217.2	0.3	158.2	0.0	10302:
	19:00:01	27.1658	27217.5	0.3	158.2	0.0	10319:
	19:02:50	27.2128	27217.9	0.4	158.2	0.0	10336:
	19:05:40	27.2600	27218.1	0.1	158.2	0.0	10353:
	19:08:29	27.3069	27218.4	0.3	158.2	0.0	10370:
	19:11:22	27.3550	27218.6	0.2	158.2	0.0	10387:
	19:14:11	27.4019	27219.0	0.3	158.2	0.0	10404:
	19:17:00	27.4489	27219.4	0.5	158.2	0.0	10421:
	19:19:49	27.4958	27219.5	0.1	158.2	0.0	10438:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited LSD: P-66-A
Ranger Fort Liard Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	19:22:38	27.5428	27219.9	0.3	158.2	0.0	10455:
	19:25:31	27.5908	27220.5	0.6	158.2	0.0	10472:
	19:28:20	27.6378	27221.9	1.4	158.2	0.0	10489:
	19:31:10	27.6850	27226.0	4.1	158.2	0.0	10506:
	19:33:59	27.7319	27226.2	0.2	158.2	0.0	10523:
	19:36:52	27.7800	27223.7	-2.5	158.2	0.0	10540:
	19:39:41	27.8269	27222.5	-1.2	158.2	0.0	10557:
	19:42:30	27.8739	27221.9	-0.6	158.2	0.0	10574:
	19:45:19	27.9208	27221.7	-0.2	158.2	0.0	10591:
	19:48:08	27.9678	27221.7	0.0	158.2	0.0	10608:
	19:51:01	28.0158	27221.8	0.1	158.2	0.0	10625:
	19:53:50	28.0628	27221.8	0.0	158.2	0.0	10642:
	19:56:40	28.1100	27221.9	0.1	158.2	0.0	10659:
	19:59:29	28.1569	27222.1	0.1	158.2	0.0	10676:
	20:02:22	28.2050	27222.3	0.2	158.2	0.0	10693:
	20:05:11	28.2519	27222.5	0.3	158.2	0.0	10710:
	20:08:00	28.2989	27222.8	0.3	158.2	0.0	10727:
	20:10:49	28.3458	27222.9	0.1	158.2	0.0	10744:
	20:13:38	28.3928	27223.1	0.2	158.2	0.0	10761:
	20:16:31	28.4408	27223.3	0.2	158.2	0.0	10778:
	20:19:20	28.4878	27223.6	0.3	158.2	0.0	10795:
	20:22:10	28.5350	27223.7	0.1	158.2	0.0	10812:
	20:24:59	28.5819	27224.0	0.3	158.2	0.0	10829:
	20:27:52	28.6300	27224.2	0.2	158.2	0.0	10846:
	20:30:41	28.6769	27224.4	0.2	158.2	0.0	10863:
	20:33:30	28.7239	27224.7	0.3	158.2	0.0	10880:
	20:36:19	28.7708	27225.0	0.3	158.2	0.0	10897:
	20:39:08	28.8178	27225.2	0.2	158.2	0.0	10914:
	20:42:01	28.8658	27225.4	0.2	158.2	0.0	10931:
	20:44:50	28.9128	27225.5	0.1	158.2	0.0	10948:
	20:47:40	28.9600	27225.8	0.3	158.2	0.0	10965:
	20:50:29	29.0069	27225.9	0.1	158.2	0.0	10982:
	20:53:22	29.0550	27226.2	0.3	158.2	0.0	10999:
	20:56:11	29.1019	27226.5	0.3	158.2	0.0	11016:
	20:59:00	29.1489	27226.7	0.2	158.2	0.0	11033:
	21:01:49	29.1958	27226.8	0.1	158.2	0.0	11050:
	21:04:38	29.2428	27227.1	0.3	158.2	0.0	11067:
	21:07:31	29.2908	27227.3	0.2	158.2	0.0	11084:
	21:10:20	29.3378	27227.5	0.2	158.2	0.0	11101:
	21:13:10	29.3850	27227.8	0.3	158.2	0.0	11118:
	21:15:59	29.4319	27227.9	0.1	158.2	0.0	11135:
	21:18:52	29.4800	27228.1	0.2	158.2	0.0	11152:
	21:21:41	29.5269	27228.3	0.2	158.2	0.0	11169:
	21:24:30	29.5739	27228.7	0.3	158.2	0.0	11186:

Absolute pressures are converted to gauge pressures
assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	21:27:19	29.6208	27228.8	0.1	158.2	0.0	11203:
	21:30:08	29.6678	27229.1	0.3	158.2	0.0	11220:
	21:33:01	29.7158	27229.3	0.2	158.2	0.0	11237:
	21:35:50	29.7628	27229.4	0.1	158.2	0.0	11254:
	21:38:40	29.8100	27229.7	0.3	158.2	0.0	11271:
	21:41:29	29.8569	27229.9	0.1	158.2	0.0	11288:
	21:44:22	29.9050	27230.1	0.3	158.2	0.0	11305:
	21:47:11	29.9519	27230.3	0.1	158.2	0.0	11322:
	21:50:00	29.9989	27230.5	0.2	158.2	0.0	11339:
	21:52:49	30.0458	27230.8	0.3	158.2	0.0	11356:
	21:55:38	30.0928	27231.0	0.1	158.2	0.0	11373:
	21:58:31	30.1408	27231.2	0.2	158.2	0.0	11390:
	22:01:20	30.1878	27231.3	0.1	158.2	0.0	11407:
	22:04:10	30.2350	27231.5	0.2	158.2	0.0	11424:
	22:06:59	30.2819	27231.8	0.3	158.2	0.0	11441:
	22:09:52	30.3300	27231.9	0.1	158.2	0.0	11458:
	22:12:41	30.3769	27232.1	0.2	158.2	0.0	11475:
	22:15:30	30.4239	27232.4	0.3	158.2	0.0	11492:
	22:18:19	30.4708	27232.5	0.1	158.2	0.0	11509:
	22:21:08	30.5178	27232.7	0.2	158.2	0.0	11526:
	22:24:01	30.5658	27232.8	0.1	158.2	0.0	11543:
	22:26:50	30.6128	27233.1	0.3	158.2	0.0	11560:
	22:29:40	30.6600	27233.3	0.2	158.2	0.0	11577:
	22:32:29	30.7069	27233.5	0.2	158.2	0.0	11594:
	22:35:22	30.7550	27233.6	0.1	158.2	0.0	11611:
	22:38:11	30.8019	27233.9	0.3	158.2	0.0	11628:
	22:41:00	30.8489	27234.1	0.1	158.2	0.0	11645:
	22:43:49	30.8958	27234.3	0.2	158.2	0.0	11662:
	22:46:38	30.9428	27234.4	0.1	158.2	0.0	11679:
	22:49:31	30.9908	27234.6	0.2	158.2	0.0	11696:
	22:52:20	31.0378	27234.8	0.2	158.2	0.0	11713:
	22:55:10	31.0850	27235.0	0.1	158.2	0.0	11730:
	22:57:59	31.1319	27235.2	0.2	158.2	0.0	11747:
	23:00:52	31.1800	27235.3	0.1	158.2	0.0	11764:
	23:03:41	31.2269	27235.5	0.2	158.2	0.0	11781:
	23:06:30	31.2739	27235.6	0.1	158.2	0.0	11798:
	23:09:19	31.3208	27235.8	0.1	158.2	0.0	11815:
	23:12:08	31.3678	27236.0	0.2	158.2	0.0	11832:
	23:15:01	31.4158	27236.2	0.2	158.2	0.0	11849:
	23:17:50	31.4628	27236.4	0.2	158.2	0.0	11866:
	23:20:40	31.5100	27236.5	0.1	158.2	0.0	11883:
	23:23:29	31.5569	27236.6	0.1	158.2	0.0	11900:
	23:26:22	31.6050	27236.8	0.2	158.2	0.0	11917:
	23:29:11	31.6519	27237.0	0.2	158.2	0.0	11934:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	23:32:00	31.6989	27237.2	0.1	158.2	0.0	11951:
	23:34:49	31.7458	27237.3	0.1	158.2	0.0	11968:
	23:37:38	31.7928	27237.4	0.1	158.2	0.0	11985:
	23:40:31	31.8408	27237.6	0.2	158.2	0.0	12002:
	23:43:20	31.8878	27237.8	0.2	158.2	0.0	12019:
	23:46:10	31.9350	27237.9	0.1	158.2	0.0	12036:
	23:48:59	31.9819	27238.1	0.2	158.2	0.0	12053:
	23:51:52	32.0300	27238.3	0.2	158.2	0.0	12070:
	23:54:41	32.0769	27238.4	0.1	158.2	0.0	12087:
	23:57:30	32.1239	27238.6	0.2	158.2	0.0	12104:
1998/07/23	00:00:19	32.1708	27238.7	0.1	158.2	0.0	12121:
	00:03:08	32.2178	27239.0	0.2	158.2	0.0	12138:
	00:06:01	32.2658	27239.1	0.1	158.2	0.0	12155:
	00:08:50	32.3128	27239.3	0.2	158.2	0.0	12172:
	00:11:40	32.3600	27239.4	0.1	158.2	0.0	12189:
	00:14:29	32.4069	27239.6	0.1	158.2	0.0	12206:
	00:17:22	32.4550	27239.7	0.1	158.2	0.0	12223:
	00:20:11	32.5019	27239.9	0.2	158.2	0.0	12240:
	00:23:00	32.5489	27240.1	0.2	158.2	0.0	12257:
	00:25:49	32.5958	27240.3	0.1	158.2	0.0	12274:
	00:28:38	32.6428	27240.3	0.1	158.2	0.0	12291:
	00:31:31	32.6908	27240.5	0.2	158.2	0.0	12308:
	00:34:20	32.7378	27240.6	0.1	158.2	0.0	12325:
	00:37:10	32.7850	27240.8	0.2	158.2	0.0	12342:
	00:39:59	32.8319	27240.9	0.1	158.2	0.0	12359:
	00:42:52	32.8800	27241.2	0.3	158.2	0.0	12376:
	00:45:41	32.9269	27241.3	0.1	158.2	0.0	12393:
	00:48:30	32.9739	27241.4	0.1	158.2	0.0	12410:
	00:51:19	33.0208	27241.6	0.1	158.2	0.0	12427:
	00:54:08	33.0678	27241.7	0.1	158.2	0.0	12444:
	00:57:01	33.1158	27241.9	0.2	158.2	0.0	12461:
	00:59:50	33.1628	27242.1	0.1	158.2	0.0	12478:
	01:02:40	33.2100	27242.1	0.1	158.2	0.0	12495:
	01:05:29	33.2569	27242.3	0.1	158.2	0.0	12512:
	01:08:22	33.3050	27242.5	0.3	158.2	0.0	12529:
	01:11:11	33.3519	27242.5	0.0	158.2	0.0	12546:
	01:14:00	33.3989	27242.8	0.3	158.2	0.0	12563:
	01:16:49	33.4458	27243.0	0.1	158.2	0.0	12580:
	01:19:38	33.4928	27243.0	0.1	158.2	0.0	12597:
	01:22:31	33.5408	27243.2	0.2	158.2	0.0	12614:
	01:25:20	33.5878	27243.3	0.1	158.2	0.0	12631:
	01:28:10	33.6350	27243.5	0.2	158.2	0.0	12648:
	01:30:59	33.6819	27243.6	0.1	158.2	0.0	12665:
	01:33:52	33.7300	27243.7	0.1	158.2	0.0	12682:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	01:36:41	33.7769	27244.0	0.3	158.2	0.0	12699:
	01:39:30	33.8239	27244.0	0.0	158.2	0.0	12716:
	01:42:19	33.8708	27244.2	0.2	158.2	0.0	12733:
	01:45:08	33.9178	27244.3	0.1	158.2	0.0	12750:
	01:48:01	33.9658	27244.3	0.1	158.2	0.0	12767:
	01:50:50	34.0128	27244.6	0.3	158.2	0.0	12784:
	01:53:40	34.0600	27244.7	0.1	158.2	0.0	12801:
	01:56:29	34.1069	27245.0	0.2	158.2	0.0	12818:
	01:59:22	34.1550	27245.0	0.1	158.2	0.0	12835:
	02:02:11	34.2019	27245.2	0.1	158.2	0.0	12852:
	02:05:00	34.2489	27245.2	0.1	158.2	0.0	12869:
	02:07:49	34.2958	27245.4	0.2	158.2	0.0	12886:
	02:10:38	34.3428	27245.6	0.2	158.2	0.0	12903:
	02:13:31	34.3908	27245.7	0.1	158.2	0.0	12920:
	02:16:20	34.4378	27245.8	0.1	158.2	0.0	12937:
	02:19:10	34.4850	27245.9	0.1	158.2	0.0	12954:
	02:21:59	34.5319	27246.1	0.1	158.2	0.0	12971:
	02:24:52	34.5800	27246.3	0.2	158.2	0.0	12988:
	02:27:41	34.6269	27246.4	0.1	158.2	0.0	13005:
	02:30:30	34.6739	27246.4	0.0	158.2	0.0	13022:
	02:33:19	34.7208	27246.5	0.1	158.2	0.0	13039:
	02:36:08	34.7678	27246.7	0.2	158.2	0.0	13056:
	02:39:01	34.8158	27247.0	0.2	158.2	0.0	13073:
	02:41:50	34.8628	27247.0	0.1	158.2	0.0	13090:
	02:44:40	34.9100	27247.1	0.1	158.2	0.0	13107:
	02:47:29	34.9569	27247.2	0.1	158.2	0.0	13124:
	02:50:22	35.0050	27247.3	0.1	158.2	0.0	13141:
	02:53:11	35.0519	27247.4	0.1	158.2	0.0	13158:
	02:56:00	35.0989	27247.6	0.1	158.2	0.0	13175:
	02:58:49	35.1458	27247.6	0.1	158.2	0.0	13192:
	03:01:38	35.1928	27247.8	0.2	158.2	0.0	13209:
	03:04:31	35.2408	27248.1	0.2	158.2	0.0	13226:
	03:07:20	35.2878	27248.1	0.0	158.2	0.0	13243:
	03:10:10	35.3350	27248.3	0.2	158.2	0.0	13260:
	03:12:59	35.3819	27248.4	0.1	158.2	0.0	13277:
	03:15:52	35.4300	27248.5	0.1	158.2	0.0	13294:
	03:18:41	35.4769	27248.5	0.1	158.2	0.0	13311:
	03:21:30	35.5239	27248.7	0.1	158.2	0.0	13328:
	03:24:19	35.5708	27248.7	0.1	158.2	0.0	13345:
	03:27:08	35.6178	27249.0	0.2	158.2	0.0	13362:
	03:30:01	35.6658	27249.0	0.0	158.2	0.0	13379:
	03:32:50	35.7128	27249.3	0.3	158.2	0.0	13396:
	03:35:40	35.7600	27249.4	0.1	158.2	0.0	13413:
	03:38:29	35.8069	27249.4	0.1	158.2	0.0	13430:

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Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	03:41:22	35.8550	27249.6	0.1	158.2	0.0	13447:
	03:44:11	35.9019	27249.6	0.1	158.2	0.0	13464:
	03:47:00	35.9489	27249.8	0.1	158.2	0.0	13481:
	03:49:49	35.9958	27249.9	0.1	158.2	0.0	13498:
	03:52:38	36.0428	27250.0	0.1	158.2	0.0	13515:
	03:55:31	36.0908	27250.1	0.1	158.2	0.0	13532:
	03:58:20	36.1378	27250.3	0.1	158.2	0.0	13549:
	04:01:10	36.1850	27250.3	0.1	158.2	0.0	13566:
	04:03:59	36.2319	27250.5	0.1	158.2	0.0	13583:
	04:06:52	36.2800	27250.6	0.1	158.2	0.0	13600:
	04:09:41	36.3269	27250.7	0.1	158.2	0.0	13617:
	04:12:30	36.3739	27250.7	0.0	158.2	0.0	13634:
	04:15:19	36.4208	27251.0	0.2	158.2	0.0	13651:
	04:18:08	36.4678	27251.0	0.1	158.2	0.0	13668:
	04:21:01	36.5158	27251.2	0.1	158.2	0.0	13685:
	04:23:50	36.5628	27251.2	0.1	158.2	0.0	13702:
	04:26:40	36.6100	27251.4	0.1	158.2	0.0	13719:
	04:29:29	36.6569	27251.4	0.1	158.2	0.0	13736:
	04:32:22	36.7050	27251.6	0.2	158.2	0.0	13753:
	04:35:11	36.7519	27251.8	0.2	158.2	0.0	13770:
	04:38:00	36.7989	27251.8	0.0	158.2	0.0	13787:
	04:40:49	36.8458	27251.9	0.1	158.2	0.0	13804:
	04:43:38	36.8928	27252.1	0.1	158.2	0.0	13821:
	04:46:31	36.9408	27252.1	0.1	158.2	0.0	13838:
	04:49:20	36.9878	27252.3	0.1	158.2	0.0	13855:
	04:52:10	37.0350	27252.4	0.1	158.2	0.0	13872:
	04:54:59	37.0819	27252.5	0.1	158.2	0.0	13889:
	04:57:52	37.1300	27252.5	0.0	158.2	0.0	13906:
	05:00:41	37.1769	27252.7	0.2	158.2	0.0	13923:
	05:03:30	37.2239	27252.8	0.1	158.2	0.0	13940:
	05:06:19	37.2708	27252.9	0.1	158.2	0.0	13957:
	05:09:08	37.3178	27253.0	0.1	158.2	0.0	13974:
	05:12:01	37.3658	27253.2	0.1	158.2	0.0	13991:
	05:14:50	37.4128	27253.2	0.0	158.2	0.0	14008:
	05:17:40	37.4600	27253.4	0.2	158.2	0.0	14025:
	05:20:29	37.5069	27253.4	0.0	158.2	0.0	14042:
	05:23:22	37.5550	27253.6	0.2	158.2	0.0	14059:
	05:26:11	37.6019	27253.6	0.1	158.2	0.0	14076:
	05:29:00	37.6489	27253.8	0.1	158.2	0.0	14093:
	05:31:49	37.6958	27253.8	0.1	158.2	0.0	14110:
	05:34:38	37.7428	27254.0	0.1	158.2	0.0	14127:
	05:37:31	37.7908	27254.1	0.1	158.2	0.0	14144:
	05:40:20	37.8378	27254.1	0.1	158.2	0.0	14161:
	05:43:10	37.8850	27254.3	0.1	158.2	0.0	14178:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
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GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	05:45:59	37.9319	27254.3	0.1	158.2	0.0	14195:
	05:48:52	37.9800	27254.5	0.1	158.2	0.0	14212:
	05:51:41	38.0269	27254.6	0.1	158.2	0.0	14229:
	05:54:30	38.0739	27254.7	0.1	158.2	0.0	14246:
	05:57:19	38.1208	27254.7	0.1	158.2	0.0	14263:
	06:00:08	38.1678	27254.9	0.2	158.2	0.0	14280:
	06:03:01	38.2158	27254.9	0.0	158.2	0.0	14297:
	06:05:50	38.2628	27255.1	0.1	158.2	0.0	14314:
	06:08:40	38.3100	27255.2	0.1	158.2	0.0	14331:
	06:11:29	38.3569	27255.2	0.0	158.2	0.0	14348:
	06:14:22	38.4050	27255.4	0.2	158.2	0.0	14365:
	06:17:11	38.4519	27255.5	0.1	158.2	0.0	14382:
	06:20:00	38.4989	27255.6	0.1	158.2	0.0	14399:
	06:22:49	38.5458	27255.6	0.1	158.2	0.0	14416:
	06:25:38	38.5928	27255.8	0.1	158.2	0.0	14433:
	06:28:31	38.6408	27255.8	0.1	158.2	0.0	14450:
	06:31:20	38.6878	27255.9	0.1	158.2	0.0	14467:
	06:34:10	38.7350	27256.2	0.3	158.2	0.0	14484:
	06:36:59	38.7819	27256.1	-0.1	158.2	0.0	14501:
	06:39:52	38.8300	27256.1	0.0	158.2	0.0	14518:
	06:42:41	38.8769	27158.6	-97.5	158.2	0.0	14535:
	06:45:30	38.9239	26886.1	-272.5	157.9	-0.2	14552:
	06:48:19	38.9708	26712.9	-173.2	157.5	-0.4	14569:
	06:51:08	39.0178	26690.5	-22.4	157.1	-0.4	14586:
	06:54:01	39.0658	26685.6	-5.0	156.7	-0.3	14603:
	06:56:50	39.1128	26681.8	-3.7	156.5	-0.2	14620:
	06:59:40	39.1600	26679.4	-2.5	156.3	-0.2	14637:
	07:02:29	39.2069	26677.4	-1.9	156.2	-0.1	14654:
	07:05:22	39.2550	26676.1	-1.3	156.1	-0.1	14671:
	07:08:11	39.3019	26675.3	-0.8	156.1	-0.1	14688:
	07:11:00	39.3489	26674.7	-0.6	156.1	0.0	14705:
	07:13:49	39.3958	26674.3	-0.4	156.0	-0.1	14722:
	07:16:38	39.4428	26674.1	-0.1	156.0	0.0	14739:
	07:19:31	39.4908	26673.9	-0.2	156.0	0.0	14756:
	07:22:20	39.5378	26673.6	-0.3	155.9	-0.1	14773:
	07:25:10	39.5850	26673.8	0.1	155.9	0.0	14790:
	07:27:59	39.6319	26673.6	-0.2	155.9	0.0	14807:
	07:30:52	39.6800	26673.6	0.1	155.9	0.0	14824:
	07:33:41	39.7269	26673.8	0.1	155.9	0.0	14841:
	07:36:30	39.7739	26673.7	-0.1	155.9	0.0	14858:
	07:39:19	39.8208	26673.8	0.1	155.9	0.0	14875:
	07:42:08	39.8678	26673.8	0.1	155.9	0.0	14892:
	07:45:01	39.9158	26673.9	0.1	155.9	0.0	14909:
	07:47:50	39.9628	26673.8	-0.1	155.9	0.0	14926:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
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GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	07:50:40	40.0100	26673.8	0.1	155.9	0.0	14943:
	07:53:29	40.0569	26673.7	-0.1	155.9	0.0	14960:
	07:56:22	40.1050	26673.6	-0.1	155.9	0.0	14977:
	07:59:11	40.1519	26649.4	-24.3	155.9	-0.1	14994:
	08:02:00	40.1989	26650.3	1.0	155.8	-0.1	15011:
	08:04:49	40.2458	26649.5	-0.8	155.7	-0.1	15028:
	08:07:38	40.2928	26629.2	-20.3	155.6	-0.1	15045:
	08:10:31	40.3408	26628.5	-0.6	155.4	-0.2	15062:
	08:13:20	40.3878	26627.6	-0.9	155.3	-0.1	15079:
	08:16:10	40.4350	26627.5	-0.1	155.3	-0.1	15096:
	08:18:59	40.4819	26572.6	-55.0	155.1	-0.2	15113:
	08:21:52	40.5300	26533.7	-38.8	154.1	-1.0	15130:
	08:24:41	40.5769	26463.1	-70.7	152.4	-1.6	15147:
	08:27:30	40.6239	26394.6	-68.5	151.6	-0.9	15164:
	08:30:19	40.6708	26331.0	-63.6	150.7	-0.9	15181:
	08:33:08	40.7178	26269.6	-61.4	149.7	-1.0	15198:
	08:36:01	40.7658	26204.2	-65.4	148.6	-1.1	15215:
	08:38:50	40.8128	26140.8	-63.4	147.4	-1.2	15232:
	08:41:40	40.8600	26078.3	-62.5	146.1	-1.3	15249:
	08:44:29	40.9069	26018.3	-60.1	144.6	-1.6	15266:
	08:47:22	40.9550	25955.7	-62.5	142.8	-1.8	15283:
	08:50:11	41.0019	25891.4	-64.3	140.9	-1.8	15300:
	08:53:00	41.0489	25822.1	-69.3	139.1	-1.9	15317:
	08:55:49	41.0958	25753.6	-68.5	137.2	-1.8	15334:
	08:58:38	41.1428	25682.6	-71.0	135.4	-1.8	15351:
	09:01:31	41.1908	25613.5	-69.2	133.6	-1.8	15368:
	09:04:20	41.2378	25542.9	-70.5	131.8	-1.8	15385:
	09:07:10	41.2850	25470.2	-72.7	129.9	-1.8	15402:
	09:09:59	41.3319	25399.0	-71.2	128.1	-1.9	15419:
	09:12:52	41.3800	25325.2	-73.8	126.1	-2.0	15436:
	09:15:41	41.4269	25246.5	-78.7	124.3	-1.8	15453:
	09:18:30	41.4739	25170.5	-76.1	122.7	-1.6	15470:
	09:21:19	41.5208	25096.3	-74.2	120.9	-1.7	15487:
	09:24:08	41.5678	25017.1	-79.2	119.2	-1.8	15504:
	09:27:01	41.6158	24928.9	-88.3	117.3	-1.9	15521:
	09:29:50	41.6628	24828.9	-100.0	115.4	-1.9	15538:
	09:32:40	41.7100	24719.5	-109.4	113.7	-1.7	15555:
	09:35:29	41.7569	24608.4	-111.0	112.1	-1.7	15572:
	09:38:22	41.8050	24498.1	-110.4	109.9	-2.1	15589:
	09:41:11	41.8519	24374.4	-123.6	107.8	-2.1	15606:
	09:44:00	41.8989	24251.0	-123.4	106.0	-1.8	15623:
	09:46:49	41.9458	24130.0	-121.0	103.6	-2.4	15640:
	09:49:38	41.9928	24004.0	-126.0	100.3	-3.3	15657:
	09:52:31	42.0408	23871.0	-133.0	96.8	-3.5	15674:

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Reporting on an interval of 1 in 17 data points.

GENCO PRESSURE CONTROL LIMITED

(403) 250-3800 Calgary, AB.

PRESSURE TRANSIENT TEST DATA

Company: Ranger Oil Limited
Ranger Fort Liard

LSD: P-66-A
Bottom Gauge

Date	Time	dt(hrs)	P(kPaG)	dP	T(°C)	dT	Pt. #
	09:55:20	42.0878	23733.1	-138.0	93.1	-3.7	15691:
	09:58:10	42.1350	23590.1	-143.0	89.3	-3.7	15708:
	10:00:59	42.1819	23444.7	-145.3	85.7	-3.6	15725:
	10:03:52	42.2300	23296.8	-147.9	81.6	-4.1	15742:
	10:06:41	42.2769	23141.9	-154.9	77.2	-4.4	15759:
	10:09:30	42.3239	22980.5	-161.4	72.5	-4.7	15776:
	10:12:19	42.3708	22812.9	-167.5	67.7	-4.8	15793:
	10:15:08	42.4178	22637.7	-175.2	62.8	-4.9	15810:
	10:18:01	42.4658	22457.3	-180.4	58.0	-4.8	15827:
	10:20:50	42.5128	22271.0	-186.2	53.3	-4.7	15844:
	10:23:40	42.5600	22098.7	-172.4	48.8	-4.5	15861:
	10:26:29	42.6069	22095.9	-2.8	45.2	-3.6	15878:
	10:29:22	42.6550	22094.8	-1.1	42.7	-2.6	15895:
	10:32:11	42.7019	22093.8	-1.0	40.8	-1.8	15912:
	10:35:00	42.7489	22093.3	-0.6	39.5	-1.3	15929:
	10:37:49	42.7958	22092.7	-0.6	38.6	-0.9	15946:
	10:40:38	42.8428	22092.2	-0.5	37.9	-0.7	15963:
	10:43:31	42.8908	22091.9	-0.3	37.5	-0.5	15980:
	10:46:20	42.9378	22091.6	-0.3	37.1	-0.3	15997:
	10:49:10	42.9850	22091.4	-0.3	36.9	-0.3	16014:
	10:51:59	43.0319	22091.0	-0.3	36.7	-0.2	16031:
	10:54:52	43.0800	22090.8	-0.2	36.6	-0.1	16048:
	10:57:41	43.1269	22090.5	-0.3	36.4	-0.1	16065:
	11:00:30	43.1739	22090.2	-0.3	36.4	-0.1	16082:
	11:03:19	43.2208	22089.9	-0.3	36.3	-0.1	16099:
	11:06:08	43.2678	22089.6	-0.3	36.3	-0.0	16116:
	11:09:01	43.3158	22089.4	-0.2	36.2	-0.0	16133:
	11:11:50	43.3628	22089.1	-0.3	36.2	-0.0	16150:
	11:14:40	43.4100	22091.4	2.3	36.2	-0.0	16167:
	11:17:29	43.4569	22051.8	-39.6	36.2	-0.0	16184:
	11:20:22	43.5050	21941.0	-110.8	35.8	-0.4	16201:
	11:23:11	43.5519	21842.3	-98.7	34.7	-1.0	16218:
	11:26:00	43.5989	21717.4	-124.9	33.2	-1.6	16235:
	11:28:49	43.6458	21591.2	-126.2	31.5	-1.7	16252:
	11:31:38	43.6928	21534.8	-56.4	28.8	-2.6	16269:
	11:34:49	43.7458	29.1	-21505.7	26.5	-2.3	16286:
	11:38:11	43.8019	21.4	-7.7	21.5	-5.0	16303:
1998/07/23	11:39:41	43.8269	15.8	-5.7	20.8	-0.8	16312:
							End Data Acquisition:

Absolute pressures are converted to gauge pressures assuming a barometric pressure of 90 kPa.
Reporting on an interval of 1 in 17 data points.

AGAT WATER ANALYSIS

AGAT® Laboratories

N.E.B. COPY

WATER ANALYSIS

CONTAINER IDENTIFICATION: PB 2B

LABORATORY NUMBER: WG24905B

OPERATOR NAME: RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER:

WELL NAME: RANGER FORT LIARD p-066-A

ELEVATIONS KB m / GRD m:

FIELD OR AREA: FORT LIARD

POOL OR ZONE: NAHANNI

NAME OF SAMPLER:

COMPANY: CENTRAL PRODUCT

TEST TYPE:

NO:

TEST RECOVERY:

SAMPLING POINT: DUMP LINE

AMT & TYPE OF CUSHION:

MUD RESISTIVITY Ω m @ 25° C:

TEST INTERVAL OR PERFS:

TYPE OF PRODUCTION: PUMPING / FLOWING / GAS LIFT / SWAB

PRODUCTION RATES: WATER m³/d / OIL m³/d / GAS 10³ m³/d

	SEPARATOR	TREATER	RESERVOIR	SOURCE	SAMPLED	RECEIVED
GAUGE PRESSURE kPa						
TEMPERATURE ° C						

DATE SAMPLED (Y-M-D): 98-03-03

DATE RECEIVED (Y-M-D): 98-04-01

DATE REPORTED (Y-M-D): 98-04-02

ANALYST: LN NCO

OTHER INFORMATION: 1800 HR

ION	mg/L	MASS FRACTION	mmol/L
Na	36000.0	0.267	1570.0
K	4300.0	0.032	110.0
Ca	9180.0	0.068	229.0
Mg	582.0	0.004	23.9
Ba	N.A.	N.A.	N.A.
Sr	N.A.	N.A.	N.A.
Fe	1.2	TRC*	TRC+

ION	mg/L	MASS FRACTION	mmol/L
Cl	84000.0	0.624	2370.0
Br	N.A.	N.A.	N.A.
I	N.A.	N.A.	N.A.
HCO_3	425.0	0.003	7.0
SO_4	12.1	TRC*	0.1
CO_3	NIL	NIL	NIL
OH	NIL	NIL	NIL
H_2S	119.0	0.001	3.5

DISSOLVED TOTAL SOLIDS mg/L

EVAPORATED AT 110° C:

EVAPORATED AT 180° C:

AT IGNITION:

CALCULATED: 135000.0

RELATIVE DENSITY: 1.087 @ 25° C

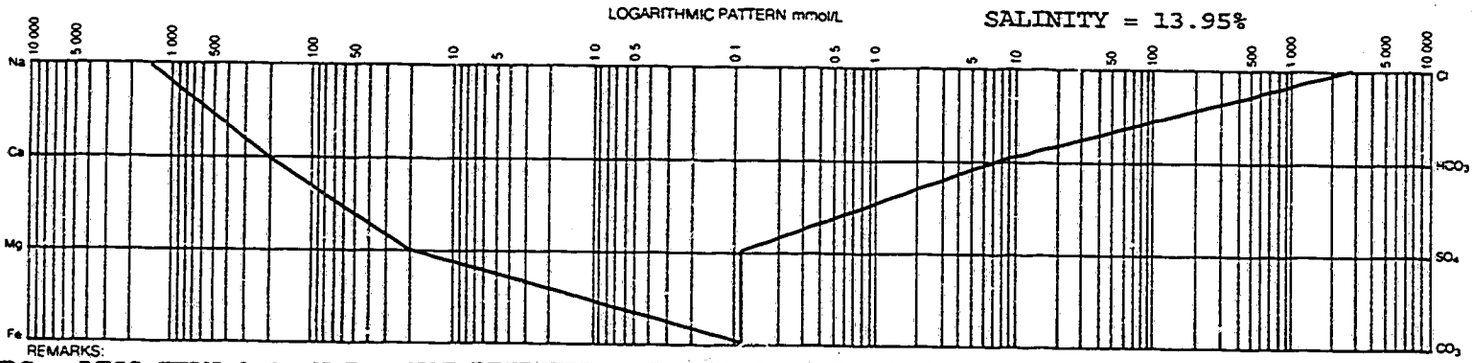
REFRACTIVE INDEX: N.A. @ 25° C

OBSERVED pH: 6.49 @ 25° C

RESISTIVITY/OHM·m: 0.07 @ 25° C

LOGARITHMIC PATTERN mmol/L

SALINITY = 13.95%



REMARKS:

TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC*= LESS THAN 0.001 N.A.= NOT ANALYZED

**NOTE: RESISTIVITY IS 0.070 OHM.m

AGAT® Laboratories

WATER ANALYSIS

CONTAINER IDENTIFICATION: PB 3C

LABORATORY NUMBER: WG24905C

OPERATOR NAME: RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER:

WELL NAME: RANGER FORT LIARD p-066-A

ELEVATIONS: KB m / GRD m

FIELD OR AREA: FORT LIARD

POOL OR ZONE: NAHANNI

NAME OF SAMPLER:

COMPANY: CENTRAL PRODUCT

TEST TYPE / NO:

TEST RECOVERY:

SAMPLING POINT: DUMP LINE

AMT & TYPE OF CUSHION:

MUD RESISTIVITY/Ω m @ 25° C

TEST INTERVAL OR PERFS:

TYPE OF PRODUCTION: PUMPING / FLOWING / GAS LIFT / SWAB

PRODUCTION RATES: WATER m³/d / OIL m³/d / GAS 10³ m³/d

	SEPARATOR	TREATER	RESERVOIR	SOURCE	SAMPLED	RECEIVED
GAUGE PRESSURE kPa						
TEMPERATURE ° C						

DATE SAMPLED (Y-M-D): 98-03-08

DATE RECEIVED (Y-M-D): 98-04-01

DATE REPORTED (Y-M-D): 98-04-02

ANALYST: LN NCO

OTHER INFORMATION: 1200 HR

ION	mg/L	MASS FRACTION	mmol/L
Na	40100.0	0.282	1750.0
K	5020.0	0.035	128.0
Ca	10100.0	0.071	251.0
Mg	649.0	0.005	26.7
Ba	N.A.	N.A.	N.A.
Sr	N.A.	N.A.	N.A.
Fe	1.3	TRC*	TRC+

ION	mg/L	MASS FRACTION	mmol/L
Cl	86000.0	0.604	2430.0
Br	N.A.	N.A.	N.A.
I	N.A.	N.A.	N.A.
HCO_3	450.0	0.003	7.4
SO_4	6.7	TRC*	0.1
CO_3	NIL	NIL	NIL
OH	NIL	NIL	NIL
H_2S	17.0	TRC*	0.5

DISSOLVED TOTAL SOLIDS mg/L

EVAPORATED AT 110° C:

EVAPORATED AT 180° C:

AT IGNITION:

CALCULATED: 142000.0

RELATIVE DENSITY: 1.095 @ 25° C

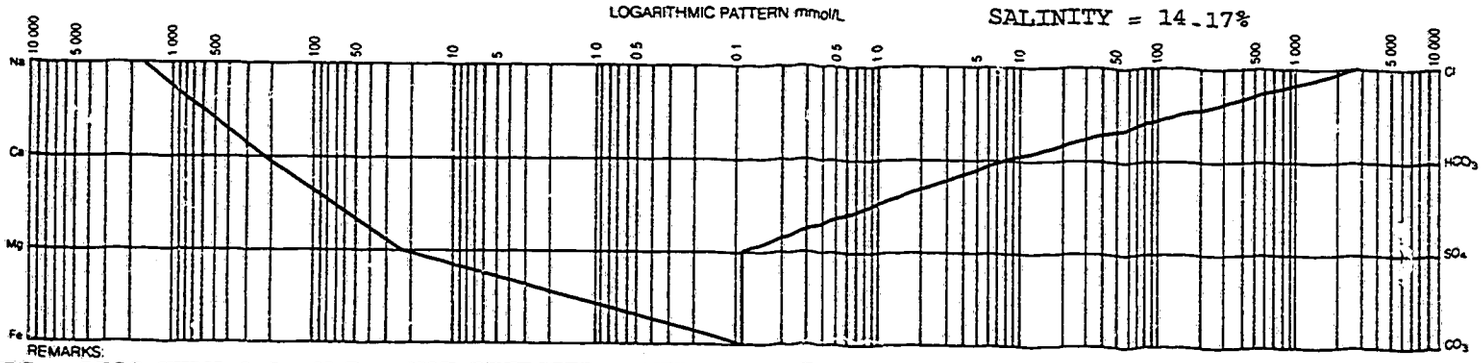
REFRACTIVE INDEX: N.A. @ 25° C

OBSERVED pH: 6.44 @ 25° C

RESISTIVITY/OHM-m: 0.06 @ 25° C

LOGARITHMIC PATTERN mmol/L

SALINITY = 14.17%



REMARKS:

TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC*= LESS THAN 0.001 N.A.= NOT ANALYZED

**NOTE: RESISTIVITY IS 0.065 OHM.m

AGAT® Laboratories

GAS ANALYSIS

CONTAINER IDENTIFICATION: AGAT 17806

LABORATORY NUMBER: GG24905A

OPERATOR NAME: RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER:

WELL NAME: RANGER FORT LIARD p-066-A

ELEVATIONS KB m: GRD m:

FIELD OR AREA: B.C.

POOL OR ZONE: NAHANNI

NAME OF SAMPLER:

COMPANY: CENTRAL PRODUCT

TEST TYPE: NO: TEST RECOVERY:

TEST INTERVAL OR PERFS:

SAMPLING POINT: SEPARATOR METER RUN

	SEPARATOR	TREATER	RESERVOIR	SOURCE	SAMPLED	RECEIVED
GAUGE PRESSURE kPa	750			750		740
TEMPERATURE °C	38			38		21

DATE SAMPLED (Y-M-D): 98-03-27

DATE RECEIVED (Y-M-D): 98-04-01

DATE REPORTED (Y-M-D): 98-04-02

ANALYST: BD NCO

OTHER INFORMATION:

COMP	MOLE FRACTION AIR FREE AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	PETROLEUM LIQUID CONTENT mL • m⁻³
H_2	0.0001	0.0001	
He	0.0010	0.0013	
N_2	0.0497	0.0628	
CO_2	0.1940	0.0000	
H_2S	0.0150	0.0000	
C_1	0.7402	0.9358	
C_2	TRACE	TRACE	
C_3	0.0000	0.0000	0.0
iC_4	0.0000	0.0000	0.0
nC_4	0.0000	0.0000	0.0
iC_5	0.0000	0.0000	0.0
nC_5	0.0000	0.0000	0.0
C_6	0.0000	0.0000	0.0
C_{7+}	0.0000	0.0000	0.0
C_8			
C_9			
C_{10+}			
TOTAL	1.0000	1.0000	0.0

GROSS HEATING VALUE MJ/m³ 15° C AND 101.325 kPa

MOISTURE AND ACID GAS FREE: 35.35

AIR FREE AS RECEIVED: 28.34

VAPOUR PRESSURE PENTANES PLUS: 0.0 kPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED — MEASURED: | CALCULATED: 0.771

MOISTURE AND ACID GAS FREE — MEASURED: | CALCULATED: 0.579

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED — pPc (abs): 5145 kPa | pTc: 211.9 K

ACID GAS FREE — pPc (abs): 4523 kPa | pTc: 186.2 K

RELATIVE MOLECULAR MASS

TOTAL GAS: 22.3 | C_{7+}: 0.0

H_2S g/m³: 21.54

REMARKS:

EXCEED NORMAL LIMITS : CO2
FIELD H2S = 1.5%/LAB = ND

AGAT Laboratories

WATER ANALYSIS

CUSTOMER IDENTIFICATION: PS 1A

LABORATORY NUMBER: WF23608A

OPERATOR NAME: RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER:

WELL NAME: RANGER FORT LIARD p-065-A/

KB: ELEVATIONS: GRD m

FIELD OR AREA: FORT LIARD

POOL OR ZONE:

NAME OF SAMPLER:

COMPANY: CENTRAL PRODUCT

TEST TYPE: NO:

TEST RECOVERY:

SAMPLING POINT: SEPARATOR

UNIT & TYPE OF CUSHION:

MUD RESISTIVITY Ω m @ 25°C

TEST INTERVAL OR PERFS:

TYPE OF PRODUCTION: PUMPING FLOWING GAS LIFT OTHER

PRODUCTION RATES: WATER m³/d OIL m³/d GAS 10³ m³/d

	SEPARATOR	TREATER	RESERVOIR	SOURCE	SAMPLED	RECEIVED
GAUGE PRESSURE kPa						
TEMPERATURE °C						

SAMPLE # (Y-M-D): 9. C3-01

DATE RECEIVED (Y-M-D): 98-03-04

DATE REPORTED (Y-M-D): 98-03-09

ANALYST: LN NCO

OTHER INFORMATION:

ION	mg/L	MASS FRACTION	mmol/L
Na^+	22100.0	0.281	959.0
K^+	2560.0	0.032	65.5
Ca^{2+}	5250.0	0.067	132.0
Mg^{2+}	350.0	0.004	14.4
Ba^{2+}	N.A.	N.A.	N.A.
Sr^{2+}	N.A.	N.A.	N.A.
Fe^{2+}	1.0	TRC*	TRC+

ION	mg/L	MASS FRACTION	mmol/L
Cl^-	47500.0	0.603	1340.0
Br^-	N.A.	N.A.	N.A.
I^-	N.A.	N.A.	N.A.
HCO_3^-	510.0	0.008	10.0
SO_4^{2-}	226.0	0.003	2.3
CO_3^{2-}	NIL	NIL	NIL
OH^-	NIL	NIL	NIL
H_2S	145.0	0.002	4.3

DISSOLVED TOTAL SOLIDS mg/L

EVAPORATED AT 110° C	EVAPORATED AT 180° C
AT IGNITION	**CALCULATED**
	78800.0

RELATIVE DENSITY: 1.049 @ 25°C

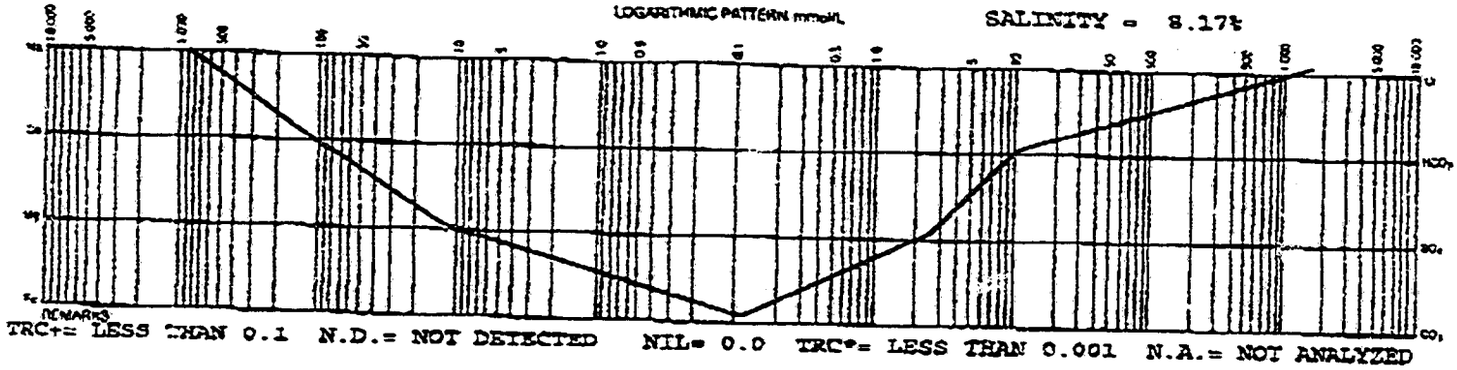
REFRACTIVE INDEX: N.A. @ 25°C

OBSERVED pH: 6.48 @ 25°C

RESISTIVITY Ω m: 0.10 @ 25°C

LOGARITHMIC PATTERN mmol/L

SALINITY = 8.17%



REMARKS

TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC*= LESS THAN 0.001 N.A.= NOT ANALYZED

AGAT® Laboratories

WATER ANALYSIS

CONTAINER IDENTIFICATION: PB 1A

LABORATORY NUMBER: W210664A

OPERATOR NAME: RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER:

WELL NAME: RANGER FORT LIARD p-066-A

ELEVATIONS KB m / GRD m:

FIELD OR AREA: FORT LIARD

POOL OR ZONE:

NAME OF SAMPLER:

COMPANY: SAME

TEST TYPE / NO:

TEST RECOVERY:

SAMPLING POINT:

AMT & TYPE OF CUSHION:

MUD RESISTIVITY Ω m @ 25°C:

TEST INTERVAL OR PERFS:

TYPE OF PRODUCTION: PUMPING / FLOWING / GAS LIFT / ENAB

PRODUCTION RATES: WATER m3/d / OIL m3/d / GAS 10³ m3/d

GAUGE PRESSURE kPa / TEMPERATURE °C: SEPARATOR / TREATER / RESERVOIR / SOURCE / SAMPLED / RECEIVED

DATE SAMPLED (Y-M-D): 98-03-02

DATE RECEIVED (Y-M-D): 98-03-12

DATE REPORTED (Y-M-D): 98-03-12

ANALYST: LN NCO

OTHER INFORMATION: TIME: 23.59 HRS

ION	mg/L	MASS FRACTION	mmol/L
Na	29000.0	0.273	1260.0
K	3380.0	0.032	86.4
Ca	6750.0	0.064	168.0
Mg	492.0	0.005	20.2
Ba	N.A.	N.A.	N.A.
Sr	N.A.	N.A.	N.A.
Fe	2.2	TRC*	TRC+

ION	mg/L	MASS FRACTION	mmol/L
Cl	66000.0	0.621	1860.0
Br	N.A.	N.A.	N.A.
I	N.A.	N.A.	N.A.
HCO_3	442.0	0.004	7.2
SO_4	123.0	0.001	1.3
CO_3	NIL	NIL	NIL
OH	NIL	NIL	NIL
H_2S	34.1	TRC*	1.0

DISSOLVED TOTAL SOLIDS mg/L

EVAPORATED AT 110° C:

EVAPORATED AT 180° C:

AT IGNITION:

CALCULATED: 106000.0

RELATIVE DENSITY: 1.071 @ 25°C

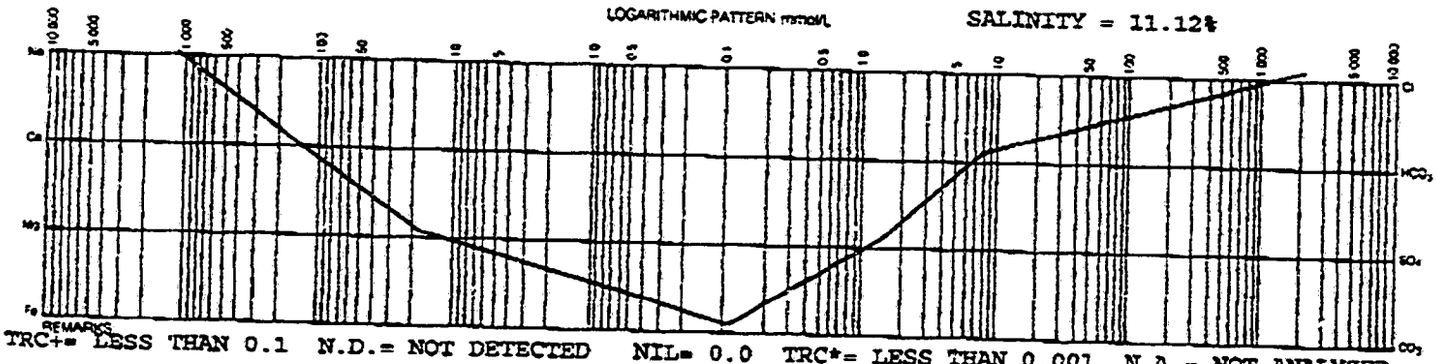
REFRACTIVE INDEX: N.A. @ 25°C

OBSERVED pH: 6.58 @ 25°C

RESISTIVITY OHM-m: 0.08 @ 25°C

LOGARITHMIC PATTERN mmol/L

SALINITY = 11.12%



REMARKS

TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC*= LESS THAN 0.001 N.A.= NOT ANALYZED

**NOTE: RESISTIVITY IS 0.080 OHM.m

AGAT® Laboratories

WATER ANALYSIS

CONTAINER IDENTIFICATION: PB 2B

LABORATORY NUMBER: W24064B

OPERATOR NAME: RANGER OIL LIMITED

UP HOLE WELL IDENTIFIER:

WELL NAME: RANGER FORT LIARD D-066-A

ELEVATIONS: KB m / GRD m

FIELD OR AREA: FORT LIARD

POOL OR ZONE:

NAME OF SAMPLER:

COMPANY: SAME

TEST TYPE:

NO:

TEST RECOVERY:

SAMPLING POINT:

AMT & TYPE OF CUSHION:

MUD RESISTIVITY Ω m @ °C

TEST INTERVAL OR PERFS:

TYPE OF PRODUCTION: PUMPING / FLOWING / GAS LIFT / SWAB

PRODUCTION RATES: WATER m³/d / OIL m³/d / GAS 10³ m³/d

	SEPARATOR	TREATER	RESERVOIR	SOURCE	SAMPLED	RECEIVED
GAUGE PRESSURE kPa						
TEMPERATURE °C						

DATE SAMPLED (Y-M-D): 98-03-02

DATE RECEIVED (Y-M-D): 98-03-12

DATE REPORTED (Y-M-D): 98-03-12

ANALYST: LN NCO

OTHER INFORMATION: TIME: 06:00 HRS

ION	mg/L	MASS FRACTION	mmol/L
Na	41200.0	0.319	1790.0
K	3420.0	0.026	87.5
Ca	7540.0	0.058	188.0
Mg	545.0	0.004	22.4
Ba	N.A.	N.A.	N.A.
Sr	N.A.	N.A.	N.A.
Fe	2.5	TRC*	TRC+

ION	mg/L	MASS FRACTION	mmol/L
Cl	76000.0	0.588	2140.0
Br	N.A.	N.A.	N.A.
I	N.A.	N.A.	N.A.
HCO_3	412.0	0.003	6.7
SO_4	93.0	0.001	1.0
CO_3	NIL	NIL	NIL
OH	NIL	NIL	NIL
H_2S	TRC+	TRC*	TRC+

DISSOLVED TOTAL SOLIDS mg/L

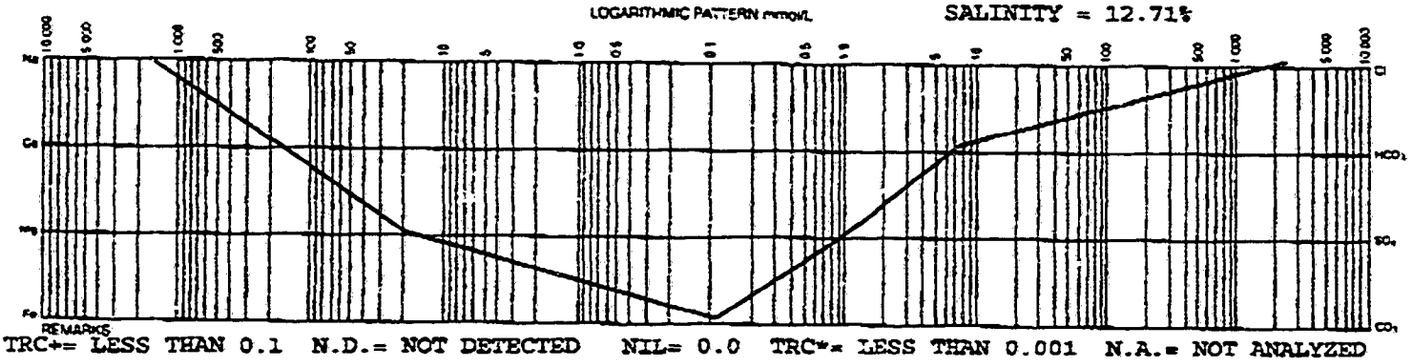
EVAPORATED AT 110° C	EVAPORATED AT 180° C
AT IGNITION	CALCULATED
	129000.0

RELATIVE DENSITY	REFRACTIVE INDEX
1.079 @ 25°C	N.A. @ 25°C

OBSERVED pH	RESISTIVITY/OHM·m
6.76 @ 25°C	0.06 @ 25°C

LOGARITHMIC PATTERN mmol/L

SALINITY = 12.71%



REMARKS

TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC*= LESS THAN 0.001 N.A.= NOT ANALYZED

**NOTE: RESISTIVITY IS 0.076 OHM.m

AGAT Laboratories

GAS ANALYSIS

CONTAINER IDENTIFICATION: AGAT 13267

LABORATORY NUMBER: GP23608A

OPERATOR NAME: RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER:

WELL NAME: RANGER FORT LIARD p-065-A/

KB m: ELEVATIONS GRD m:

FIELD OR AREA: FORT LIARD

POOL OR ZONE:

NAME OF SAMPLER:

COMPANY: CENTRAL PRODUCT

TEST TYPE: NO:

TEST RECOVERY:

TEST INTERVAL OR PERFS:

SAMPLING POINT: METER RUN

	SEPARATOR	TREATER	RESERVOIR	SOURCE	SAMPLED	RECEIVED
GAUGE PRESSURE kPa				2620	2620	760
TEMPERATURE °C				45	45	21

DATE SAMPLED (Y-M-D): 98-03-01

DATE RECEIVED (Y-M-D): 98-03-04

DATE REPORTED (Y-M-D): 98-03-09

ANALYST: LQ MCO

OTHER INFORMATION:

COMP	MOLE FRACTION: AIR FREE AS RECEIVED	MOLE FRACTION: AIR FREE MOISTURE AND ACID GAS FREE	PETROLEUM LIQUID CONTENT m³/10³m³
H_2S	0.0002	0.0003	
He	0.0011	0.0013	
N_2	0.0490	0.0581	
CO_2	0.1492	0.0000	
H_2S	0.0080	0.0000	
C_1	0.7925	0.9403	
C_2	0.0000	0.0000	
C_3	0.0000	0.0000	0.0
iC_4	0.0000	0.0000	0.0
nC_4	0.0000	0.0000	0.0
iC_5	0.0000	0.0000	0.0
nC_5	0.0000	0.0000	0.0
C_6	0.0000	0.0000	0.0
C_7+	0.0000	0.0000	0.0
C_8			
C_9			
C_{10+}			
TOTAL	1.0000	1.0000	0.0

GROSS HEATING VALUE MJ/m³ 15° C AND 101.325 kPa

MOISTURE AND ACID GAS FREE: 35.52

AIR FREE AS RECEIVED: 30.15

VAPOUR PRESSURE PENTANES PLUS: 0.0 kPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED — MEASURED: | CALCULATED: 0.723

MOISTURE AND ACID GAS FREE — MEASURED: | CALCULATED: 0.577

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED — apc (abs): 4989 kPa | aTc: 205.6 K

ACID GAS FREE — pPc (abs): 4528 kPa | aTc: 186.5 K

RELATIVE MOLECULAR MASS

TOTAL GAS: 20.9 | C_{7+}: 0.0

H_2S g/m³: 11.43

REMARKS:

EXCEED NORMAL LIMITS : CO2

FIELD H2S = 0.70%/LAB = 0.80%

SURVEY PLAN

OVERSIZED

DOCUMENT

FILMED

ON

35mm

Dipmeter Plots (2)

OVERSIZED

DOCUMENT

FILMED

ON

35mm

Static Gradient Report (Feb.14/99)

1823

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Ranger Oil Limited

Static Gradient
Ranger Fort Liard P-66A
P-66A
Feb 14, 99

Service Company: Contact Info		
Report Writer: Vio Tandara, 1-403-347-2524(309-7913)	Service Company: Lee Tool, Div. of Schlumberger	
Operator: Don Hunt, 1-780-778-2362	Job ID: p-66agrad	Test Date: Feb 14, 99

Gauge: Lee Memory Recorder Model 3000s (Quartz)
Manufacturer: Lee Tool, Division of Schlumberger Canada Limited

Static Gradient

Ranger Oil Limited
Alberta, Canada

Feb 14, 99

Ranger Fort Liard P-66A | **P-66A** | **Liard, Nikanni**

Well

Client: Ranger Oil Limited	Province: Alberta	Country: Canada
Well Name: Ranger Fort Liard P-66A	Deviated Well: No	Well Status: Gas
Well No.: P-66A	KB Elevation: 459.89 m	CF Elevation: 449.49 m
Field: Liard / Pool: Nikanni	Pool Datum:	

Test

Test Type: Static Gradient			Atmospheric: 101.30 KPa A		
Test Start (mm/dd/yy): 02/14/99 01:23 PM	Test Finish: 02/14/99 09:45 PM		Casing ID		Tubing ID: 88.90 mm
On Bottom: 02/14/99 04:39 PM	Off Bottom: 02/14/99 08:53 PM		C. Pres. Before		T. Pres. Before
Shut In: 02/13/99	ETO: 02/14/99 01:25 PM		C. Pres. After		T. Pres. After
	Meas. Depth [mCF]	TVD [mCF]	Est. Pressure [KPa G]	Est. Gradient [KPa/m]	Est. Temperature [DegC]
Well Datum					Grad. Threshold: 2.00 KPa/m
Run Depth	3050.00	3050.00	26328.16	6.47	Grad. Recorder: 9501Q-16E
Avg. MPP Depth	3225.15	3225.15	27461.10	6.47	
Operator: Don Hunt, 1-780-778-2362			Service Company: Lee Tool, Div. of Schlumberger		
Remarks: 9501q-16e bottom rec. & 9505q-16e top rec.					

Depth References

Depth Reference	Offset [m]	Elevation [mMSL]
Casing Flange (CF)		449.49
Kelly Bushing (KB)	CF + 10.40	459.89

Perforations

Perf Top MD, [mCF]	Perf Bottom MD, [mCF]	MPP TVD, [mCF]	Pressure [KPa G]	Gradient [KPa/m]
3104.65	3345.65	3225.15	27461.10	6.47

Gradient Recorder

Model	Serial	Latest Calibration
LMR-3000S	9505Q-16E	05/20/98
Max. Rated Press.	**Max. Rated Temp.**	
110210.66 KPa G	174.92 DegC	

Gradient Stops

Depth					
Tool String MD, [mCF]	Recorder MD, [mCF]	Sample R/T [mmm dd, 24hr]	Pressure [KPa G]	Gradient [KPa/m]	Temperature [DegC]
0.00	-1.50	Feb 14, 99 14:12:00	13486.51		-12.79
500.00	498.50	14:35:00	14443.79	1.91	22.01
1000.00	998.50	14:53:00	15327.20	1.77	56.29
1500.00	1498.50	15:10:00	16162.83	1.67	85.76
2000.00	1996.50	15:28:00	19601.59	6.88	108.26
2500.00	2498.50	15:47:00	22758.06	6.31	125.79
2700.00	2698.50	16:00:00	24036.66	6.39	134.48
2800.00	2798.50	16:12:00	24692.06	6.55	140.03
2900.00	2898.50	16:24:00	25351.00	6.59	144.02
3000.00	2998.50	16:36:00	25988.56	6.38	147.08
3050.00	3048.50	16:49:00	26318.12	6.59	148.98

Fluid Interface	Depth TVD, [mCF]	Gradient Before [KPa/m]	Gradient After [KPa/m]
Interface 1	1507.85	1.77	6.88

Bottom Hole Pressure

	Tool String MD, [mCF]	Sample R/T [mmm dd, yy 24 hr.]	Pressure [KPa G]	
Sample 1	3050.00	Feb 14, 99 16:59:40	26325.33	
Sample 2		20:51:40	26327.84	
Difference:		03:52:00	2.50	Build Up Rate 0.65 KPa/Hr.

Bottom Recorder

Model	Serial	Latest Calibration	
LMR-3000S	9501Q-16E	05/20/98	
Max. Rated Press. 110210.66 KPa G	Max. Rated Temp. 174.92 DegC		

Gradient Stops

Depth Tool String MD, [mCF]	Depth Recorder MD, [mCF]	Sample R/T [mmm dd, 24hr]	Pressure [KPa G]	Gradient [KPa/m]	Temperature [DegC]
0.00	0.00	Feb 14, 99 14:12:00	13504.83		-13.30
500.00	500.00	14:35:00	14454.61	1.90	22.97
1000.00	1000.00	14:53:00	15332.98	1.76	57.53
1500.00	1500.00	15:10:00	16182.01	1.70	86.40
2000.00	2000.00	15:28:00	19614.63	6.87	108.63
2500.00	2500.00	15:47:00	22771.18	6.31	126.07
2700.00	2700.00	16:00:00	24049.31	6.39	134.73
2800.00	2800.00	16:12:00	24708.17	6.59	140.21
2900.00	2900.00	16:24:00	25368.46	6.60	144.13
3000.00	3000.00	16:36:00	26004.74	6.36	147.18
3050.00	3050.00	16:49:00	26328.16	6.47	149.04

Fluid Interface	Depth TVD, [mCF]	Gradient Before [KPa/m]	Gradient After [KPa/m]
Interface 1	1505.74	1.76	6.87

Bottom Hole Pressure

	Tool String MD, [mCF]	Sample R/T [mmm dd, yy 24 hr.]	Pressure [KPa G]	
Sample 1	3050.00	Feb 14, 99 17:00:00	26345.88	
Sample 2		20:51:30	26346.18	
Difference:		03:51:30	0.30	Build Up Rate 0.08 KPa/Hr.

Calibration Summary

Ranger Oil Limited
Alberta, Canada

Feb 14, 99

Ranger Fort Liard P-66A | **P-66A** | **Liard, Nikanni**

Top Recorder

Tool	Serial	Latest Calibration	Battery Serial
LMR-3000S	9505Q-16E	05/20/98	
Landed Depth	**Depth Offset**	**Min. Battery**	
	-1.50 m	20.77 V	

Equations

FP = Pres Freq (Hz)
FT = Temp Freq (Hz)

XP = 1.866400e+004 + (1.000000e-002) FP
XT = 4.924200e+004 + (1.000000e-002) FT

P_0 = 1.936513e+001+ (-1.714123e+000) XT + (-2.262890e-002) XT^2 + (-3.275274e-006) XT^3 + (-2.048157e-008) XT^4
P_1 = 4.245641e+001+ (-2.079295e-002) XT + (3.963275e-005) XT^2 + (4.812623e-008) XT^3 + (2.138480e-010) XT^4
P_2 = -1.742961e-003+ (8.580555e-006) XT + (-8.255788e-008) XT^2 + (-3.112277e-010) XT^3 + (-7.631776e-013) XT^4
P_3 = 5.357535e-007+ (-3.513717e-010) XT + (1.048347e-010) XT^2 + (5.290096e-013) XT^3 + (1.094640e-015) XT^4
Pressure (psiA) = $P_0 + P_1 XP + P_2 XP^2 + P_3 XP^3$

T_0 = 2.536848e+001
T_1 = -7.367358e-001
T_2 = -7.876411e-004
T_3 = -4.044080e-007
Temperature (degC) = $T_0 + T_1 XT + T_2 XT^2 + T_3 XT^3$

Bottom Recorder

Tool	Serial	Latest Calibration	Battery Serial
LMR-3000S	9501Q-16E	05/20/98	
Landed Depth	**Depth Offset**	**Min. Battery**	
	0.00 m	20.97 V	

Equations

FP = Pres Freq (Hz)
FT = Temp Freq (Hz)

XP = 2.021700e+004 + (1.000000e-002) FP
XT = 4.404500e+004 + (1.000000e-002) FT

P_0 = 1.953652e+001+ (-1.398162e+000) XT + (-2.261735e-002) XT^2 + (-4.257821e-006) XT^3 + (-2.244771e-008) XT^4
P_1 = 4.157305e+001+ (-2.084275e-002) XT + (3.598379e-005) XT^2 + (2.848362e-008) XT^3 + (1.764987e-010) XT^4
P_2 = -1.764766e-003+ (1.041122e-005) XT + (-5.717207e-008) XT^2 + (-2.005331e-010) XT^3 + (-5.887638e-013) XT^4
P_3 = 4.798491e-007+ (-3.590927e-009) XT + (6.006125e-011) XT^2 + (3.389536e-013) XT^3 + (8.149256e-016) XT^4
Pressure (psiA) = $P_0 + P_1 XP + P_2 XP^2 + P_3 XP^3$

T_0 = 2.537126e+001
T_1 = -7.405879e-001
T_2 = -7.987619e-004
T_3 = -4.174395e-007
Temperature (degC) = $T_0 + T_1 XT + T_2 XT^2 + T_3 XT^3$

Tool Summary

Ranger Oil Limited
Alberta, Canada

Feb 14, 99

Ranger Fort Liard P-66A | **P-66A** | **Liard, Nikanni**

Top Recorder

Tool	Serial	Latest Calibration	Battery Serial
LMR-3000S	9505Q-16E	05/20/98	
Landed Depth	**Depth Offset**	**Min. Battery**	
	-1.50 m	20.77 V	

Program: st_grad_for_512_rb

Intervals					Expected Samples			Actual Samples				
Mode	Interval [d hh:mm:ss]	Rate [hh:mm:ss]	Delta [KPa]	Periodic [hh:mm:ss]	Regular Samples	Percent Storage	Energy [Ahr]	Regular Samples	Delta Samples	Percent Storage	Energy [Ahr]	Duration [d hh:mm:ss]
HB	10:00	1			600	0.2%	0.0022	600		0.2%	0.0022	10:00
HB	10	10			86400	24.7%	1.8249	2927		0.8%	0.0618	8:07:50
Totals:	10 10:00				87000	24.9%	1.8271	3527		1.0%	0.0640	8:17:50

Bottom Recorder

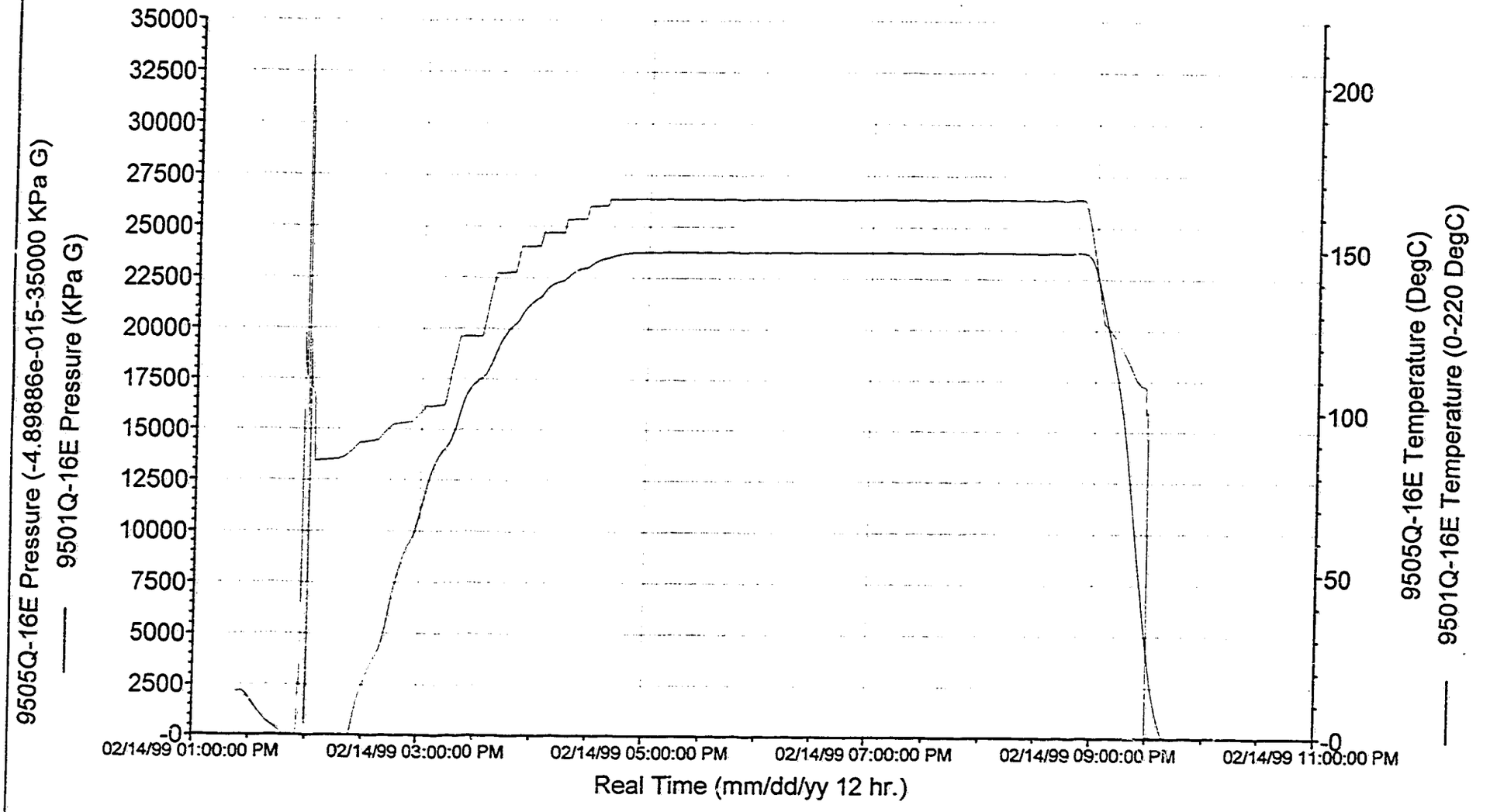
Tool	Serial	Latest Calibration	Battery Serial
LMR-3000S	9501Q-16E	05/20/98	
Landed Depth	**Depth Offset**	**Min. Battery**	
	0.00 m	20.97 V	

Program: st_grad_for_512_rb

Intervals					Expected Samples			Actual Samples				
Mode	Interval [d hh:mm:ss]	Rate [hh:mm:ss]	Delta [KPa]	Periodic [hh:mm:ss]	Regular Samples	Percent Storage	Energy [Ahr]	Regular Samples	Delta Samples	Percent Storage	Energy [Ahr]	Duration [d hh:mm:ss]
HB	10:00	1			600	0.2%	0.0022	600		0.2%	0.0022	10:00
HB	10	10			86400	24.7%	1.8249	2921		0.8%	0.0617	8:06:50
Totals:	10 10:00				87000	24.9%	1.8271	3521		1.0%	0.0639	8:16:50

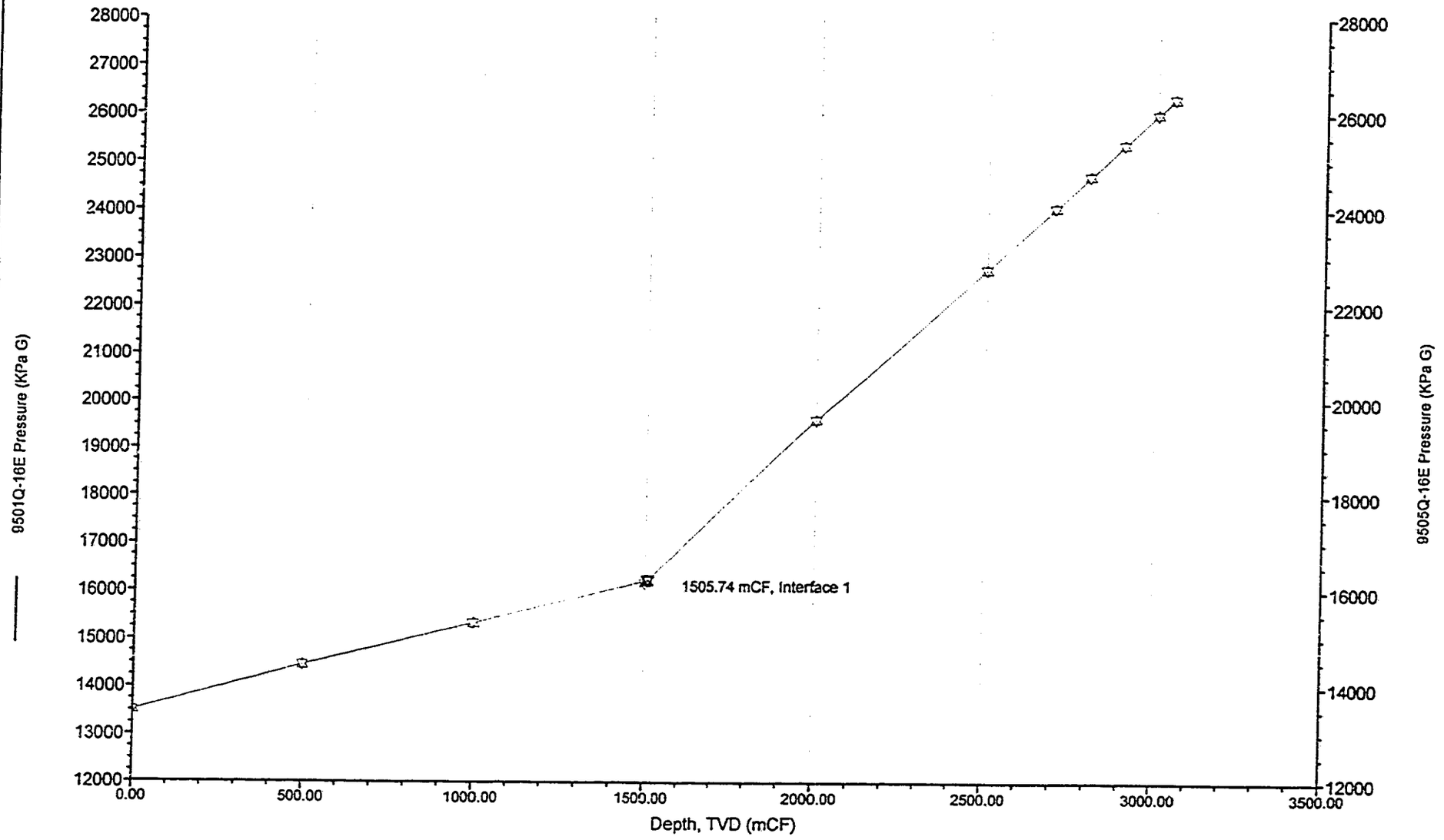
Pressure & Temperature vs. Elapsed Time

Company:	**Lee Tool, Div. of Schlumberger**	*Field:*	**Liard**
Client:	**Ranger Oil Limited**	*Well Name:*	**Ranger Fort Liard P-66A**
Remarks:	**9501q-16e bot. rec. & 9505q-16e top rec.**	*Well Number:*	**P-66A**



Pressure vs. Depth

Company:	Lee Tool, Div. of Schlumberger	*Field:*	Liard
Client:	Ranger Oil Limited	*Well Name:*	Ranger Fort Liard P-66A
Remarks:	9501q-16e bot. rec. & 9505q-16e top rec.	*Well Number:*	P-66A



Sub-Surface Pressure Report (2)

N.E.B. COPY

Sub-Surface Pressure Report

[redacted]

LEE TOOL
DIVISION OF SCHLUMBERGER CANADA LIMITED

7449 - 49 Avenue Crescent
Red Deer, Alberta T4P 1X6

MAY 19 2000

Ranger Oil Limited

Static Gradient In
Ranger Ft. Liard
P-66-A

Jun 30, 99 to Jul 02, 99

Service Company Contact Info		
Report Writer: Wade Nicks, 309-7940	Service Company: Lee Tool, Div. of Schlumberger	
Operator: Bonnett's Wireline Services Ltd., (250) 787-3020	Job ID: Ranger Static Gradient	Test Date: Jun 30, 99 to Jul 02, 99

Gauge: Lee Memory Recorder Model 3000s (Quartz)
Manufacturer: Lee Tool, Division of Schlumberger Canada Limited

Static Gradient In

Ranger Oil Limited
Alberta, Canada

Jun 30, 99 to Jul 02, 99

Ranger Ft. Liard | **P-66-A** | **Liard, Nihanni**

Well

Client: Ranger Oil Limited		Province: Alberta	Country: Canada
Well Name: Ranger Ft. Liard		Deviated Well: Yes	Well Status: Gas
Well No.: P-66-A		KB Elevation: 459.89 m	CF Elevation: 449.49 m
Field: Liard	Pool: Nihanni	Pool Datum:	

Test

Test Type: Static Gradient In				Atmospheric: 101.30 KPa A	
Test Start (mm/dd/yy): 06/30/99	05:33 PM	Test Finish: 07/02/99	02:58 PM	Casing ID:	Tubing ID: 88.90 mm
On Bottom: 06/30/99	09:40 PM	Off Bottom: 07/02/99	12:05 PM	C. Pres. Before:	T. Pres. Before: 20370.00 KPa G
Shut In: 06/30/99	06:10 PM	ETO: 06/30/99	05:33 PM	C. Pres. After:	T. Pres. After:

	Meas. Depth [mCF]	TVD [mCF]	Est. Pressure [KPa G]	Est. Gradient [KPa/m]	Est. Temperature [DegC]	Grad. Threshold: 2.00 KPa/m
Well Datum						Grad. Recorder: 9502Q-16E
Run Depth:	3000.00	2604.63	26011.87	8.71		
Avg. MPP Depth	3133.10	2701.72	26857.44	8.71		

Operator: Bonnett's Wireline Services Ltd., (250) 787-3020
Service Company: Lee Tool, Div. of Schlumberger
Remarks: 9112Q-16E Bot. Rec. & 9502Q-16E Top Rec.

Depth References

Depth Reference	Offset [m]	Elevation [mMSL]
Casing Flange (CF)		449.49
Kelly Bushing (KB)	CF + 10.40	459.89

Perforations

Perf Top MD, [mCF]	Perf Bottom MD, [mCF]	MPP TVD, [mCF]	Pressure [KPa G]	Gradient [KPa/m]
3104.60	3161.60	2701.72	26857.44	8.71

Top Recorder

Model	Serial	Latest Calibration	
LMR-3000S	9502Q-16E	11/28/98	
Max. Rated Press. 110213.34 KPa G	Max. Rated Temp. 174.96 DegC		

Gradient Stops

Depth						
Tool String MD, [mCF]	Recorder MD, [mCF]	Recorder TVD, [mCF]	Sample R/T [mmm dd, 24hr]	Pressure [kPa G]	Gradient [KPa/m]	Temperature [DegC]
0.00	-2.00	-2.00	Jun 30, 99 19:21:00	19932.64		15.70
500.00	498.00	497.65	19:43:00	21058.20	2.25	32.84
1000.00	998.00	997.07	20:00:00	21998.65	1.88	64.24
1500.00	1498.00	1495.28	20:19:00	22837.12	1.68	92.83
2000.00	1998.00	1903.13	20:38:00	23501.23	1.63	112.54
2500.00	2498.00	2247.90	20:57:00	24028.90	1.53	129.05
2700.00	2698.00	2388.28	21:12:00	24248.61	1.57	137.82
2800.00	2798.00	2459.95	21:24:00	24738.23	6.83	142.84
2900.00	2898.00	2532.96	21:37:00	25387.61	8.89	146.47
3000.00	2998.00	2603.22	21:49:00	25999.57	8.71	149.50

Fluid Interface	Depth TVD, [mCF]	Gradient Before [KPa/m]	Gradient After [KPa/m]
Interface 1	2408.45	1.57	8.89

Bottom Hole Pressure

	Tool String MD, [mCF]	Sample R/T [mmm dd, yy 24 hr.]	Pressure [KPa G]	
Sample 1	3000.00	Jun 30, 99 21:42:00	25977.84	
Sample 2		21:50:00	26001.91	
Difference:		00:08:00	24.07	Build Up Rate 180.51 KPa/Hr.

Bottom Recorder

Model	Serial	Latest Calibration	
LMR-3000S	9112Q-16E	03/10/99	
Max. Rated Press.	Max. Rated Temp.		
110213.27 KPa G	174.96 DegC		

Gradient Stops

Depth						
Tool String MD, [mCF]	Recorder MD, [mCF]	Recorder TVD, [mCF]	Sample R/T [mmm dd, 24hr]	Pressure [KPa G]	Gradient [KPa/m]	Temperature [DegC]
0.00	0.00	-0.00	Jun 30, 99 19:21:00	19960.28		15.12
500.00	500.00	499.64	19:43:00	21063.62	2.21	32.51
1000.00	1000.00	999.06	20:00:00	22000.27	1.88	63.73
1500.00	1500.00	1497.22	20:19:00	22845.37	1.70	92.23
2000.00	2000.00	1904.47	20:38:00	23507.35	1.63	111.82
2500.00	2500.00	2249.30	20:57:00	24035.46	1.53	128.16
2700.00	2700.00	2389.70	21:12:00	24255.15	1.56	136.93
2800.00	2800.00	2461.43	21:24:00	24753.14	6.94	141.93
2900.00	2900.00	2534.40	21:37:00	25402.84	8.90	145.54
3000.00	3000.00	2604.63	21:49:00	26014.22	8.70	148.57

Fluid Interface	Depth TVD, [mCF]	Gradient Before [KPa/m]	Gradient After [KPa/m]
Interface 1	2408.87	1.56	8.90

Bottom Hole Pressure

	Tool String MD, [mCF]	Sample R/T [mmm dd, yy 24 hr.]	Pressure [KPa G]	
Sample 1	3000.00	Jun 30, 99 21:42:00	25991.21	
Sample 2		21:50:00	26016.75	
Difference:		00:08:00	25.54	Build Up Rate 191.53 KPa/Hr.

Deviated Well Survey

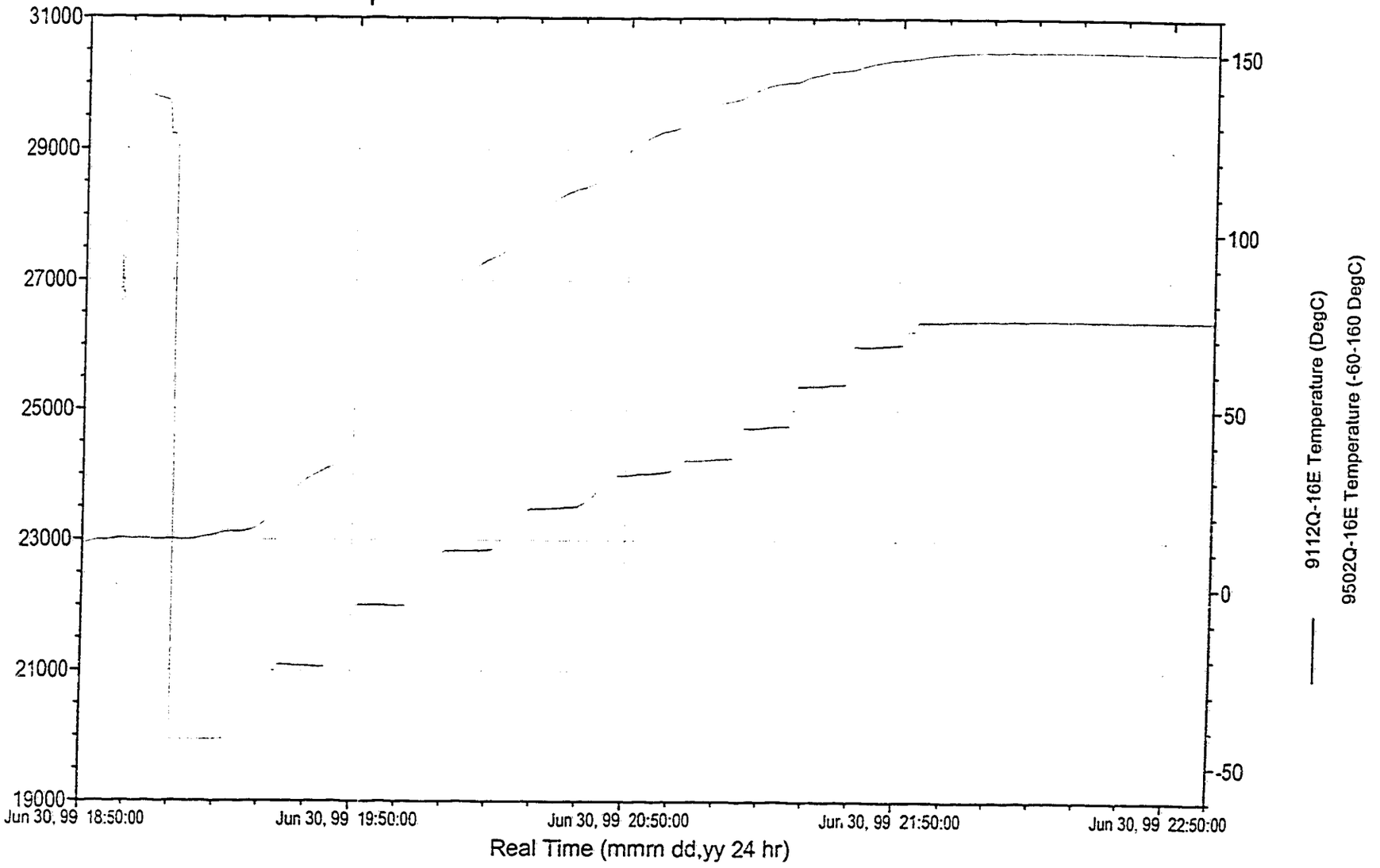
Meas. Depth [mKB]	Inclination [Degrees]	TVD [mKB]	Meas. Depth [mCF]	TVD [mCF]
0.00	0.00	0.00	-10.40	-10.40
199.00	0.50	199.00	188.60	188.60
490.00	4.20	489.69	479.60	479.29
499.00	4.10	498.67	488.60	488.27
509.00	4.10	508.64	498.60	498.24
518.00	4.00	517.62	507.60	507.22
989.00	5.50	988.16	978.60	977.76
1007.00	5.39	1006.08	996.60	995.68
1019.00	4.80	1018.03	1008.60	1007.63
1494.00	12.60	1491.63	1483.60	1481.23
1503.00	12.80	1500.41	1492.60	1490.01
1513.00	12.90	1510.16	1502.60	1499.76
1990.00	47.90	1901.23	1979.60	1890.83
2000.00	48.00	1907.93	1989.60	1897.53
2010.00	48.30	1914.60	1999.60	1904.20
2019.00	47.80	1920.62	2008.60	1910.22
2496.00	45.50	2249.60	2485.60	2239.20
2506.00	45.40	2256.62	2495.60	2246.22
2516.00	45.60	2263.63	2505.60	2253.23
2689.00	44.30	2384.83	2678.60	2374.43

Deviated Well Survey

Meas. Depth [mKB]	Inclination [Degrees]	TVD [mKB]	Meas. Depth [mCF]	TVD [mCF]
2699.00	44.50	2391.98	2688.60	2381.58
2709.00	44.60	2399.10	2698.60	2388.70
2718.00	44.70	2405.50	2707.60	2395.10
2795.00	42.50	2460.44	2784.60	2450.04
2804.00	42.20	2467.09	2793.60	2456.69
2814.00	42.20	2474.50	2803.60	2464.10
2893.00	43.30	2532.20	2882.60	2521.80
2903.00	43.70	2539.46	2892.60	2529.06
2913.00	44.00	2546.67	2902.60	2536.27
2940.00	45.80	2565.75	2929.60	2555.35
2950.00	46.10	2572.71	2939.60	2562.31
2959.00	46.40	2578.93	2948.60	2568.53
2969.00	46.30	2585.83	2958.60	2575.43
2998.00	44.80	2606.26	2987.60	2595.86
3013.00	45.20	2616.86	3002.60	2606.46
3023.00	45.20	2623.91	3012.60	2613.51
3095.00	43.90	2675.20	3084.60	2664.80
3122.00	40.40	2695.22	3111.60	2684.82
3138.00	36.90	2707.72	3127.60	2697.32
3157.00	37.00	2722.90	3146.60	2712.50
3224.00	38.50	2775.80	3213.60	2765.40
3253.00	34.70	2799.08	3242.60	2788.68

Pressure & Temperature vs. Real Time (Static Gradient In)

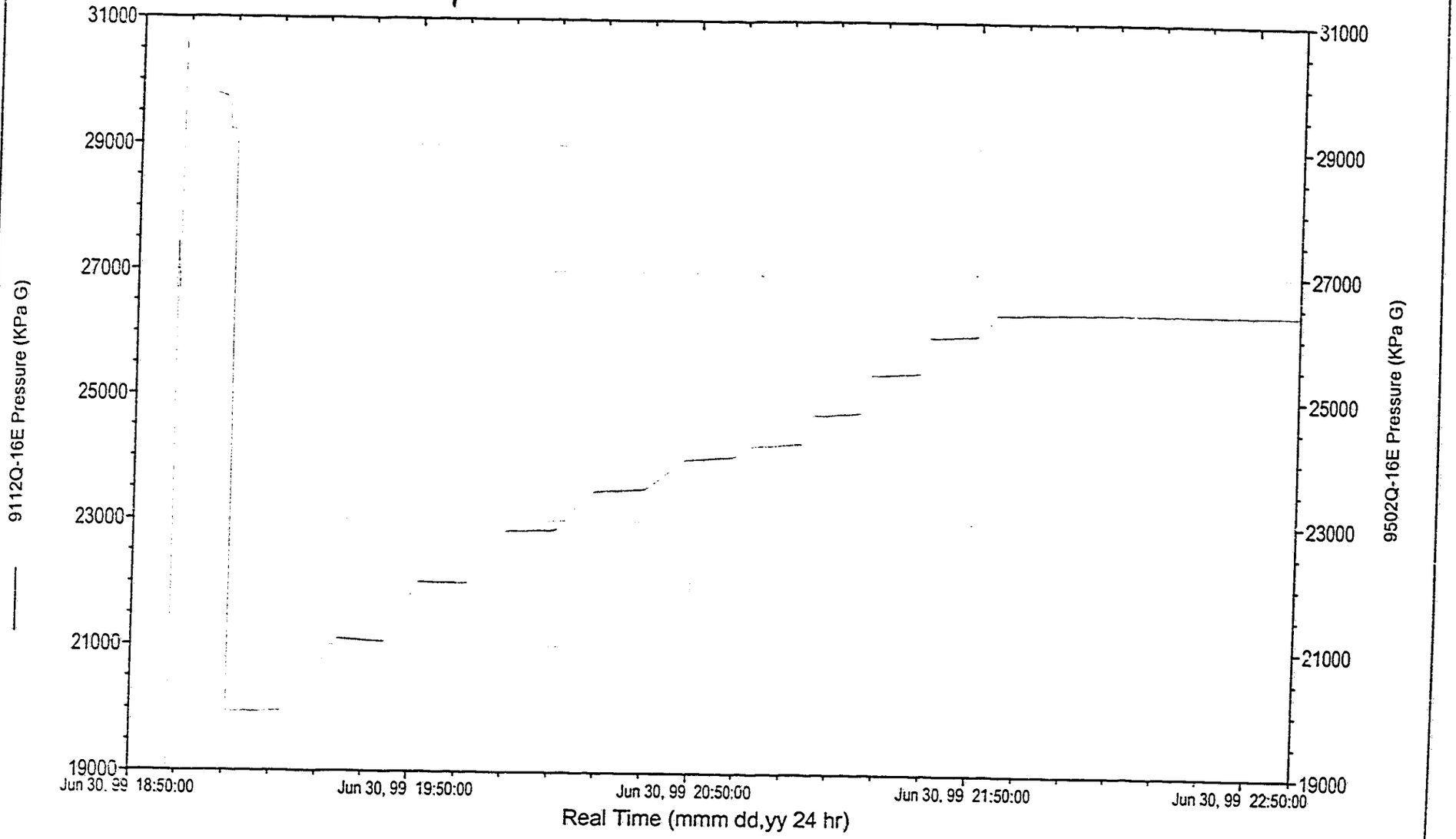
Company:	**Lee Tool, Div. of Schlumberger**	*Field:*	**Liard**
Client:	**Ranger Oil Limited**	*Well Name:*	**Ranger Ft. Liard**
Remarks:	**9112Q-16E Bot. Rec. & 9502Q-16E Top Rec.**	*Well Number:*	**P-66-A**



Pressure vs. Real Time (Static Gradient In)

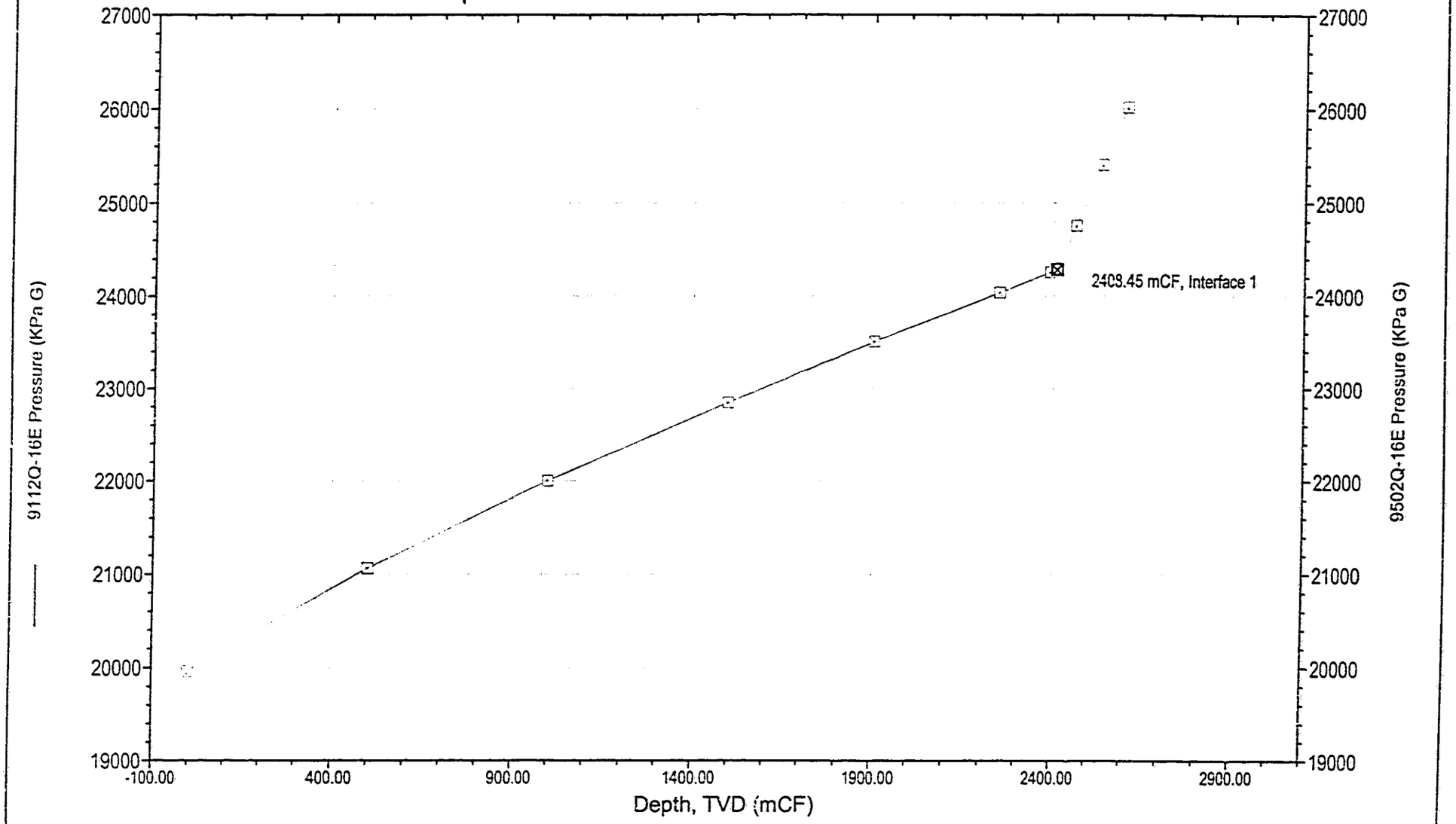
Company: Lee Tool, Div. of Schlumberger
Client: Ranger Oil Limited
Remarks: 9112Q-16E Bot. Rec. & 9502Q-16E Top Rec.

Field: Liard
Well Name: Ranger Ft. Liard
Well Number: P-66-A



Pressure vs. Depth (Static Gradient In)

Company:	**Lee Tool, Div. of Schlumberger**	*Field:*	**Liard**
Client:	**Ranger Oil Limited**	*Well Name:*	**Ranger Ft. Liard**
Remarks:	**9112Q-16E Bot. Rec. & 9502Q-16E Top Rec.**	*Well Number:*	**P-66-A**



Ranger Oil Limited

Build-Up

Ranger Ft. Liard

P-66-A

Jun 30, 99 to Jul 02, 99

Service Company Contact Info		
Report Writer: Wade Nicks, 309-7940	Service Company: Lee Tool, Div. of Schlumberger	
Operator: Bonnett's Wireline Services Ltd., (250) 787-3020	Job ID: Ranger Static Gradient	Test Date: Jun 30, 99 to Jul 02, 99

Gauge: Lee Memory Recorder Model 3000s (Quartz)

Manufacturer: Lee Tool, Division of Schlumberger Canada Limited

Build-Up

Ranger Oil Limited
Alberta, Canada

Jun 30, 99 to Jul 02, 99

Ranger Ft. Liard | **P-66-A** | **Liard, Nihanni**

Well

Client	Province	Country
Ranger Oil Limited	Alberta	Canada
Well Name	**Deviated Well**	**Well Status**
Ranger Ft. Liard	Yes	Gas
Well No.	**KB Elevation**	**CF Elevation**
P-66-A	459.89 m	449.49 m
Field / **Pool**	**Pool Datum**	
Liard / Nihanni		

Test

Test Type				Atmospheric	
Build-Up				101.30 KPa A	
Test Start (mm/dd/yy)		**Test Finish**		**Casing ID**	**Tubing ID**
06/30/99	05:33 PM	07/02/99	02:58 PM		88.90 mm
On Bottom		**Off Bottom**		**C. Pres. Before**	**T. Pres. Before**
06/30/99	09:55 PM	07/02/99	12:05 PM		20370.00 KPa G
Shut In		**ETO**		**C. Pres. After**	**T. Pres. After**
06/30/99	06:10 PM	06/30/99	05:33 PM		

	Meas. Depth [mCF]	TVD [mCF]	Est. Pressure [KPa G]	Est. Gradient [KPa/m]	Est. Temperature [DegC]	Grad. Threshold
Well Datum						Grad. Recorder
Landed Depth	3000.00	2604.63				
Avg. MPP Depth	3133.10	2701.72				

Operator	Service Company
Bonnett's Wireline Services Ltd., (250) 787-3020	Lee Tool, Div. of Schlumberger

Remarks
9112Q-16E Bot. Rec. & 9502Q-16E Top Rec.

Depth References

Depth Reference	Offset [m]	Elevation [mMSL]
Casing Flange (CF)		449.49
Kelly Bushing (KB)	CF + 10.40	459.89

Perforations

Perf Top MD, [mCF]	Perf Bottom MD, [mCF]	MPP TVD, [mCF]	Pressure	Gradient
3104.60	3161.60	2701.72		

Top Recorder

Model	Serial	Latest Calibration	
LMR-3000S	9502Q-16E	11/28/98	
Max. Rated Press.	**Max. Rated Temp.**		
110213.34 KPa G	174.96 DegC		

Bottom Hole Pressure

	Tool String MD, [mCF]	Sample R/T [mmm dd, yy 24 hr.]	Pressure [KPa G]	
Sample 1	3000.00	Jul 02, 99 05:10:00	26380.89	
Sample 2		11:10:00	26388.08	
Difference:		06:00:00	7.18	Build Up Rate 1.20 KPa/Hr.

Bottom Recorder

Model	Serial	Latest Calibration
LMR-3000S	9112Q-16E	03/10/99
Max. Rated Press.	**Max. Rated Temp.**	
110213.27 KPa G	174.96 DegC	

Bottom Hole Pressure

	Tool String MD, [mCF]	Sample R/T [mmm dd, yy 24 hr.]	Pressure [KPa G]	
Sample 1	3000.00	Jul 02, 99 05:10:00	26388.82	
Sample 2		11:10:00	26393.07	
Difference:		06:00:00	4.25	Build Up Rate 0.71 KPa/Hr.

Deviated Well Survey

Meas. Depth [mKB]	Inclination [Degrees]	TVD [mKB]	Meas. Depth [mCF]	TVD [mCF]
0.00	0.00	0.00	-10.40	-10.40
199.00	0.50	199.00	188.60	188.60
490.00	4.20	489.69	479.60	479.29
499.00	4.10	498.67	488.60	488.27
509.00	4.10	508.64	498.60	498.24
518.00	4.00	517.62	507.60	507.22
989.00	5.50	988.16	978.60	977.76
1007.00	5.39	1006.08	996.60	995.68
1019.00	4.80	1018.03	1008.60	1007.63
1494.00	12.60	1491.63	1483.60	1481.23
1503.00	12.80	1500.41	1492.60	1490.01
1513.00	12.90	1510.16	1502.60	1499.76
1990.00	47.90	1901.23	1979.60	1890.83
2000.00	48.00	1907.93	1989.60	1897.53
2010.00	48.30	1914.60	1999.60	1904.20
2019.00	47.80	1920.62	2008.60	1910.22
2496.00	45.50	2249.60	2485.60	2239.20
2506.00	45.40	2256.62	2495.60	2246.22
2516.00	45.60	2263.63	2505.60	2253.23
2689.00	44.30	2384.83	2678.60	2374.43
2699.00	44.50	2391.98	2688.60	2381.58
2709.00	44.60	2399.10	2698.60	2388.70
2718.00	44.70	2405.50	2707.60	2395.10
2795.00	42.50	2460.44	2784.60	2450.04
2804.00	42.20	2467.09	2793.60	2456.69
2814.00	42.20	2474.50	2803.60	2464.10
2893.00	43.30	2532.20	2882.60	2521.80
2903.00	43.70	2539.46	2892.60	2529.06
2913.00	44.00	2546.67	2902.60	2536.27
2940.00	45.80	2565.75	2929.60	2555.35
2950.00	46.10	2572.71	2939.60	2562.31
2959.00	46.40	2578.93	2948.60	2568.53
2969.00	46.30	2585.83	2958.60	2575.43
2998.00	44.80	2606.26	2987.60	2595.86
3013.00	45.20	2616.86	3002.60	2606.46
3023.00	45.20	2623.91	3012.60	2613.51
3095.00	43.90	2675.20	3084.60	2664.80

Deviated Well Survey

Meas. Depth [mKB]	Inclination [Degrees]	TVD [mKB]	Meas. Depth [mCF]	TVD [mCF]
3122.00	40.40	2695.22	3111.60	2684.82
3138.00	36.90	2707.72	3127.60	2697.32
3157.00	37.00	2722.90	3146.60	2712.50
3224.00	38.50	2775.80	3213.60	2765.40
3253.00	34.70	2799.08	3242.60	2788.68

Tool Summary

Ranger Oil Limited
Alberta, Canada

Jun 30, 99 to Jul 02, 99

Ranger Ft. Liard | **P-66-A** | **Liard, Nihanni**

Top Recorder

Tool	Serial	Latest Calibration	Battery Serial
LMR-3000S	9502Q-16E	11/28/98	
Landed Depth	**Depth Offset**	**Min. Battery**	
2998.00 mCF	-2.00 m	0.10 V	

Program

Intervals					Expected Samples			Actual Samples				
Mode	Interval [d hh:mm:ss]	Rate [hh:mm:ss]	Delta [KPa]	Periodic [hh:mm:ss]	Regular Samples	Percent Storage	Energy [Ahr]	Regular Samples	Delta Samples	Percent Storage	Energy [Ahr]	Duration [d hh:mm:ss]
HB	10:00	1			600	0.2%	0.0022	600		0.2%	0.0022	10:00
HB	15	10			129600	37.1%	2.7374	129600		37.1%	2.7374	15
HB	60	1:00			86400	24.7%	10.2249	9701		2.8%	1.1481	6 17:41:00
Totals:	75 10:00				216600	62.0%	12.9644	139901		40.0%	3.8878	21 17:51:00

Bottom Recorder

Tool	Serial	Latest Calibration	Battery Serial
LMR-3000S	9112Q-16E	03/10/99	
Landed Depth	**Depth Offset**	**Min. Battery**	
3000.00 mCF	0.00 m	0.19 V	

Program

Intervals					Expected Samples			Actual Samples				
Mode	Interval [d hh:mm:ss]	Rate [hh:mm:ss]	Delta [KPa]	Periodic [hh:mm:ss]	Regular Samples	Percent Storage	Energy [Ahr]	Regular Samples	Delta Samples	Percent Storage	Energy [Ahr]	Duration [d hh:mm:ss]
HB	10:00	1			600	0.2%	0.0022	600		0.2%	0.0022	10:00
HB	15	10			129600	37.1%	2.7374	18826		5.4%	0.3975	2 4:17:40
HB	60	1:00			86400	24.7%	10.2249					
Totals:	75 10:00				216600	62.0%	12.9644	19426		5.6%	0.3998	2 4:27:40

Calibration Summary

Ranger Oil Limited
Alberta, Canada

Jun 30, 99 to Jul 02, 99

Ranger Ft. Liard | **P-66-A** | **Liard, Nihanni**

Top Recorder

Tool	Serial	Latest Calibration	Battery Serial
LMR-3000S	9502Q-16E	11/28/98	
Landed Depth	**Depth Offset**	**Min. Battery**	
2998.00 mCF	-2.00 m	0.10 V	

Equations

FP = Pres Freq (Hz)
FT = Temp Freq (Hz)

XP = 1.938500e+004 + (1.000000e-002) FP
XT = 4.770900e+004 + (1.000000e-002) FT

P_0 = 1.953372e+001+ (-1.200032e+000) XT + (-2.172789e-002) XT^2 + (-1.011883e-006) XT^3 + (-1.975025e-008) XT^4
P_1 = 4.271474e+001+ (-2.265985e-002) XT + (2.999324e-005) XT^2 + (4.096047e-008) XT^3 + (2.514522e-010) XT^4
P_2 = -1.644208e-003+ (1.558679e-005) XT + (-6.094425e-008) XT^2 + (-5.169452e-010) XT^3 + (-1.459151e-012) XT^4
P_3 = 3.314725e-007+ (-8.980239e-009) XT + (9.921004e-011) XT^2 + (1.019436e-012) XT^3 + (2.492994e-015) XT^4
Pressure (psiA) = $P_0 + P_1 XP + P_2 XP^2 + P_3 XP^3$

T_0 = 2.507865e+001
T_1 = -7.197898e-001
T_2 = -6.564610e-004
T_3 = -1.370481e-007
Temperature (degC) = $T_0 + T_1 XT + T_2 XT^2 + T_3 XT^3$

Bottom Recorder

Tool	Serial	Latest Calibration	Battery Serial
LMR-3000S	9112Q-16E	03/10/99	
Landed Depth	**Depth Offset**	**Min. Battery**	
3000.00 mCF	0.00 m	0.19 V	

Equations

FP = Pres Freq (Hz)
FT = Temp Freq (Hz)

XP = 2.524500e+004 + (1.000000e-002) FP
XT = 4.404400e+004 + (1.000000e-002) FT

P_0 = 2.059346e+001+ (-1.248274e+000) XT + (-2.033423e-002) XT^2 + (1.170075e-006) XT^3 + (-1.235264e-008) XT^4
P_1 = 3.963056e+001+ (-1.891355e-002) XT + (4.895316e-005) XT^2 + (9.463500e-008) XT^3 + (2.698000e-010) XT^4
P_2 = -1.975134e-003+ (-3.969299e-006) XT + (-2.592481e-007) XT^2 + (-1.271178e-009) XT^3 + (-2.368644e-012) XT^4
P_3 = 1.340248e-006+ (5.199956e-008) XT + (9.074406e-010) XT^2 + (4.902146e-012) XT^3 + (8.577975e-015) XT^4
P_4 = -9.123857e-010+ (-6.740327e-011) XT + (-1.081794e-012) XT^2 + (-5.924722e-015) XT^3 + (-1.024025e-017) XT^4
Pressure (psiA) = $P_0 + P_1 XP + P_2 XP^2 + P_3 XP^3 + P_4 XP^4$

T_0 = 2.575680e+001
T_1 = -7.340471e-001
T_2 = -8.306071e-004
T_3 = -5.911701e-007
Temperature (degC) = $T_0 + T_1 XT + T_2 XT^2 + T_3 XT^3$

Recorded Data

Ranger Oil Limited
Alberta, Canada

Jun 30, 99 to Jul 02, 99

Ranger Ft. Liard | **P-66-A** | **Liard, Nihanni**

Data

9112Q-16E Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	9112Q-16E Pressure (KPa G)	9502Q-16E Pressure (KPa G)	9112Q-16E vs 9502Q-16E Press. Diff. (KPa)	9112Q-16E Temperature (DegC)	9502Q-16E Temperature (DegC)	Comments
Jun 30, 99 17:33:00	0:00:00:00		-23.138			19.38	
17:35:00	0:00:02:00	20.621	-31.707	52.327	19.11	12.39	9112Q-16E Bottom Recorder
17:36:00	0:00:03:00	20.599	-31.507	52.105	19.14	12.52	9502Q-16E Top Recorder
17:51:00	0:00:18:00	19.003	-28.969	47.972	12.06	12.31	
18:06:00	0:00:33:00	17.746	-30.296	48.042	11.56	11.80	
18:21:00	0:00:48:00	16.728	-29.678	46.405	12.18	12.22	
18:36:00	0:01:03:00	22.948	-16.666	39.614	12.06	12.09	
18:51:00	0:01:18:00	1431.416	1422.700	8.716	12.51	13.39	
19:06:00	0:01:33:00	29780.781	29728.001	52.780	13.57	14.22	
19:11:00	0:01:38:00	19942.988	19914.523	28.466	13.42	14.12	Static Gradient In Start
19:26:00	0:01:53:00	20279.656	20322.985	-43.329	15.63	16.09	
19:41:00	0:02:08:00	21072.046	21063.644	8.402	31.13	31.56	
19:56:00	0:02:23:00	22004.570	21999.374	5.195	57.89	58.70	
20:11:00	0:02:38:00	22833.406	22820.600	12.806	82.43	83.45	
20:26:00	0:02:53:00	23275.508	23306.269	-30.761	98.75	99.75	
20:41:00	0:03:08:00	23565.128	23594.650	-29.522	113.02	113.79	
20:56:00	0:03:23:00	24030.612	24023.911	6.701	127.70	128.63	
21:11:00	0:03:38:00	24250.692	24244.492	6.201	136.62	137.53	
21:26:00	0:03:53:00	24759.688	24866.901	-107.213	142.27	143.16	
21:41:00	0:04:08:00	25994.851	25978.655	16.196	146.54	147.61	
21:55:00	0:04:22:00	26363.792	26346.723	17.069	149.50	150.47	On Bottom
22:10:00	0:04:37:00	26382.490	26366.168	16.322	150.75	151.63	
22:25:00	0:04:52:00	26384.912	26368.010	16.902	150.84	151.71	
22:40:00	0:05:07:00	26385.294	26368.014	17.280	150.83	151.70	
22:55:00	0:05:22:00	26385.128	26368.043	17.084	150.82	151.69	
23:10:00	0:05:37:00	26385.282	26368.080	17.202	150.81	151.68	
23:25:00	0:05:52:00	26385.279	26368.152	17.127	150.80	151.67	
23:40:00	0:06:07:00	26385.418	26368.576	16.843	150.79	151.66	
23:55:00	0:06:22:00	26385.622	26368.819	16.803	150.78	151.65	
Jul 01, 99 00:10:00	0:06:37:00	26385.488	26368.636	16.852	150.77	151.64	
00:25:00	0:06:52:00	26385.542	26368.796	16.747	150.75	151.62	
00:40:00	0:07:07:00	26385.580	26368.879	16.701	150.73	151.59	
00:55:00	0:07:22:00	26385.585	26369.205	16.380	150.71	151.58	
01:10:00	0:07:37:00	26385.911	26369.451	16.460	150.69	151.56	
01:25:00	0:07:52:00	26385.997	26369.685	16.312	150.67	151.54	
01:40:00	0:08:07:00	26385.956	26369.672	16.284	150.66	151.53	
01:55:00	0:08:22:00	26386.058	26369.813	16.245	150.64	151.51	
02:10:00	0:08:37:00	26386.081	26370.122	15.959	150.63	151.50	
02:25:00	0:08:52:00	26386.264	26370.248	16.016	150.61	151.48	
02:40:00	0:09:07:00	26386.399	26370.529	15.870	150.60	151.47	
02:55:00	0:09:22:00	26386.327	26370.926	15.402	150.59	151.46	
03:10:00	0:09:37:00	26386.399	26370.920	15.480	150.58	151.45	
03:25:00	0:09:52:00	26386.680	26370.706	15.974	150.57	151.44	
03:40:00	0:10:07:00	26386.690	26371.151	15.538	150.56	151.43	
03:55:00	0:10:22:00	26386.750	26371.246	15.504	150.55	151.43	
04:10:00	0:10:37:00	26386.682	26371.002	15.681	150.55	151.42	
04:25:00	0:10:52:00	26386.824	26371.276	15.548	150.54	151.42	
04:40:00	0:11:07:00	26389.851	26375.065	14.786	150.53	151.41	
04:55:00	0:11:22:00	26393.186	26379.212	13.974	150.50	151.39	

Data

9112Q-16E Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	9112Q-16E Pressure (KPa G)	9502Q-16E Pressure (KPa G)	9112Q-16E vs 9502Q-16E Press. Diff. (KPa)	9112Q-16E Temperature (DegC)	9502Q-16E Temperature (DegC)	Comments
05:10:00	0:11:37:00	26389.778	26376.040	13.738	150.48	151.36	
05:25:00	0:11:52:00	26390.847	26379.443	11.404	150.45	151.35	
05:40:00	0:12:07:00	26384.658	26370.121	14.537	150.34	151.23	
05:55:00	0:12:22:00	26384.966	26370.844	14.122	150.38	151.27	
06:10:00	0:12:37:00	26385.218	26370.877	14.341	150.39	151.28	
06:25:00	0:12:52:00	26385.272	26370.991	14.281	150.40	151.28	
06:40:00	0:13:07:00	26385.387	26370.937	14.451	150.40	151.29	
06:55:00	0:13:22:00	26385.359	26370.986	14.373	150.41	151.29	
07:10:00	0:13:37:00	26385.475	26370.920	14.555	150.41	151.30	
07:25:00	0:13:52:00	26385.399	26371.061	14.338	150.42	151.30	
07:40:00	0:14:07:00	26385.337	26371.021	14.316	150.42	151.30	
07:55:00	0:14:22:00	26385.354	26371.033	14.321	150.42	151.30	
08:10:00	0:14:37:00	26385.224	26370.646	14.578	150.42	151.30	
08:25:00	0:14:52:00	26384.824	26370.518	14.306	150.42	151.30	
08:40:00	0:15:07:00	26385.080	26370.530	14.550	150.42	151.30	
08:55:00	0:15:22:00	26385.238	26370.673	14.565	150.42	151.30	
09:10:00	0:15:37:00	26385.165	26371.006	14.159	150.42	151.30	
09:25:00	0:15:52:00	26385.374	26371.162	14.212	150.42	151.30	
09:40:00	0:16:07:00	26385.309	26371.046	14.263	150.42	151.30	
09:55:00	0:16:22:00	26385.340	26371.085	14.255	150.42	151.30	
10:10:00	0:16:37:00	26385.306	26370.905	14.401	150.42	151.30	
10:25:00	0:16:52:00	26385.320	26370.777	14.543	150.42	151.30	
10:40:00	0:17:07:00	26385.303	26370.959	14.344	150.42	151.30	
10:55:00	0:17:22:00	26385.334	26370.856	14.479	150.42	151.30	
11:10:00	0:17:37:00	26385.286	26370.895	14.391	150.42	151.29	
11:25:00	0:17:52:00	26385.269	26370.883	14.387	150.41	151.29	
11:40:00	0:18:07:00	26385.300	26370.818	14.482	150.41	151.29	
11:55:00	0:18:22:00	26385.187	26370.754	14.433	150.41	151.29	
12:10:00	0:18:37:00	26385.249	26370.833	14.416	150.41	151.29	
12:25:00	0:18:52:00	26385.201	26370.821	14.381	150.41	151.29	
12:40:00	0:19:07:00	26385.263	26370.757	14.507	150.41	151.29	
12:55:00	0:19:22:00	26385.199	26370.641	14.558	150.41	151.28	
13:10:00	0:19:37:00	26385.213	26370.628	14.584	150.40	151.28	
13:25:00	0:19:52:00	26385.244	26370.655	14.588	150.40	151.28	
13:40:00	0:20:07:00	26385.131	26370.643	14.488	150.40	151.28	
13:55:00	0:20:22:00	26385.114	26370.670	14.444	150.40	151.28	
14:10:00	0:20:37:00	26385.128	26370.606	14.522	150.40	151.28	
14:25:00	0:20:52:00	26385.063	26369.855	15.207	150.40	151.27	
14:40:00	0:21:07:00	26385.125	26369.779	15.346	150.39	151.27	
14:55:00	0:21:22:00	26385.060	26369.715	15.345	150.39	151.27	
15:10:00	0:21:37:00	26385.074	26369.650	15.423	150.39	151.27	
15:25:00	0:21:52:00	26385.009	26369.626	15.383	150.39	151.27	
15:40:00	0:22:07:00	26384.944	26369.704	15.240	150.39	151.27	
15:55:00	0:22:22:00	26384.958	26369.679	15.279	150.39	151.26	
16:10:00	0:22:37:00	26384.907	26369.615	15.292	150.38	151.26	
16:25:00	0:22:52:00	26384.938	26369.642	15.296	150.38	151.26	
16:40:00	0:23:07:00	26384.952	26369.669	15.283	150.38	151.26	
16:55:00	0:23:22:00	26384.918	26369.787	15.131	150.38	151.25	
17:10:00	0:23:37:00	26384.932	26369.659	15.273	150.37	151.25	
17:25:00	0:23:52:00	26384.881	26369.634	15.247	150.37	151.25	
17:40:00	1:00:07:00	26384.847	26369.700	15.147	150.37	151.25	
17:55:00	1:00:22:00	26384.892	26369.624	15.268	150.37	151.24	
18:10:00	1:00:37:00	26384.954	26369.651	15.303	150.36	151.24	
18:25:00	1:00:52:00	26385.015	26369.729	15.286	150.36	151.24	
18:40:00	1:01:07:00	26385.009	26371.217	13.792	150.35	151.24	
18:55:00	1:01:22:00	26386.850	26377.334	9.516	150.39	151.29	
19:10:00	1:01:37:00	26387.537	26379.632	7.905	150.43	151.31	
19:25:00	1:01:52:00	26387.649	26379.886	7.763	150.45	151.32	

Data

9112Q-16E Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	9112Q-16E Pressure (KPa G)	9502Q-16E Pressure (KPa G)	9112Q-16E vs 9502Q-16E Press. Diff. (KPa)	9112Q-16E Temperature (DegC)	9502Q-16E Temperature (DegC)	Comments
19:40:00	1:02:07:00	26387.849	26380.128	7.721	150.46	151.32	
19:55:00	1:02:22:00	26388.033	26380.124	7.909	150.47	151.33	
20:10:00	1:02:37:00	26388.103	26380.353	7.750	150.48	151.34	
20:25:00	1:02:52:00	26388.094	26380.467	7.627	150.49	151.35	
20:40:00	1:03:07:00	26388.195	26380.528	7.667	150.50	151.35	
20:55:00	1:03:22:00	26388.200	26380.538	7.662	150.50	151.36	
21:10:00	1:03:37:00	26388.127	26380.587	7.539	150.51	151.36	
21:25:00	1:03:52:00	26388.273	26380.545	7.728	150.51	151.37	
21:40:00	1:04:07:00	26388.292	26380.634	7.658	150.52	151.37	
21:55:00	1:04:22:00	26388.249	26380.671	7.579	150.53	151.37	
22:10:00	1:04:37:00	26388.365	26380.616	7.748	150.53	151.38	
22:25:00	1:04:52:00	26388.336	26380.550	7.786	150.53	151.38	
22:40:00	1:05:07:00	26388.339	26380.574	7.764	150.54	151.38	
22:55:00	1:05:22:00	26388.420	26380.611	7.809	150.54	151.39	
23:10:00	1:05:37:00	26388.471	26380.596	7.874	150.54	151.39	
23:25:00	1:05:52:00	26388.346	26380.633	7.713	150.55	151.39	
23:40:00	1:06:07:00	26388.475	26380.657	7.818	150.55	151.40	
23:55:00	1:06:22:00	26388.492	26380.591	7.902	150.55	151.40	
Jul 02, 99 00:10:00	1:06:37:00	26388.495	26380.667	7.828	150.56	151.40	
00:25:00	1:06:52:00	26388.576	26380.692	7.885	150.56	151.40	
00:40:00	1:07:07:00	26388.497	26380.756	7.742	150.56	151.41	
00:55:00	1:07:22:00	26388.579	26380.728	7.850	150.56	151.41	
01:10:00	1:07:37:00	26388.598	26380.741	7.857	150.57	151.41	
01:25:00	1:07:52:00	26388.663	26380.869	7.794	150.57	151.41	
01:40:00	1:08:07:00	26388.583	26380.750	7.833	150.57	151.41	
01:55:00	1:08:22:00	26388.682	26380.854	7.828	150.57	151.41	
02:10:00	1:08:37:00	26388.700	26380.878	7.852	150.57	151.42	
02:25:00	1:08:52:00	26388.715	26380.787	7.929	150.57	151.42	
02:40:00	1:09:07:00	26388.653	26380.799	7.854	150.58	151.42	
02:55:00	1:09:22:00	26388.638	26380.823	7.815	150.58	151.42	
03:10:00	1:09:37:00	26388.720	26380.887	7.832	150.58	151.42	
03:25:00	1:09:52:00	26388.751	26380.756	7.995	150.58	151.42	
03:40:00	1:10:07:00	26388.737	26380.808	7.928	150.58	151.42	
03:55:00	1:10:22:00	26388.737	26380.833	7.904	150.58	151.43	
04:10:00	1:10:37:00	26388.753	26380.793	7.960	150.58	151.43	
04:25:00	1:10:52:00	26388.739	26380.805	7.934	150.59	151.43	
04:40:00	1:11:07:00	26388.725	26380.869	7.855	150.59	151.43	
04:55:00	1:11:22:00	26388.852	26380.933	7.918	150.59	151.43	
05:10:00	1:11:37:00	26388.820	26380.894	7.927	150.59	151.43	
05:25:00	1:11:52:00	26388.885	26380.906	7.979	150.59	151.43	
05:40:00	1:12:07:00	26388.854	26380.867	7.987	150.59	151.44	
05:55:00	1:12:22:00	26388.871	26380.827	8.044	150.59	151.44	
06:10:00	1:12:37:00	26388.840	26380.839	8.000	150.59	151.44	
06:25:00	1:12:52:00	26388.760	26380.891	7.869	150.59	151.44	
06:40:00	1:13:07:00	26388.935	26380.955	7.980	150.59	151.44	
06:55:00	1:13:22:00	26388.873	26380.967	7.906	150.59	151.44	
07:10:00	1:13:37:00	26388.859	26380.979	7.879	150.60	151.44	
07:25:00	1:13:52:00	26388.907	26380.992	7.915	150.60	151.44	
07:40:00	1:14:07:00	26389.002	26380.952	8.050	150.60	151.44	
07:55:00	1:14:22:00	26388.940	26380.952	7.988	150.60	151.44	
08:10:00	1:14:37:00	26388.861	26381.004	7.857	150.60	151.44	
08:25:00	1:14:52:00	26388.892	26380.912	7.980	150.60	151.44	
08:40:00	1:15:07:00	26388.957	26381.016	7.941	150.60	151.44	
08:55:00	1:15:22:00	26388.878	26380.976	7.901	150.60	151.45	
09:10:00	1:15:37:00	26388.863	26381.028	7.835	150.60	151.45	
09:25:00	1:15:52:00	26388.990	26381.040	7.950	150.60	151.45	
09:40:00	1:16:07:00	26389.021	26381.156	7.865	150.60	151.45	
09:55:00	1:16:22:00	26388.990	26381.117	7.874	150.60	151.45	

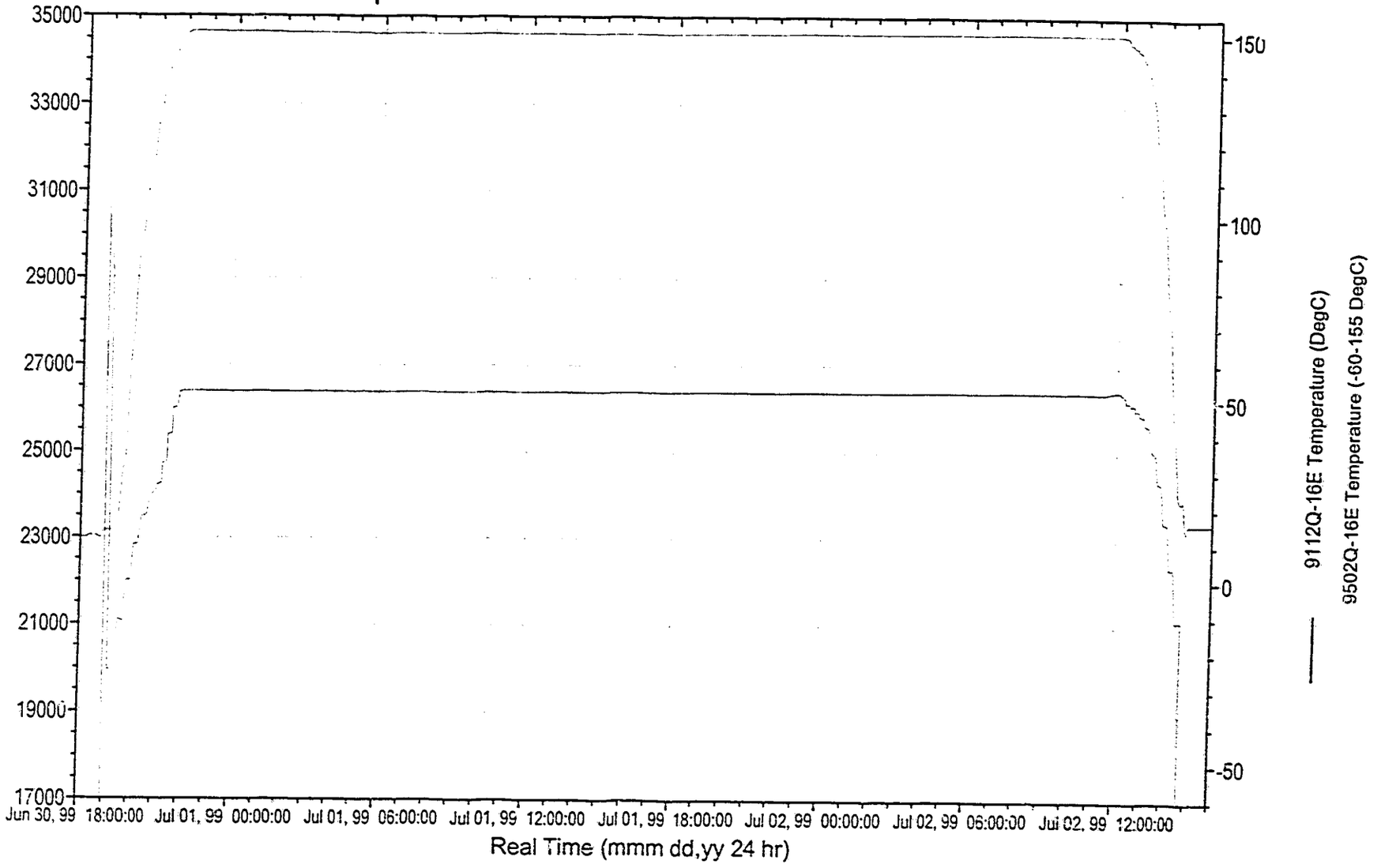
Data

9112Q-16E Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	9112Q-16E Pressure (KPa G)	9502Q-16E Pressure (KPa G)	9112Q-16E vs 9502Q-16E Press. Diff. (KPa)	9112Q-16E Temperature (DegC)	9502Q-16E Temperature (DegC)	Comments
10:10:00	1:16:37:00	26392.126	26385.470	6.656	150.61	151.45	
10:25:00	1:16:52:00	26392.247	26386.973	5.275	150.62	151.45	
10:40:00	1:17:07:00	26391.805	26387.299	4.506	150.60	151.45	
10:55:00	1:17:22:00	26392.800	26387.829	4.971	150.64	151.45	
11:10:00	1:17:37:00	26393.075	26388.076	4.998	150.62	151.45	
11:25:00	1:17:52:00	26397.474	26391.972	5.502	150.60	151.45	
11:40:00	1:18:07:00	26420.726	26417.116	3.610	150.62	151.46	
11:55:00	1:18:22:00	26447.705	26444.582	3.123	150.58	151.41	
12:05:00	1:18:32:00	26445.199	26438.311	6.888	150.36	151.14	Off Bottom
12:07:00	1:18:34:00	26442.922	26386.665	56.257	150.32	151.10	Static Gradient Out Start
12:22:00	1:18:49:00	26214.550	26207.456	7.094	147.98	148.73	
12:37:00	1:19:04:00	26146.579	26140.762	5.817	146.53	147.29	
12:52:00	1:19:19:00	26020.882	26014.980	5.902	143.72	144.43	
13:07:00	1:19:34:00	25742.852	25690.376	52.476	138.87	138.55	
13:22:00	1:19:49:00	25358.939	25243.291	115.648	129.48	128.66	
13:37:00	1:20:04:00	24900.114	24779.409	120.705	115.83	115.23	
13:52:00	1:20:19:00	24329.927	24188.240	141.687	98.67	98.13	
14:07:00	1:20:34:00	23407.941	23410.104	-2.164	75.02	73.97	
14:22:00	1:20:49:00	22371.425	22369.830	1.595	43.42	41.57	
14:37:00	1:21:04:00	21145.077	21131.525	13.552	22.80	22.88	
14:52:00	1:21:19:00	3.717	34.060	-30.343	15.01	15.23	

Pressure & Temperature vs. Real Time

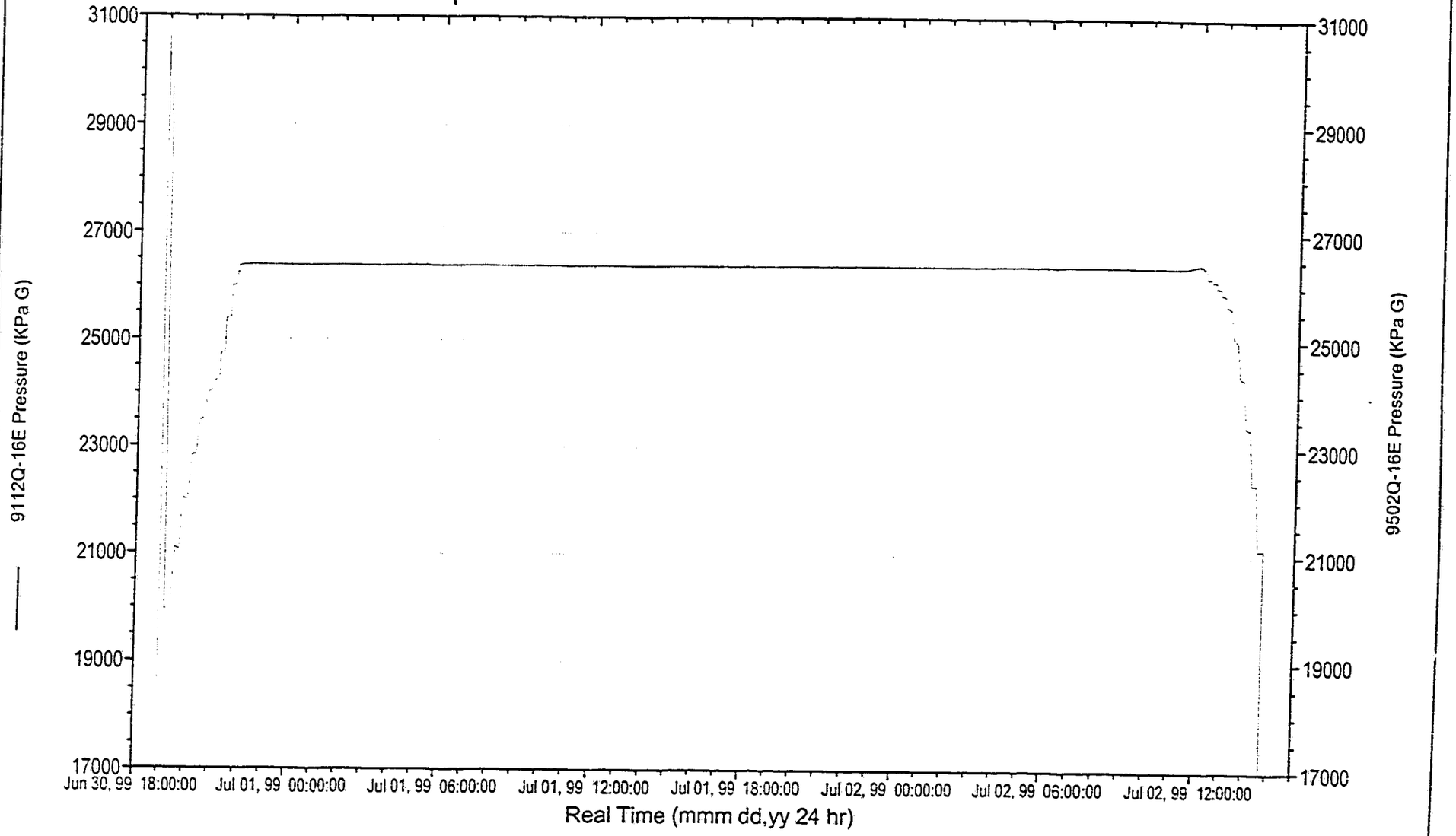
Company: **Lee Tool, Div. of Schlumberger**
Client: **Ranger Oil Limited**
Remarks: **9112Q-16E Bot. Rec. & 9502Q-16E Top Rec.**

Field: **Liard**
Well Name: **Ranger Ft. Liard**
Well Number: **P-66-A**



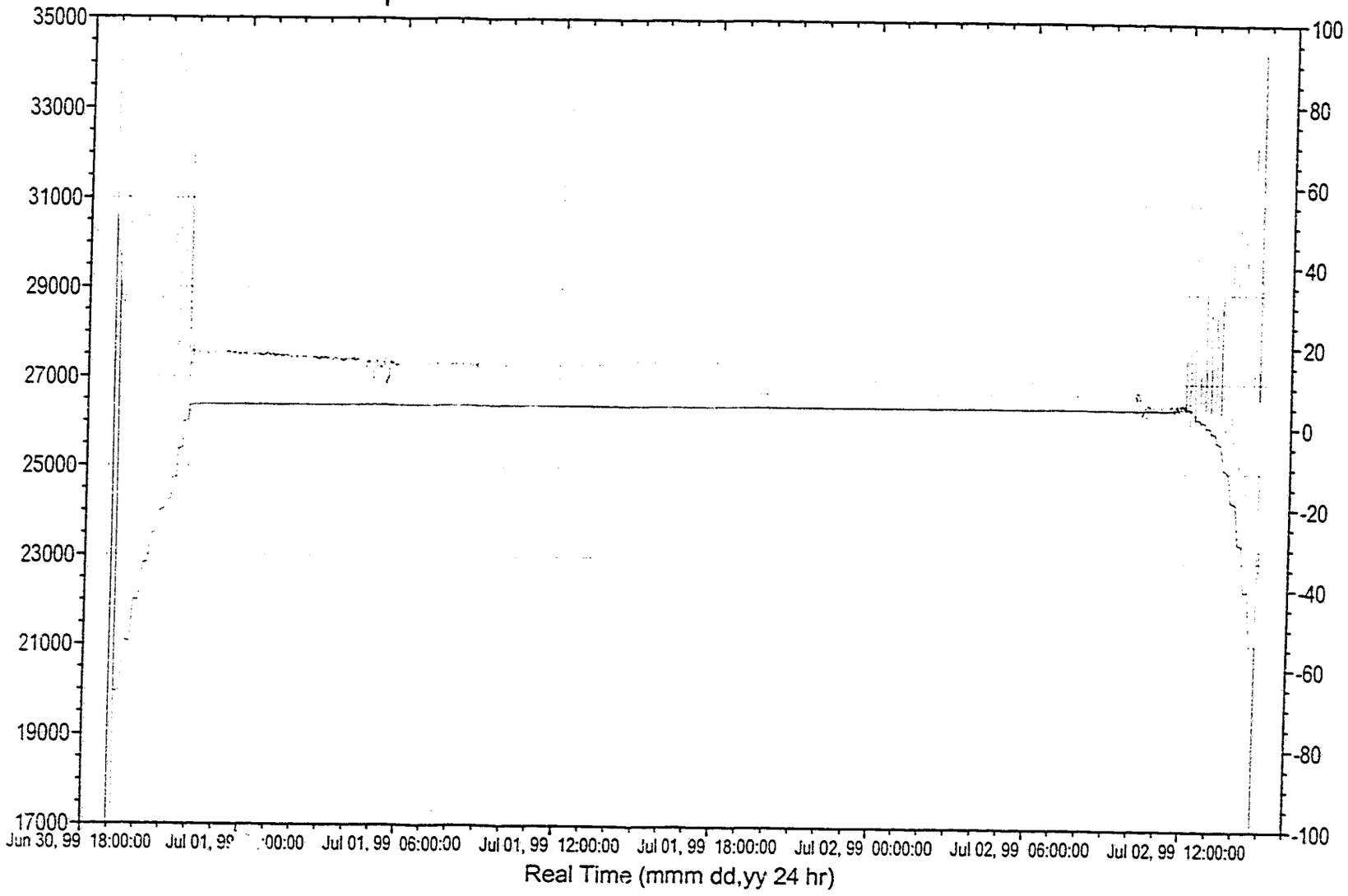
Pressure vs. Real Time

Company:	**Lee Tool, Div. of Schlumberger**	*Field:*	**Liard**
Client:	**Ranger Oil Limited**	*Well Name:*	**Ranger Ft. Liard**
Remarks:	**9112Q-16E Bot. Rec. & 9502Q-16E Top Rec.**	*Well Number:*	**P-66-A**



Pressure & Pressure Diff. vs. Real Time

Company:	Lee Tool, Div. of Schlumberger	*Field:*	Liard
Client:	Ranger Oil Limited	*Well Name:*	Ranger Ft. Liard
Remarks:	9112Q-16E Bot. Rec. & 9502Q-16E Top Rec.	*Well Number:*	P-66-A



Ranger Oil Limited

Static Gradient Out

Ranger Ft. Liard

P-66-A

Jul 02, 99

Service Company Contact Info		
Report Writer: Wade Nicks, 309-7940	Service Company: Lee Tool, Div. of Schlumberger	
Operator: Bonnett's Wireline Services Ltd., (250) 787-3020	Job ID: Ranger Static Gradient	Test Date: Jul 02, 99

Gauge: Lee Memory Recorder Model 3000s (Quartz)

Manufacturer: Lee Tool, Division of Schlumberger Canada Limited

Static Gradient Out

Ranger Oil Limited
Alberta, Canada

Jul 02, 99

Ranger Ft. Liard | **P-66-A** | **Liard, Nihanni**

Well

Client		Province	Country
Ranger Oil Limited		Alberta	Canada
Well Name		**Deviated Well**	**Well Status**
Ranger Ft. Liard		Yes	Gas
Well No.		**KB Elevation**	**CF Elevation**
P-66-A		459.89 m	449.49 m
Field	**Pool**	**Pool Datum**	
Liard	Nihanni		

Test

Test Type				Atmospheric		
Static Gradient Out				101.30 KPa A		
Test Start (mm/dd/yy)		**Test Finish**		**Casing ID**		**Tubing ID**
07/02/99	12:07 PM	07/02/99	02:58 PM			88.90 mm
On Bottom		**Off Bottom**		**C. Pres. Before**		**T. Pres. Before**
06/30/99	09:55 PM	07/02/99	12:17 PM			21374.00 KPa G
Shut In		**ETO**		**C. Pres. After**		**T. Pres. After**
06/30/99	06:10 PM	07/02/99	12:07 PM			

	Meas. Depth [mCF]	TVD [mCF]	Est. Pressure [KPa G]	Est. Gradient [KPa/m]	Est. Temperature [DegC]	Grad. Threshold
Well Datum						2.00 KPa/m
Run Depth	3000.00	2604.63	26320.28	3.28		Grad. Recorder
Avg. MPP Depth	3133.10	2701.72	26639.02	3.28		9502Q-16E

Operator	Service Company
Bonnett's Wireline Services Ltd., (250) 787-3020	Lee Tool, Div. of Schlumberger

Remarks
9112Q-16E Bot. Rec. & 9502Q-16E Top Rec.

Depth References

Depth Reference	Offset [m]	Elevation [mMSL]
Casing Flange (CF)		449.49
Kelly Bushing (KB)	CF + 10.40	459.89

Perforations

Perf Top MD, [mCF]	Perf Bottom MD, [mCF]	MPP TVD, [mCF]	Pressure [KPa G]	Gradient [KPa/m]
3104.60	3161.60	2701.72	26639.02	3.28

Top Recorder

Model	Serial	Latest Calibration	
LMR-3000S	9502Q-16E	11/28/98	
Max. Rated Press	**Max. Rated Temp.**		
110213.34 KPa G	174.96 DegC		

Gradient Stops

Depth						
Tool String MD, [mCF]	Recorder MD, [mCF]	Recorder TVD, [mCF]	Sample R/T [mmm dd, 24hr]	Pressure [KPa G]	Gradient [KPa/m]	Temperature [DegC]
0.00	-2.00	-2.00	Jul 02, 99 14:43:00	21141.05		22.78
500.00	498.00	497.65	14:23:00	22370.45	2.46	40.45
1000.00	998.00	997.07	14:06:00	23411.02	2.08	74.75
1500.00	1498.00	1495.28	13:50:00	24330.98	1.85	99.28
2000.00	1998.00	1903.13	13:33:00	25037.20	1.73	117.62
2500.00	2498.00	2247.90	13:16:00	25647.83	1.77	133.23
2700.00	2698.00	2388.28	13:03:00	25883.78	1.68	140.67
2800.00	2798.00	2459.95	12:51:00	26016.25	1.85	144.54
2900.00	2898.00	2532.96	12:39:00	26138.70	1.68	147.17
2950.00	2948.00	2568.12	12:28:00	26200.40	1.76	148.36
3000.00	2998.00	2603.22	12:17:00	26315.65	3.28	149.27

Bottom Hole Pressure

	Tool String MD, [mCF]	Sample R/T [mmm dd, yy 24 hr.]	Pressure [KPa G]	
Sample 1	3000.00	Jul 02, 99 12:08:00	26391.92	
Sample 2		12:17:00	26315.65	
Difference:		00:09:00	-76.28	Build Up Rate -508.52 KPa/Hr.

Bottom Recorder

Model	Serial	Latest Calibration	
LMR-3000S	9112Q-16E	03/10/99	
Max. Rated Press.	**Max. Rated Temp.**		
110213.27 KPa G	174.96 DegC		

Gradient Stops

Depth						
Tool String MD, [mCF]	Recorder MD, [mCF]	Recorder TVD, [mCF]	Sample R/T [mmm dd, 24hr]	Pressure [KPa G]	Gradient [KPa/m]	Temperature [DegC]
0.00	0.00	-0.00	Jul 02, 99 14:43:00	21153.96		22.55
500.00	500.00	499.64	14:23:00	22373.06	2.44	42.10
1000.00	1000.00	999.06	14:06:00	23408.65	2.07	75.93
1500.00	1500.00	1497.22	13:50:00	24333.52	1.86	99.77
2000.00	2000.00	1904.47	13:33:00	25043.25	1.74	117.67
2500.00	2500.00	2249.30	13:16:00	25655.93	1.78	132.91
2700.00	2700.00	2389.70	13:03:00	25891.33	1.68	140.07
2800.00	2800.00	2461.43	12:51:00	26022.66	1.83	143.85
2900.00	2900.00	2534.40	12:39:00	26144.65	1.67	146.37
2950.00	2950.00	2569.50	12:28:00	26206.66	1.77	147.52
3000.00	3000.00	2604.63	12:17:00	26334.81	3.65	148.42

Bottom Hole Pressure

	Tool String MD, [mCF]	Sample R/T [mmm dd, yy 24 hr.]	Pressure [KPa G]	
Sample 1	3000.00	Jul 02, 99 12:08:00	26409.62	
Sample 2		12:17:00	26334.81	
Difference:		00:09:00	-74.81	Build Up Rate -498.76 KPa/Hr.

Deviated Well Survey

Meas. Deptn [mKB]	Inclination [Degrees]	TVD [mKB]	Meas. Depth [mCF]	TVD [mCF]
0.00	0.00	0.00	-10.40	-10.40
199.00	0.50	199.00	188.60	188.60
490.00	4.20	489.69	479.60	479.29
499.00	4.10	498.67	488.60	488.27
509.00	4.10	508.64	498.60	498.24
518.00	4.00	517.62	507.60	507.22
989.00	5.50	988.16	978.60	977.76
1007.00	5.39	1006.08	996.60	995.68
1019.00	4.80	1018.03	1008.60	1007.63
1494.00	12.60	1491.63	1483.60	1481.23
1503.00	12.80	1500.41	1492.60	1490.01
1513.00	12.90	1510.16	1502.60	1499.76
1990.00	47.90	1901.23	1979.60	1890.83
2000.00	48.00	1907.93	1989.60	1897.53
2010.00	48.30	1914.60	1999.60	1904.20
2019.00	47.80	1920.62	2008.60	1910.22
2496.00	45.50	2249.60	2485.60	2239.20
2506.00	45.40	2256.62	2495.60	2246.22
2516.00	45.60	2263.63	2505.60	2253.23
2689.00	44.30	2384.83	2678.60	2374.43
2699.00	44.50	2391.98	2688.60	2381.58
2709.00	44.60	2399.10	2698.60	2388.70

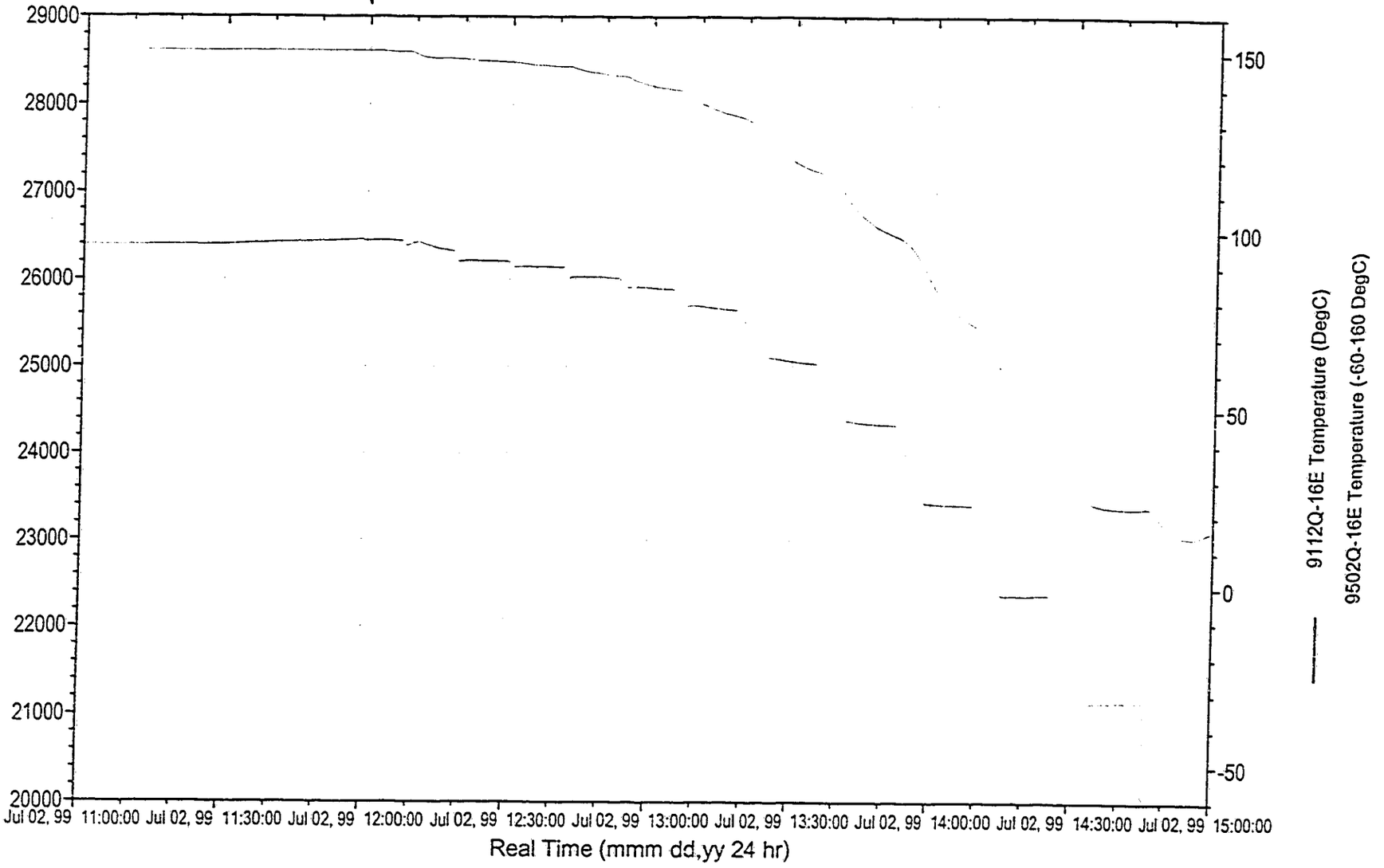
Deviated Well Survey

Meas. Depth [mKB]	Inclination [Degrees]	TVD [mKB]	Meas. Depth [mCF]	TVD [mCF]
2718.00	44.70	2405.50	2707.60	2395.10
2795.00	42.50	2460.44	2784.60	2450.04
2804.00	42.20	2467.09	2793.60	2456.69
2814.00	42.20	2474.50	2803.60	2464.10
2893.00	43.30	2532.20	2882.60	2521.80
2903.00	43.70	2539.46	2892.60	2529.06
2913.00	44.00	2546.67	2902.60	2536.27
2940.00	45.80	2565.75	2929.60	2555.35
2950.00	46.10	2572.71	2939.60	2562.31
2959.00	46.40	2578.93	2948.60	2568.53
2969.00	46.30	2585.83	2958.60	2575.43
2998.00	44.80	2606.26	2987.60	2595.86
3013.00	45.20	2616.86	3002.60	2606.46
3023.00	45.20	2623.91	3012.60	2613.51
3095.00	43.90	2675.20	3084.60	2664.80
3122.00	40.40	2695.22	3111.60	2684.82
3138.00	36.90	2707.72	3127.60	2697.32
3157.00	37.00	2722.90	3146.60	2712.50
3224.00	38.50	2775.80	3213.60	2765.40
3253.00	34.70	2799.08	3242.60	2788.68

Pressure & Temperature vs. Real Time (Static Gradient Out)

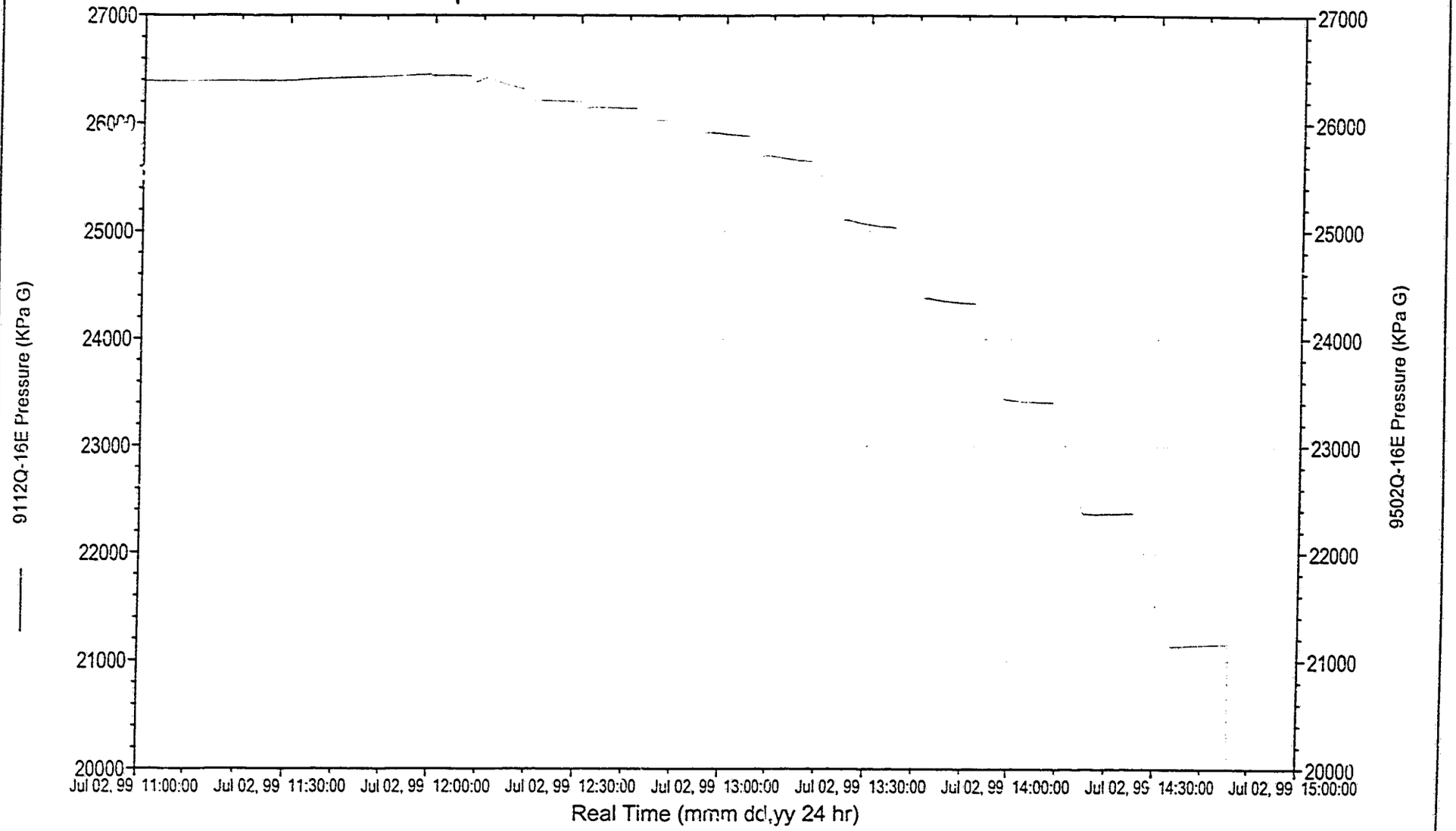
Company: **Lee Tool, Div. of Schlumberger**
Client: **Ranger Oil Limited**
Remarks: **9112Q-16E Bot. Rec. & 9502Q-16E Top Rec.**

Field: **Liard**
Well Name: **Ranger Ft. Liard**
Well Number: **P-66-A**



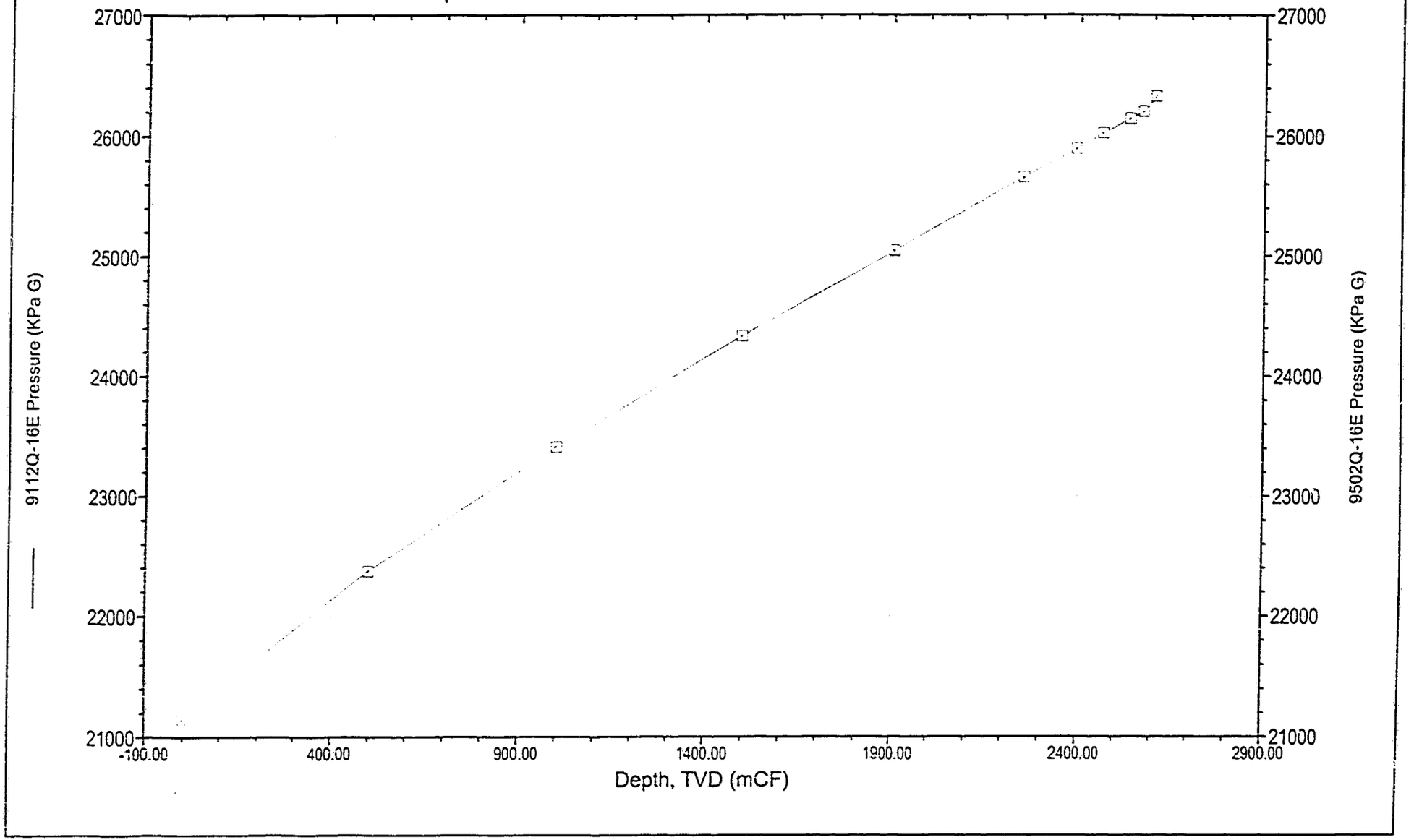
Pressure vs. Real Time (Static Gradient Out)

Company:	**Lee Tool, Div. of Schlumberger**	*Field:*	**Liard**
Client:	**Ranger Oil Limited**	*Well Name:*	**Ranger Ft. Liard**
Remarks:	**9112Q-16E Bot. Rec. & 9502Q-16E Top Rec.**	*Well Number:*	**P-66-A**



Pressure vs. Depth (Static Gradient Out)

Company:	Lee Tool, Div. of Schlumberger	*Field:*	Liard
Client:	Ranger Oil Limited	*Well Name:*	Ranger Ft. Liard
Remarks:	9112Q-16E Bot. Rec. & 9502Q-16E Top Rec.	*Well Number:*	P-66-A

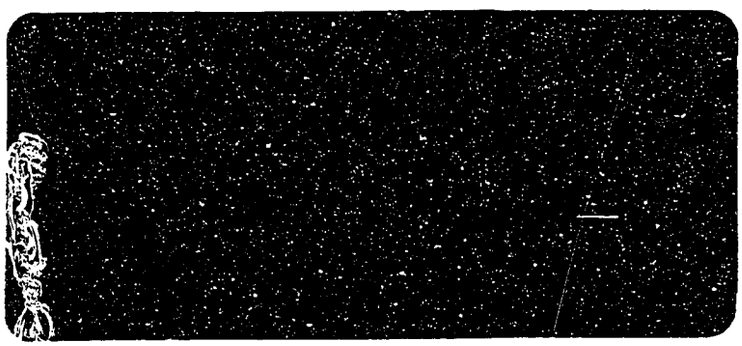


1823

N.E.B. COPY

GOVERNMENT

Sub-Surface Pressure Report



LEE TOOL

DIVISION OF SCHLUMBERGER CANADA LIMITED

7449 - 49 Avenue Crescent
Red Deer, Alberta T4P 1X6

NATIONAL ENERGY BOARD
REGULATORY RESEARCH
MAY 19 2000

Ranger Oil Limited

Flow & Build-Up

Ranger Ft. Liard

P-66-A

Jul 29, 99 to Aug 24, 99

Service Company Contact Info		
Report Writer: Wade Nicks, 309-7940	Service Company: Lee Tool, Div. of Schlumberger	
Operator: Bonnett's Wireline Services Ltd., (250) 787-3020	Job ID: Ranger extended	Test Date: Jul 29, 99 to Aug 24, 99

Gauge: Lee Memory Recorder Model 3000s (Quartz)

Manufacturer: Lee Tool, Division of Schlumberger Canada Limited

Flow & Build-Up

Ranger Oil Limited
Alberta, Canada

Jul 29, 99 to Aug 24, 99

Ranger Ft. Liard | **P-66-A** | **Liard, Nihanni**

Well

Client: Ranger Oil Limited		Province: Alberta	Country: Canada
Well Name: Ranger Ft. Liard		Deviated Well: Yes	Well Status: Gas
Well No.: P-66-A		KB Elevation: 459.89 m	CF Elevation: 449.49 m
Field: Liard	Pool: Nihanni	Pool Datum:	

Test

Test Type: Flow & Build-Up				Atmospheric: 101.30 KPa A	
Test Start (mm/dd/yy): 07/29/99	02:32 PM	Test Finish: 08/24/99	10:34 PM	Casing ID:	Tubing ID: 88.90 mm
On Bottom: 07/29/99	04:26 PM	Off Bottom: 08/29/99	03:14 PM	C. Pres. Before:	T. Pres. Before: 21460.00 KPa G
Shut: 08/08/99	09:00 PM	ETD: 07/29/99	02:32 PM	C. Pres. After:	T. Pres. After:

	Meas. Depth [mCF]	TVD [mCF]	Est. Pressure [KPa G]	Est. Gradient [KPa/m]	Est. Temperature [DegC]	Grad. Threshold
Well Datum						Grad. Recorder
Landed Depth	2954.00	2575.48				
Avg. MPP Depth	3133.10	2703.82				

Operator: Bonnett's Wireline Services Ltd., (250) 787-3020
Service Company: Lee Tool, Div. of Schlumberger

Remarks: Tool Quit on August 24/99 @ 22:34 p.m.

Depth References

Depth Reference	Offset [m]	Elevation [mMSL]
Casing Flange (CF)		449.49
Kelly Bushing (KB)	CF + 10.40	459.89

Perforations

Perf Top MD, [mCF]	Perf Bottom MD, [mCF]	MPP TVD, [mCF]	Pressure	Gradient
3104.60	3161.60	2703.82		

Top Recorder

Model	Serial	Latest Calibration	
LyR-3000S	Imr49902	01/01/70	
Max. Rated Press.: 110213.85 KPa G	Max. Rated Temp.: 175.00 DegC		

Bottom Hole Pressure

	Tool String MD, [mCF]	Sample R/T [mmm dd, yy 24 hr.]	Pressure [KPa G]	
Sample 1	2954.00			
Sample 2				
Difference:				Build Up Rate

Recorder 2

Model	Serial	Latest Calibration	
LMR-4000S	LMR49901	04/21/99	
Max. Rated Press.	Max. Rated Temp.		
110213.79 KPa G	174.96 DegC		

Bottom Hole Pressure

	Tool String MD, [mCF]	Sample R/T [mmm dd, yy 24 hr.]	Pressure [KPa G]	
Sample 1	2954.00			
Sample 2				
Difference:				Build Up Rate

Bottom Recorder

Model	Serial	Latest Calibration	
LMR-3000S	9502Q-16E	11/28/98	
Max. Rated Press.	Max. Rated Temp.		
110213.34 KPa G	174.96 DegC		

Bottom Hole Pressure

	Tool String MD, [mCF]	Sample R/T [mmm dd, yy 24 hr.]	Pressure [KPa G]	
Sample 1	2954.00			
Sample 2				
Difference:				Build Up Rate

Deviated Well Survey

Meas. Depth [mCF]	Inclination [Degrees]	TVD [mCF]
0.00	0.00	0.00
199.00	0.50	199.00
2950.00	46.10	2572.71
2959.00	46.40	2578.93
2969.00	46.30	2585.83
3122.00	40.40	2695.22
3138.00	36.90	2707.72
3157.00	37.00	2722.90

Tool Summary

Ranger Oil Limited
Alberta, Canada

Jul 29, 99 to Aug 24, 99

Ranger Ft. Liard | **P-66-A** | **Liard, Nihanni**

Top Recorder

Tool	Serial	Latest Calibration	Battery Serial
LyR-3000S	lmr49902	01/01/70	150 C
Landed Depth	**Depth Offset**	**Min. Battery**	
2951.00 mCF	-3.00 m	-1.#J V	

Program: Ranger30day

Intervals					Expected Samples			Actual Samples				
Mode	Interval [d hh:mm:ss]	Rate [hh:mm:ss]	Delta [KPa]	Periodic [hh:mm:ss]	Regular Samples	Percent Storage	Energy [Ahr]	Regular Samples	Delta Samples	Percent Storage	Energy [Ahr]	Duration [d hh:mm:ss]
HB	30	10			259200	74.2%	5.4747	119087		34.1%	2.5153	13 18:47:50
HB	30	1:00			43200	12.4%	5.1125					
Totals:	60				302400	86.5%	10.5872	119087		34.1%	2.5153	13 18:47:50

Recorder 2

Tool	Serial	Latest Calibration	Battery Serial
LMR-4000S	LMR49901	04/21/99	150 C
Landed Depth	**Depth Offset**	**Min. Battery**	
2952.00 mCF	-2.00 m	0.10 V	

Program: Ranger30day

Intervals					Expected Samples			Actual Samples				
Mode	Interval [d hh:mm:ss]	Rate [hh:mm:ss]	Delta [KPa]	Periodic [hh:mm:ss]	Regular Samples	Percent Storage	Energy [Ahr]	Regular Samples	Delta Samples	Percent Storage	Energy [Ahr]	Duration [d hh:mm:ss]
HB	30	10			259200	74.2%	5.4747	227670		65.1%	4.8088	26 8:25:00
HB	30	1:00			43200	12.4%	5.1125					
Totals:	60				302400	86.5%	10.5872	227670		65.1%	4.8088	26 8:25:00

Bottom Recorder

Tool	Serial	Latest Calibration	Battery Serial
LMR-3000S	9502Q-16E	11/28/98	
Landed Depth	**Depth Offset**	**Min. Battery**	
2954.00 mCF	0.00 m	0.10 V	

Program

Intervals					Expected Samples			Actual Samples				
Mode	Interval [d hh:mm:ss]	Rate [hh:mm:ss]	Delta [KPa]	Periodic [hh:mm:ss]	Regular Samples	Percent Storage	Energy [Ahr]	Regular Samples	Delta Samples	Percent Storage	Energy [Ahr]	Duration [d hh:mm:ss]
HB	10:00	1			600	0.2%	0.0022	600		0.2%	0.0022	10:00
HB	15	10			129600	37.1%	2.7374	129600		37.1%	2.7374	15
HB	60	1:00			86400	24.7%	10.2249	9701		2.8%	1.1481	6 17:41:00
Totals:	75 10:00				216600	62.0%	12.9644	139901		40.0%	3.8676	21 17:51:00

Calibration Summary

Ranger Oil Limited
Alberta, Canada

Jul 29, 99 to Aug 24, 99

Ranger Ft. Liard | **P-66-A** | **Liard, Nihanni**

Top Recorder

Tool	Serial	Latest Calibration	Battery Serial
LyR-3000S	Imr49902	01/01/70	150 C
Landed Depth	**Depth Offset**	**Min. Battery**	
2951.00 mCF	-3.00 m	-1.#J V	

Equations

FP = Pres Freq (Hz)
FT = Temp Freq (Hz)

XP = 2.473000e+004 + (1.000000e-002) FP
XT = 5.132200e+004 + (1.000000e-002) FT

P_0 = 1.175431e+001+ (-8.070629e-001) XT + (-2.188418e-002) XT^2 + (9.248426e-006) XT^3
P_1 = 4.655417e+001+ (-2.262040e-002) XT + (2.874971e-005) XT^2 + (-5.957688e-008) XT^3
P_2 = -1.767792e-003+ (1.019494e-005) XT + (-4.130800e-008) XT^2 + (4.885289e-011) XT^3
P_3 = 6.292336e-007+ (-6.050031e-010) XT + (5.613726e-011) XT^2 + (4.622830e-014) XT^3
Pressure (psiA) = $P_0 + P_1$ XP + P_2 XP^2 + P_3 XP^3

T_0 = 2.483780e+001
T_1 = -7.277677e-001
T_2 = -8.535837e-004
T_3 = -6.863757e-007
Temperature (degC) = $T_0 + T_1$ XT + T_2 XT^2 + T_3 XT^3

Recorder 2

Tool	Serial	Latest Calibration	Battery Serial
LMR-4000S	LMR49901	04/21/99	150 C
Landed Depth	**Depth Offset**	**Min. Battery**	
2952.00 mCF	-2.00 m	0.10 V	

Equations

FP = Pres Freq (Hz)
FT = Temp Freq (Hz)

XP = 2.400800e+004 + (1.000000e-002) FP
XT = 4.788000e+004 + (1.000000e-002) FT

P_0 = 1.988735e+001+ (-1.167790e+000) XT + (-2.228564e-002) XT^2 + (1.169695e-006) XT^3 + (-1.480677e-008) XT^4
P_1 = 4.390188e+001+ (-2.212298e-002) XT + (3.165288e-005) XT^2 + (7.900083e-009) XT^3 + (1.597057e-010) XT^4
P_2 = -1.764029e-003+ (1.428218e-005) XT + (-3.656165e-008) XT^2 + (-2.178743e-010) XT^3 + (-8.307616e-013) XT^4
P_3 = 5.969450e-007+ (-9.967290e-009) XT + (9.106598e-012) XT^2 + (2.979492e-013) XT^3 + (1.127216e-015) XT^4
Pressure (psiA) = $P_0 + P_1$ XP + P_2 XP^2 + P_3 XP^3

T_0 = 2.580718e+001
T_1 = -7.309891e-001
T_2 = -8.284541e-004
T_3 = -6.064924e-007
Temperature (degC) = $T_0 + T_1$ XT + T_2 XT^2 + T_3 XT^3

Bottom Recorder

Tool	Serial	Latest Calibration	Battery Serial
LMR-3000S	9502Q-16E	11/28/98	
Landed Depth	**Depth Offset**	**Min. Battery**	
2954.00 mCF	0.00 m	0.10 V	

Equations

FP = Pres Freq (Hz)
FT = Temp Freq (Hz)

XP = 1.938500e+004 + (1.000000e-002) FP
XT = 4.770900e+004 + (1.000000e-002) FT

P_0 = 1.953372e+001+ (-1.200032e+000) XT + (-2.172789e-002) XT^2 + (-1.011883e-006) XT^3 + (-1.975025e-008) XT^4
P_1 = 4.271474e+001+ (-2.265985e-002) XT + (2.999324e-005) XT^2 + (4.096047e-008) XT^3 + (2.514522e-010) XT^4
P_2 = -1.644208e-003+ (1.558679e-005) XT + (-6.094425e-008) XT^2 + (-5.169452e-010) XT^3 + (-1.459151e-012) XT^4
P_3 = 3.314725e-007+ (-8.980239e-009) XT + (9.921004e-011) XT^2 + (1.019436e-012) XT^3 + (2.492994e-015) XT^4
Pressure (psiA) = $P_0 + P_1 XP + P_2 XP^2 + P_3 XP^3$

T_0 = 2.507865e+001
T_1 = -7.197898e-001
T_2 = -6.564610e-004
T_3 = -1.370481e-007
Temperature (degC) = $T_0 + T_1 XT + T_2 XT^2 + T_3 XT^3$

Recorded Data

Ranger Oil Limited
Alberta, Canada

Jul 29, 99 to Aug 24, 99

Ranger Ft. Liard | **P-66-A** | **Liard, Nihanni**

Data

LMR49901 Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	LMR49901 Pressure (KPa G)	lmr49902 Pressure (KPa G)	9502Q-16E Pressure (KPa G)	LMR49901 Temperature (DegC)	Comments
Jul 29, 99 14:32:00	0:00:00:00	-6.106	-6.019	-13.782	15.81	
14:40:00	0:00:08:00	10.538	-5.621	-12.896	16.12	9502Q-16E Bottom Recorder
14:41:00	0:00:09:00	10.206	-5.828	-12.943	15.94	LMR 49901
14:42:00	0:00:10:00	10.495	-5.731	-13.150	15.76	LMR 49902
15:42:00	0:01:10:00	23810.270	23756.592	23811.675	75.96	
16:42:00	0:02:10:00	25953.422	25948.570	25951.924	146.83	
17:42:00	0:03:10:00	25977.960	25974.180	25975.295	147.14	
18:42:00	0:04:10:00	25994.226	25990.718	25991.403	147.08	
19:42:00	0:05:10:00	26009.111	26005.358	26005.847	147.01	
20:42:00	0:06:10:00	26022.561	26018.291	26018.700	146.94	
21:42:00	0:07:10:00	26034.897	26030.751	26031.042	146.88	
22:42:00	0:08:10:00	26046.081	26041.995	26042.256	146.83	
23:42:00	0:09:10:00	26056.622	26052.379	26052.455	146.77	
Jul 30, 99 00:42:00	0:10:10:00	26066.365	26061.980	26062.012	146.73	
01:42:00	0:11:10:00	26075.422	26070.961	26071.067	146.69	
02:42:00	0:12:10:00	26083.980	26079.468	26079.476	146.66	
03:42:00	0:13:10:00	26091.825	26087.265	26087.245	146.63	
04:42:00	0:14:10:00	26099.405	26094.667	26094.617	146.60	
05:42:00	0:15:10:00	26106.431	26101.633	26101.660	146.58	
06:42:00	0:16:10:00	26112.985	26108.184	26108.236	146.56	
07:42:00	0:17:10:00	26119.341	26114.404	26114.448	146.54	
08:42:00	0:18:10:00	26125.250	26120.407	26120.298	146.52	
09:42:00	0:19:10:00	24780.895	24776.574	24776.974	149.25	
10:42:00	0:20:10:00	24671.268	24667.446	24668.915	150.37	
11:42:00	0:21:10:00	24600.949	24597.814	24599.149	150.65	
12:42:00	0:22:10:00	24567.838	24563.602	24564.811	150.83	
13:42:00	0:23:10:00	24552.072	24548.373	24548.761	150.94	
14:42:00	1:00:10:00	24539.170	24535.317	24536.846	151.02	
15:42:00	1:01:10:00	24528.300	24524.706	24526.403	151.08	
16:42:00	1:02:10:00	24523.110	24518.805	24520.409	151.13	
17:42:00	1:03:10:00	24503.860	24500.401	24502.551	151.18	
18:42:00	1:04:10:00	24493.025	24489.588	24492.158	151.21	
19:42:00	1:05:10:00	24488.174	24484.213	24486.414	151.25	
20:42:00	1:06:10:00	24478.306	24474.487	24476.316	151.27	
21:42:00	1:07:10:00	23946.159	23945.014	23949.670	151.36	
22:42:00	1:08:10:00	23871.903	23870.193	23875.398	151.43	
23:42:00	1:09:10:00	23845.748	23844.165	23849.008	151.46	
Jul 31, 99 00:42:00	1:10:10:00	23825.729	23823.724	23828.579	151.48	
01:42:00	1:11:10:00	23811.557	23809.688	23814.829	151.49	
02:42:00	1:12:10:00	23799.080	23796.458	23801.686	151.50	
03:42:00	1:13:10:00	23787.493	23785.265	23790.466	151.51	
04:42:00	1:14:10:00	23777.128	23774.420	23779.441	151.52	
05:42:00	1:15:10:00	23769.323	23766.515	23771.744	151.53	
06:42:00	1:16:10:00	23760.825	23757.371	23761.907	151.53	
07:42:00	1:17:10:00	23750.403	23747.947	23752.481	151.54	
08:42:00	1:18:10:00	23744.463	23741.181	23746.174	151.55	
09:42:00	1:19:10:00	22505.731	22512.086	22523.829	151.51	
10:42:00	1:20:10:00	22330.499	22336.927	22348.452	151.54	
11:42:00	1:21:10:00	22258.447	22265.341	22278.323	151.54	

LMR49901		LMR49901	lmr49902	9502Q-16E	LMR49901	
Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	Pressure (KPa G)	Pressure (KPa G)	Pressure (KPa G)	Temperature (DegC)	Comments
12:42:00	1:22:10:00	22211.500	22217.438	22229.816	151.53	
13:42:00	1:23:10:00	22167.436	22173.246	22186.101	151.51	
14:42:00	2:00:10:00	22138.095	22144.278	22156.712	151.50	
15:42:00	2:01:10:00	22110.295	22116.527	22128.975	151.49	
16:42:00	2:02:10:00	22086.336	22092.695	22105.295	151.47	
17:42:00	2:03:10:00	22064.939	22070.734	22083.025	151.46	
18:42:00	2:04:10:00	22046.901	22052.338	22065.121	151.44	
19:42:00	2:05:10:00	22029.184	22034.283	22048.109	151.43	
20:42:00	2:06:10:00	22013.388	22018.659	22032.038	151.41	
21:42:00	2:07:10:00	22677.440	22678.959	22688.255	151.43	
22:42:00	2:08:10:00	22750.756	22752.519	22760.875	151.44	
23:42:00	2:09:10:00	22779.607	22780.768	22789.830	151.45	
Aug 01, 99 00:42:00	2:10:10:00	22788.971	22791.638	22800.156	151.44	
01:42:00	2:11:10:00	22791.794	22793.626	22801.286	151.44	
02:42:00	2:12:10:00	22790.999	22792.879	22800.884	151.44	
03:42:00	2:13:10:00	22790.101	22791.838	22799.498	151.45	
04:42:00	2:14:10:00	22787.283	22789.324	22797.066	151.45	
05:42:00	2:15:10:00	22783.933	22785.790	22793.911	151.45	
06:42:00	2:16:10:00	22780.208	22781.978	22789.872	151.46	
07:42:00	2:17:10:00	22776.537	22778.165	22786.811	151.46	
08:42:00	2:18:10:00	22772.278	22774.358	22782.610	151.46	
09:42:00	2:19:10:00	22768.500	22769.752	22778.046	151.47	
10:42:00	2:20:10:00	22764.026	22765.600	22773.320	151.47	
11:42:00	2:21:10:00	22759.873	22761.226	22768.803	151.47	
12:42:00	2:22:10:00	22754.759	22756.291	22763.500	151.47	
13:42:00	2:23:10:00	22749.750	22751.577	22759.503	151.48	
14:42:00	3:00:10:00	22745.863	22747.321	22754.460	151.48	
15:42:00	3:01:10:00	22741.760	22743.060	22750.719	151.48	
16:42:00	3:02:10:00	22738.406	22739.876	22747.190	151.48	
17:42:00	3:03:10:00	22734.141	22735.224	22743.084	151.48	
18:42:00	3:04:10:00	22730.4[illegible]	22731.541	22739.134	151.48	
19:42:00	3:05:10:00	22725.029	22726.373	22734.195	151.48	
20:42:00	3:06:10:00	22719.222	22720.644	22728.475	151.49	
21:42:00	3:07:10:00	22715.386	22717.295	22724.786	151.49	
22:42:00	3:08:10:00	22712.722	22714.003	22721.929	151.49	
23:42:00	3:09:10:00	22709.313	22710.144	22717.615	151.49	
Aug 02, 99 00:42:00	3:10:10:00	22704.461	22704.812	22713.456	151.49	
01:42:00	3:11:10:00	22700.252	22701.349	22708.882	151.49	
02:42:00	3:12:10:00	22696.204	22696.810	22705.452	151.49	
03:42:00	3:13:10:00	22691.832	22691.988	22700.977	151.49	
04:42:00	3:14:10:00	22688.262	22689.154	22696.507	151.49	
05:42:00	3:15:10:00	22683.626	22684.780	22692.608	151.49	
06:42:00	3:16:10:00	22678.721	22679.849	22688.550	151.49	
07:42:00	3:17:10:00	22675.418	22676.613	22684.443	151.50	
08:42:00	3:18:10:00	22672.432	22672.646	22680.905	151.50	
09:42:00	3:19:10:00	22668.222	22668.844	22677.163	151.50	
10:42:00	3:20:10:00	22663.691	22665.098	22672.688	151.50	
11:42:00	3:21:10:00	22660.760	22661.409	22669.414	151.50	
12:42:00	3:22:10:00	22657.084	22657.385	22666.140	151.50	
13:42:00	3:23:10:00	22653.512	22653.696	22661.665	151.50	
14:42:00	4:00:10:00	22650.368	22651.315	22658.755	151.50	
15:42:00	4:01:10:00	22646.476	22647.626	22655.217	151.50	
16:42:00	4:02:10:00	22642.373	22643.432	22651.631	151.50	
17:42:00	4:03:10:00	22639.176	22639.686	22647.884	151.50	
18:42:00	4:04:10:00	22635.495	22636.229	22643.929	151.50	
19:42:00	4:05:10:00	22632.403	22632.885	22641.327	151.50	
20:42:00	4:06:10:00	22628.353	22628.629	22636.909	151.50	
21:42:00	4:07:10:00	22625.262	22625.682	22633.895	151.50	

	LMR49901		LMR49901	lmr-19902	9502Q-16E	LMR49901	
	Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	Pressure (KPa G)	Pressure (KPa G)	Pressure (KPa G)	Temperature (DegC)	Comments
	22:42:00	4:08:10:00	22622.437	22622.616	22630.668	151.50	
	23:42:00	4:09:10:00	22618.545	22619.272	22627.026	151.50	
Aug 03, 99	00:42:00	4:10:10:00	22615.186	22615.645	22623.799	151.50	
	01:42:00	4:11:10:00	22611.933	22613.038	22621.146	151.50	
	02:42:00	4:12:10:00	22608.095	22609.065	22616.879	151.50	
	03:42:00	4:13:10:00	22605.751	22606.226	22614.385	151.50	
	04:42:00	4:14:10:00	22600.259	22601.584	22609.754	151.50	
	05:42:00	4:15:10:00	22598.446	22598.632	22606.735	151.50	
	06:42:00	4:16:10:00	22595.512	22595.973	22604.441	151.50	
	07:42:00	4:17:10:00	22593.170	22592.902	22601.276	151.51	
	08:42:00	4:18:10:00	22589.809	22589.960	22598.357	151.50	
	09:42:00	4:19:10:00	22586.930	22587.466	22595.599	151.50	
	10:42:00	4:20:10:00	22584.054	22584.111	22592.637	151.51	
	11:42:00	4:21:10:00	22581.760	22581.680	22589.931	151.51	
	12:42:00	4:22:10:00	22577.175	22577.826	22586.028	151.51	
	13:42:00	4:23:10:00	22574.722	22575.326	22582.754	151.51	
	14:42:00	5:00:10:00	22571.736	22572.039	22579.263	151.51	
	15:42:00	5:01:10:00	22568.377	22568.871	22576.401	151.51	
	16:42:00	5:02:10:00	22565.233	22565.799	22573.439	151.51	
	17:42:00	5:03:10:00	22562.299	22562.461	22570.625	151.51	
	18:42:00	5:04:10:00	22557.982	22558.777	22566.518	151.51	
	19:42:00	5:05:10:00	22555.901	22556.566	22564.016	151.51	
	20:42:00	5:06:10:00	22553.073	22553.052	22561.101	151.50	
	21:42:00	5:07:10:00	22549.929	22550.615	22557.775	151.51	
	22:42:00	5:08:10:00	22546.570	22547.498	22555.381	151.51	
	23:42:00	5:09:10:00	22544.118	22543.865	22552.519	151.51	
Aug 04, 99	00:42:00	5:10:10:00	22541.080	22541.088	22548.984	151.51	
	01:42:00	5:11:10:00	22537.984	22538.543	22546.270	151.50	
	02:42:00	5:12:10:00	22534.680	22536.043	22543.308	151.51	
	03:42:00	5:13:10:00	22532.283	22532.983	22540.606	151.51	
	04:42:00	5:14:10:00	22530.040	22530.041	22537.844	151.50	
	05:42:00	5:15:10:00	22527.802	22527.655	22535.554	151.51	
	06:42:00	5:16:10:00	22525.028	22525.564	22532.223	151.50	
	07:42:00	5:17:10:00	22522.469	22522.220	22530.294	151.50	
	08:42:00	5:18:10:00	22519.803	22519.499	22527.800	151.50	
	09:42:00	5:19:10:00	22517.936	22517.459	22525.037	151.50	
	10:42:00	5:20:10:00	22515.377	22514.738	22523.060	151.50	
	11:42:00	5:21:10:00	22512.764	22513.208	22520.358	151.50	
	12:42:00	5:22:10:00	22511.270	22511.054	22519.053	151.50	
	13:42:00	5:23:10:00	22509.085	22509.070	22516.819	151.50	
	14:42:00	6:00:10:00	22507.164	22506.180	22514.577	151.50	
	15:42:00	6:01:10:00	22505.565	22506.066	22513.120	151.50	
	16:42:00	6:02:10:00	22503.860	22503.850	22511.875	151.50	
	17:42:00	6:03:10:00	22501.619	22501.475	22509.841	151.50	
	18:42:00	6:04:10:00	22498.632	22498.471	22506.975	151.50	
	19:42:00	6:05:10:00	22497.620	22497.338	22504.901	151.50	
	20:42:00	6:06:10:00	22495.594	22495.127	22502.712	151.50	
	21:42:00	6:07:10:00	22491.913	22491.727	22499.533	151.50	
	22:42:00	6:08:10:00	22488.609	22487.532	22495.426	151.50	
	23:42:00	6:09:10:00	22480.238	22480.391	22487.880	151.50	
Aug 05, 99	00:42:00	6:10:10:00	22472.825	22472.116	22480.850	151.50	
	01:42:00	6:11:10:00	22472.078	22470.472	22479.293	151.50	
	02:42:00	6:12:10:00	22469.304	22468.891	22476.478	151.50	
	03:42:00	6:13:10:00	22466.265	22465.943	22474.189	151.50	
	04:42:00	6:14:10:00	22463.865	22464.696	22472.311	151.50	
	05:42:00	6:15:10:00	22461.144	22461.358	22468.928	151.50	
	06:42:00	6:16:10:00	22458.532	22458.014	22465.962	151.50	
	07:42:00	6:17:10:00	22455.546	22455.123	22462.735	151.50	

LMR49901		LMR49901	lmr49902	9502Q-16E	LMR49901	
Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	Pressure (KPa G)	Pressure (KPa G)	Pressure (KPa G)	Temperature (DegC)	Comments
08:42:00	6:18:10:00	22453.521	22452.964	22461.230	151.50	
09:42:00	6:19:10:00	22450.533	22450.419	22458.312	151.50	
10:42:00	6:20:10:00	22448.719	22448.384	22456.070	151.50	
11:42:00	6:21:10:00	22445.573	22445.437	22453.051	151.50	
12:42:00	6:22:10:00	22443.014	22441.917	22449.668	151.50	
13:42:00	6:23:10:00	22439.334	22439.542	22447.066	151.50	
14:42:00	7:00:10:00	22435.709	22436.141	22443.683	151.50	
15:42:00	7:01:10:00	22434.056	22433.591	22441.658	151.50	
16:42:00	7:02:10:00	22430.000	22430.139	22437.590	151.50	
17:42:00	7:03:10:00	22428.561	22427.532	22435.977	151.50	
18:42:00	7:04:10:00	22425.841	22424.698	22433.063	151.50	
19:42:00	7:05:10:00	22422.535	22421.870	22430.404	151.50	
20:42:00	7:06:10:00	22420.616	22419.766	22427.286	151.50	
21:42:00	7:07:10:00	22417.203	22417.448	22424.576	151.50	
22:42:00	7:08:10:00	22415.229	22414.501	22422.546	151.50	
23:42:00	7:09:10:00	22411.709	22412.120	22419.319	151.50	
Aug 06, 99 00:42:00	7:10:10:00	22409.843	22409.740	22418.018	151.50	
01:42:00	7:11:10:00	22407.497	22407.535	22415.204	151.50	
02:42:00	7:12:10:00	22405.309	22404.191	22412.289	151.49	
03:42:00	7:13:10:00	22403.335	22401.816	22410.568	151.49	
04:42:00	7:14:10:00	22402.965	22401.640	22409.947	151.50	
05:42:00	7:15:10:00	22404.243	22404.197	22412.289	151.49	
06:42:00	7:16:10:00	22403.283	22403.007	22410.676	151.49	
07:42:00	7:17:10:00	22401.469	22400.456	22408.278	151.49	
08:42:00	7:18:10:00	22399.817	22398.013	22406.304	151.49	
09:42:00	7:19:10:00	22395.550	22395.241	22402.605	151.49	
10:42:00	7:20:10:00	22392.724	22392.350	22400.315	151.49	
11:42:00	7:21:10:00	22390.111	22389.630	22397.192	151.49	
12:42:00	7:22:10:00	22385.898	22385.435	22393.497	151.49	
13:42:00	7:23:10:00	22383.286	22383.225	22390.218	151.49	
14:42:00	8:00:10:00	22379.820	22379.087	22386.627	151.49	
15:42:00	8:01:10:00	22376.779	22376.542	22384.438	151.49	
16:42:00	8:02:10:00	22375.551	22374.331	22382.508	151.49	
17:42:00	8:03:10:00	22372.193	22371.837	22379.333	151.49	
18:42:00	8:04:10:00	22371.553	22370.590	22378.661	151.49	
19:42:00	8:05:10:00	22368.032	22367.530	22375.226	151.49	
20:42:00	8:06:10:00	22365.420	22364.078	22372.151	151.49	
21:42:00	8:07:10:00	22362.114	22361.578	22369.080	151.49	
22:42:00	8:08:10:00	22359.446	22359.147	22366.842	151.49	
23:42:00	8:09:10:00	22358.647	22357.327	22365.593	151.49	
Aug 07, 99 00:42:00	8:10:10:00	22356.461	22355.405	22362.887	151.49	
01:42:00	8:11:10:00	22354.167	22353.031	22360.541	151.49	
02:42:00	8:12:10:00	22349.208	22348.723	22356.586	151.49	
03:42:00	8:13:10:00	22345.530	22344.063	22351.957	151.49	
04:42:00	8:14:10:00	22340.837	22340.441	22348.314	151.49	
05:42:00	8:15:10:00	22339.074	22338.639	22346.385	151.49	
06:42:00	8:16:10:00	22337.796	22336.819	22344.199	151.49	
07:42:00	8:17:10:00	22334.382	22333.475	22341.909	151.49	
08:42:00	8:18:10:00	22333.475	22332.234	22340.031	151.49	
09:42:00	8:19:10:00	22331.983	22330.414	22338.265	151.49	
10:42:00	8:20:10:00	22328.357	22327.813	22334.514	151.49	
11:42:00	8:21:10:00	22326.970	22325.199	22333.373	151.49	
12:42:00	8:22:10:00	22324.996	22324.185	22332.328	151.49	
13:42:00	8:23:10:00	22322.648	22322.037	22329.674	151.49	
14:42:00	9:00:10:00	22317.797	22316.992	22325.146	151.49	
15:42:00	9:01:10:00	22315.771	22315.342	22323.168	151.49	
16:42:00	9:02:10:00	22312.677	22311.381	22319.521	151.49	
17:42:00	9:03:10:00	22308.571	22307.305	22315.097	151.49	

LMR49901		LMR49901	lmr49902	95020-16E	LMR49901	
Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	Pressure (KPa G)	Pressure (KPa G)	Pressure (KPa G)	Temperature (DegC)	Comments
18:42:00	9:04:10:00	22307.236	22305.882	22313.480	151.49	
19:42:00	9:05:10:00	22305.158	22304.238	22311.402	151.49	
20:42:00	9:06:10:00	22302.918	22301.801	22309.164	151.49	
21:42:00	9:07:10:00	22299.611	22298.463	22306.141	151.49	
22:42:00	9:08:10:00	22298.650	22297.959	22305.413	151.48	
23:42:00	9:09:10:00	22293.265	22291.547	22299.739	151.49	
Aug 08, 99 00:42:00	9:10:10:00	22293.318	22291.604	22299.535	151.49	
01:42:00	9:11:10:00	22290.757	22290.420	22297.446	151.48	
02:42:00	9:12:10:00	22285.530	22284.757	22292.501	151.48	
03:42:00	9:13:10:00	22283.612	22282.370	22290.159	151.48	
04:42:00	9:14:10:00	22281.745	22280.273	22288.702	151.48	
05:42:00	9:15:10:00	22280.732	22279.303	22287.040	151.48	
06:42:00	9:16:10:00	22278.598	22277.275	22284.846	151.48	
07:42:00	9:17:10:00	22275.611	22274.674	22282.084	151.48	
08:42:00	9:18:10:00	22273.051	22271.266	22279.173	151.48	
09:42:00	9:19:10:00	22272.412	22271.430	22279.333	151.48	
10:42:00	9:20:10:00	22272.679	22271.153	22278.653	151.48	
11:42:00	9:21:10:00	22267.132	22265.604	22273.083	151.48	
12:42:00	9:22:10:00	22265.159	22264.527	22272.611	151.48	
13:42:00	9:23:10:00	22261.107	22259.929	22268.035	151.48	
14:42:00	10:00:10:00	22259.184	22258.071	22265.273	151.48	
15:42:00	10:01:10:00	22257.852	22256.421	22264.124	151.48	
16:42:00	10:02:10:00	22255.187	22254.153	22261.629	151.48	
17:42:00	10:03:10:00	22253.159	22251.659	22259.964	151.48	
18:42:00	10:04:10:00	22250.118	22248.491	22256.681	151.48	
19:42:00	10:05:10:00	22249.053	22247.124	22255.539	151.48	
20:42:00	10:06:10:00	22247.131	22245.720	22253.398	151.48	
21:00:00	10:06:28:00	22247.240	22245.594	22665.468	151.48	Well Shut-In Date & Time
22:00:00	10:07:28:00	24278.002	24269.178	24275.365	151.23	
23:00:00	10:08:28:00	24446.831	24437.388	24441.143	150.84	
Aug 09, 99 00:00:00	10:09:28:00	24550.782	24541.428	24543.844	150.48	
01:00:00	10:10:28:00	24626.990	24617.664	24619.537	150.22	
02:00:00	10:11:28:00	24688.047	24678.635	24680.483	150.03	
03:00:00	10:12:28:00	24739.740	24730.281	24731.952	149.88	
04:00:00	10:13:28:00	24784.910	24775.510	24777.098	149.75	
05:00:00	10:14:28:00	24825.325	24815.801	24817.453	149.64	
06:00:00	10:15:28:00	24862.103	24852.631	24854.136	149.54	
07:00:00	10:16:28:00	24896.140	24886.674	24888.175	149.45	
08:00:00	10:17:28:00	24927.562	24918.075	24919.575	149.34	
09:00:00	10:18:28:00	24957.120	24947.511	24949.043	149.25	
10:00:00	10:19:28:00	24984.789	24975.156	24976.647	149.18	
11:00:00	10:20:28:00	25010.849	25001.171	25002.708	149.12	
12:00:00	10:21:28:00	25035.541	25025.787	25027.365	149.07	
13:00:00	10:22:28:00	25058.957	25049.279	25050.884	149.03	
14:00:00	10:23:28:00	25081.248	25071.539	25073.202	148.99	
15:00:00	11:00:28:00	25102.599	25092.840	25094.481	148.95	
16:00:00	11:01:28:00	25123.427	25113.499	25115.116	148.91	
17:00:00	11:02:28:00	25142.950	25133.329	25134.889	148.75	
18:00:00	11:03:28:00	25161.633	25151.756	25153.371	148.73	
19:00:00	11:04:28:00	25179.578	25169.476	25171.314	148.72	
20:00:00	11:05:28:00	25196.751	25186.836	25188.452	148.70	
21:00:00	11:06:28:00	25213.318	25203.406	25205.083	148.68	
22:00:00	11:07:28:00	25229.321	25219.303	25221.079	148.66	
23:00:00	11:08:28:00	25244.826	25234.852	25236.477	148.64	
Aug 10, 99 00:00:00	11:09:28:00	25259.703	25249.788	25251.345	148.62	
01:00:00	11:10:28:00	25274.102	25264.106	25265.705	148.60	
02:00:00	11:11:28:00	25287.969	25277.854	25279.547	148.58	
03:00:00	11:12:28:00	25301.401	25291.259	25293.013	148.56	

LMR49901		LMR49901	lmr49902	9502Q-16E	LMR49901	
Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	Pressure (KPa G)	Pressure (KPa G)	Pressure (KPa G)	Temperature (DegC)	Comments
04:00:00	11:13:28:00	25314.386	25304.221	25305.895	148.54	
05:00:00	11:14:28:00	25326.903	25316.675	25318.375	148.52	
06:00:00	11:15:28:00	25338.942	25328.853	25330.349	148.51	
07:00:00	11:16:28:00	25350.621	25340.466	25342.206	148.49	
08:00:00	11:17:28:00	25362.075	25351.850	25353.570	148.48	
09:00:00	11:18:28:00	25373.074	25362.796	25364.520	148.46	
10:00:00	11:19:28:00	25383.732	25373.509	25375.108	148.45	
11:00:00	11:20:28:00	25394.082	25383.711	25385.526	148.43	
12:00:00	11:21:28:00	25404.082	25393.756	25395.569	148.42	
13:00:00	11:22:28:00	25413.838	25403.552	25405.275	148.40	
14:00:00	11:23:28:00	25423.360	25413.027	25414.748	148.39	
15:00:00	12:00:28:00	25432.510	25422.113	25423.961	148.38	
16:00:00	12:01:28:00	25441.512	25431.087	25432.877	148.36	
17:00:00	12:02:28:00	25449.984	25439.719	25441.521	148.35	
18:00:00	12:03:28:00	25458.498	25448.023	25450.010	148.34	
19:00:00	12:04:28:00	25466.662	25456.376	25458.265	148.33	
20:00:00	12:05:28:00	25474.667	25464.334	25466.197	148.32	
21:00:00	12:06:28:00	25482.490	25472.119	25473.884	148.31	
22:00:00	12:07:28:00	25490.028	25479.524	25481.505	148.30	
23:00:00	12:08:28:00	25497.385	25486.907	25488.815	148.29	
Aug 11, 99 00:00:00	12:09:28:00	25504.404	25494.094	25495.893	148.28	
01:00:00	12:10:28:00	25511.401	25500.932	25502.712	148.27	
02:00:00	12:11:28:00	25518.093	25507.567	25509.495	148.26	
03:00:00	12:12:28:00	25524.771	25514.171	25516.183	148.25	
04:00:00	12:13:28:00	25531.207	25520.674	25522.460	148.25	
05:00:00	12:14:28:00	25537.494	25526.847	25528.775	148.24	
06:00:00	12:15:28:00	25543.558	25533.064	25534.883	148.23	
07:00:00	12:16:28:00	25549.516	25538.951	25540.887	148.22	
08:00:00	12:17:28:00	25555.293	25544.754	25546.617	148.21	
09:00:00	12:18:28:00	25561.061	25550.375	25552.261	148.21	
10:00:00	12:19:28:00	25566.606	25555.984	25557.826	148.20	
11:00:00	12:20:28:00	25572.034	25561.303	25563.210	148.19	
12:00:00	12:21:28:00	25577.314	25566.574	25568.503	148.18	
13:00:00	12:22:28:00	25582.435	25571.776	25573.627	148.18	
14:00:00	12:23:28:00	25587.450	25576.765	25578.727	148.17	
15:00:00	13:00:28:00	25592.358	25581.642	25583.554	148.16	
16:00:00	13:01:28:00	25597.067	25586.514	25588.447	148.16	
17:00:00	13:02:28:00	25601.934	25591.277	25593.133	148.15	
18:00:00	13:03:28:00	25606.607	25595.847		148.14	Interval Change
19:00:00	13:04:28:00	25611.168	25600.241		148.14	
20:00:00	13:05:28:00	25615.558	25604.775		148.13	
21:00:00	13:06:28:00	25619.959	25609.036		148.13	
22:00:00	13:07:28:00	25624.155	25613.431		148.12	
23:00:00	13:08:28:00	25628.315	25617.604		148.12	
Aug 12, 99 00:00:00	13:09:28:00	25632.440	25621.527		148.11	
01:00:00	13:10:28:00	25636.511	25625.614		148.10	
02:00:00	13:11:28:00	25640.424	25629.472		148.10	
03:00:00	13:12:28:00	25644.201	25633.342		148.09	
04:00:00	13:13:28:00	25648.008	25637.200		148.09	
05:00:00	13:14:28:00	25651.709	25640.897		148.08	
06:00:00	13:15:28:00	25655.421	25644.386		148.08	
07:00:00	13:16:28:00	25659.004	25648.022		148.07	
08:00:00	13:17:28:00	25662.504	25651.485		148.07	
09:00:00	13:18:28:00	25665.899	25654.957		148.06	
09:16:00	13:18:44:00	25666.787			148.06	LMR49902 Electronics Failure
10:16:00	13:19:44:00	25670.234			148.06	
11:16:00	13:20:44:00	25673.564			148.05	
12:16:00	13:21:44:00	25676.746			148.05	

LMR49901		LMR49901	lmr49902	9502Q-16E	LMR49901	
Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	Pressure (KPa G)	Pressure (KPa G)	Pressure (KPa G)	Temperature (DegC)	Comments
13:16:00	13:22:44:00	25679.952			148.04	
14:16:00	13:23:44:00	25683.081			148.04	
15:16:00	14:00:44:00	25686.222			148.04	
16:16:00	14:01:44:00	25689.163			148.03	
17:16:00	14:02:44:00	25692.239			148.03	
18:16:00	14:03:44:00	25695.168			148.02	
19:16:00	14:04:44:00	25698.044			148.02	
20:16:00	14:05:44:00	25700.961			148.02	
21:16:00	14:06:44:00	25703.784			148.01	
22:16:00	14:07:44:00	25706.554			148.01	
23:16:00	14:08:44:00	25709.312			148.00	
Aug 13, 99 00:16:00	14:09:44:00	25711.935			148.00	
01:16:00	14:10:44:00	25714.546			148.00	
02:16:00	14:11:44:00	25717.104			148.00	
03:16:00	14:12:44:00	25719.768			147.99	
04:16:00	14:13:44:00	25722.285			147.99	
05:16:00	14:14:44:00	25724.684			147.99	
06:16:00	14:15:44:00	25727.219			147.98	
07:16:00	14:16:44:00	25729.577			147.98	
08:16:00	14:17:44:00	25731.882			147.98	
09:16:00	14:18:44:00	25734.322			147.97	
10:16:00	14:19:44:00	25736.615			147.97	
11:16:00	14:20:44:00	25739.014			147.96	
12:16:00	14:21:44:00	25741.254			147.96	
13:16:00	14:22:44:00	25743.400			147.96	
14:16:00	14:23:44:00	25745.699			147.95	
15:16:00	15:00:44:00	25747.921			147.95	
16:16:00	15:01:44:00	25750.079			147.95	
17:16:00	15:02:44:00	25752.255			147.94	
18:16:00	15:03:44:00	25754.430			147.94	
19:16:00	15:04:44:00	25756.576			147.94	
20:16:00	15:05:44:00	25758.604			147.93	
21:16:00	15:06:44:00	25760.644			147.93	
22:16:00	15:07:44:00	25762.660			147.93	
23:16:00	15:08:44:00	25764.635			147.92	
Aug 14, 99 00:16:00	15:09:44:00	25766.504			147.92	
01:16:00	15:10:44:00	25768.491			147.92	
02:16:00	15:11:44:00	25770.319			147.92	
03:16:00	15:12:44:00	25772.201			147.91	
04:16:00	15:13:44:00	25774.135			147.91	
05:16:00	15:14:44:00	25776.016			147.91	
06:16:00	15:15:44:00	25777.779			147.91	
07:16:00	15:16:44:00	25779.648			147.90	
08:16:00	15:17:44:00	25781.447			147.90	
09:16:00	15:18:44:00	25783.210			147.90	
10:16:00	15:19:44:00	25785.038			147.90	
11:16:00	15:20:44:00	25786.761			147.89	
12:16:00	15:21:44:00	25788.471			147.89	
13:16:00	15:22:44:00	25790.164			147.89	
14:16:00	15:23:44:00	25791.980			147.89	
15:16:00	16:00:44:00	25793.661			147.89	
16:16:00	16:01:44:00	25795.330			147.88	
17:16:00	16:02:44:00	25796.959			147.88	
18:16:00	16:03:44:00	25798.445			147.88	
19:16:00	16:04:44:00	25800.155			147.87	
20:16:00	16:05:44:00	25801.637			147.87	
21:16:00	16:06:44:00	25803.269			147.87	
22:16:00	16:07:44:00	25804.869			147.87	

LMR49901			LMR49901	lmr49902	9502Q-16E	LMR49901	
Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	Pressure (KPa G)	Pressure (KPa G)	Pressure (KPa G)	Temperature (DegC)	Comments
23:16:00	16:08:44:00	25806.339			147.87	
Aug 15, 99 00:16:00	16:09:44:00	25807.890			147.86	
01:16:00	16:10:44:00	25809.412			147.86	
02:16:00	16:11:44:00	25810.975			147.86	
03:16:00	16:12:44:00	25812.486			147.86	
04:16:00	16:13:44:00	25813.955			147.86	
05:16:00	16:14:44:00	25815.359			147.86	
06:16:00	16:15:44:00	25816.829			147.85	
07:16:00	16:16:44:00	25818.180			147.85	
08:16:00	16:17:44:00	25819.703			147.85	
09:16:00	16:18:44:00	25821.201			147.85	
10:16:00	16:19:44:00	25822.564			147.85	
11:16:00	16:20:44:00	25823.968			147.84	
12:16:00	16:21:44:00	25825.373			147.84	
13:16:00	16:22:44:00	25826.883			147.84	
14:16:00	16:23:44:00	25828.246			147.84	
15:16:00	17:00:44:00	25829.610			147.84	
16:16:00	17:01:44:00	25830.908			147.83	
17:16:00	17:02:44:00	25832.272			147.83	
18:16:00	17:03:44:00	25833.570			147.83	
19:16:00	17:04:44:00	25834.934			147.83	
20:16:00	17:05:44:00	25836.232			147.83	
21:16:00	17:06:44:00	25837.555			147.83	
22:16:00	17:07:44:00	25838.829			147.82	
23:16:00	17:08:44:00	25840.099			147.82	
Aug 16, 99 00:16:00	17:09:44:00	25841.397			147.82	
01:16:00	17:10:44:00	25842.561			147.82	
02:16:00	17:11:44:00	25843.766			147.82	
03:16:00	17:12:44:00	25845.105			147.82	
04:16:00	17:13:44:00	25846.216			147.82	
05:16:00	17:14:44:00	25847.461			147.81	
06:16:00	17:15:44:00	25848.759			147.81	
07:16:00	17:16:44:00	25849.911			147.81	
08:16:00	17:17:44:00	25851.103			147.81	
09:16:00	17:18:44:00	25852.308			147.81	
10:16:00	17:19:44:00	25853.500			147.80	
11:16:00	17:20:44:00	25854.693			147.80	
12:16:00	17:21:44:00	25855.739			147.80	
13:16:00	17:22:44:00	25856.931			147.80	
14:16:00	17:23:44:00	25858.176			147.80	
15:16:00	18:00:44:00	25859.234			147.80	
16:16:00	18:01:44:00	25860.333			147.79	
17:16:00	18:02:44:00	25861.432			147.79	
18:16:00	18:03:44:00	25862.571			147.79	
19:16:00	18:04:44:00	25863.723			147.79	
20:16:00	18:05:44:00	25864.716			147.79	
21:16:00	18:06:44:00	25865.855			147.79	
22:16:00	18:07:44:00	25866.901			147.79	
23:16:00	18:08:44:00	25868.052			147.78	
Aug 17, 99 00:16:00	18:09:44:00	25869.086			147.78	
01:16:00	18:10:44:00	25870.132			147.78	
02:16:00	18:11:44:00	25871.177			147.78	
03:16:00	18:12:44:00	25872.223			147.78	
04:16:00	18:13:44:00	25873.310			147.78	
05:16:00	18:14:44:00	25874.262			147.78	
06:16:00	18:15:44:00	25875.442			147.77	
07:16:00	18:16:44:00	25876.341			147.77	
08:16:00	18:17:44:00	25877.427			147.77	

LMR49901		LMR49901	lmr49902	9502Q-16E	LMR49901	
Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	Pressure (KPa G)	Pressure (KPa G)	Pressure (KPa G)	Temperature (DegC)	Comments
09:16:00	18:18:44:00	25878.420			147.77	
10:16:00	18:19:44:00	25879.413			147.77	
11:16:00	18:20:44:00	25880.406			147.77	
12:16:00	18:21:44:00	25881.439			147.76	
13:16:00	18:22:44:00	25882.379			147.76	
14:16:00	18:23:44:00	25883.360			147.76	
15:16:00	19:00:44:00	25884.352			147.76	
16:16:00	19:01:44:00	25885.292			147.76	
17:16:00	19:02:44:00	25886.232			147.76	
18:16:00	19:03:44:00	25887.318			147.76	
19:16:00	19:04:44:00	25888.205			147.75	
20:16:00	19:05:44:00	25889.145			147.75	
21:16:00	19:06:44:00	25890.191			147.75	
22:16:00	19:07:44:00	25891.025			147.75	
23:16:00	19:08:44:00	25892.058			147.75	
Aug 18, 99 00:16:00	19:09:44:00	25892.945			147.75	
01:16:00	19:10:44:00	25893.844			147.75	
02:16:00	19:11:44:00	25894.825			147.74	
03:16:00	19:12:44:00	25895.712			147.74	
04:16:00	19:13:44:00	25896.692			147.74	
05:16:00	19:14:44:00	25897.526			147.74	
06:16:00	19:15:44:00	25898.466			147.74	
07:16:00	19:16:44:00	25899.353			147.74	
08:16:00	19:17:44:00	25900.333			147.74	
09:16:00	19:18:44:00	25901.073			147.74	
10:16:00	19:19:44:00	25901.960			147.73	
10:56:00	19:20:24:00	25902.583			147.73	9502Q-16E Battery Failure
11:56:00	19:21:24:00	25903.510			147.73	
12:56:00	19:22:24:00	25904.344			147.73	
13:56:00	19:23:24:00	25905.231			147.73	
14:56:00	20:00:24:00	25906.171			147.73	
15:56:00	20:01:24:00	25906.952			147.73	
16:56:00	20:02:24:00	25907.838			147.73	
17:56:00	20:03:24:00	25908.672			147.72	
18:56:00	20:04:24:00	25909.506			147.72	
19:56:00	20:05:24:00	25910.393			147.72	
20:56:00	20:06:24:00	25911.174			147.72	
21:56:00	20:07:24:00	25912.008			147.72	
22:56:00	20:08:24:00	25912.935			147.72	
23:56:00	20:09:24:00	25913.676			147.72	
Aug 19, 99 00:56:00	20:10:24:00	25914.457			147.72	
01:56:00	20:11:24:00	25915.331			147.71	
02:56:00	20:12:24:00	25916.218			147.71	
03:56:00	20:13:24:00	25917.052			147.71	
04:56:00	20:14:24:00	25917.833			147.71	
05:56:00	20:15:24:00	25918.667			147.71	
06:56:00	20:16:24:00	25919.448			147.71	
07:56:00	20:17:24:00	25920.229			147.71	
08:56:00	20:18:24:00	25921.010			147.71	
09:56:00	20:19:24:00	25921.791			147.70	
10:56:00	20:20:24:00	25922.624			147.70	
11:56:00	20:21:24:00	25923.365			147.70	
12:56:00	20:22:24:00	25924.186			147.70	
13:56:00	20:23:24:00	25925.020			147.70	
14:56:00	21:00:24:00	25925.748			147.70	
15:56:00	21:01:24:00	25926.476			147.70	
16:56:00	21:02:24:00	25927.310			147.70	
17:56:00	21:03:24:00	25927.998			147.70	

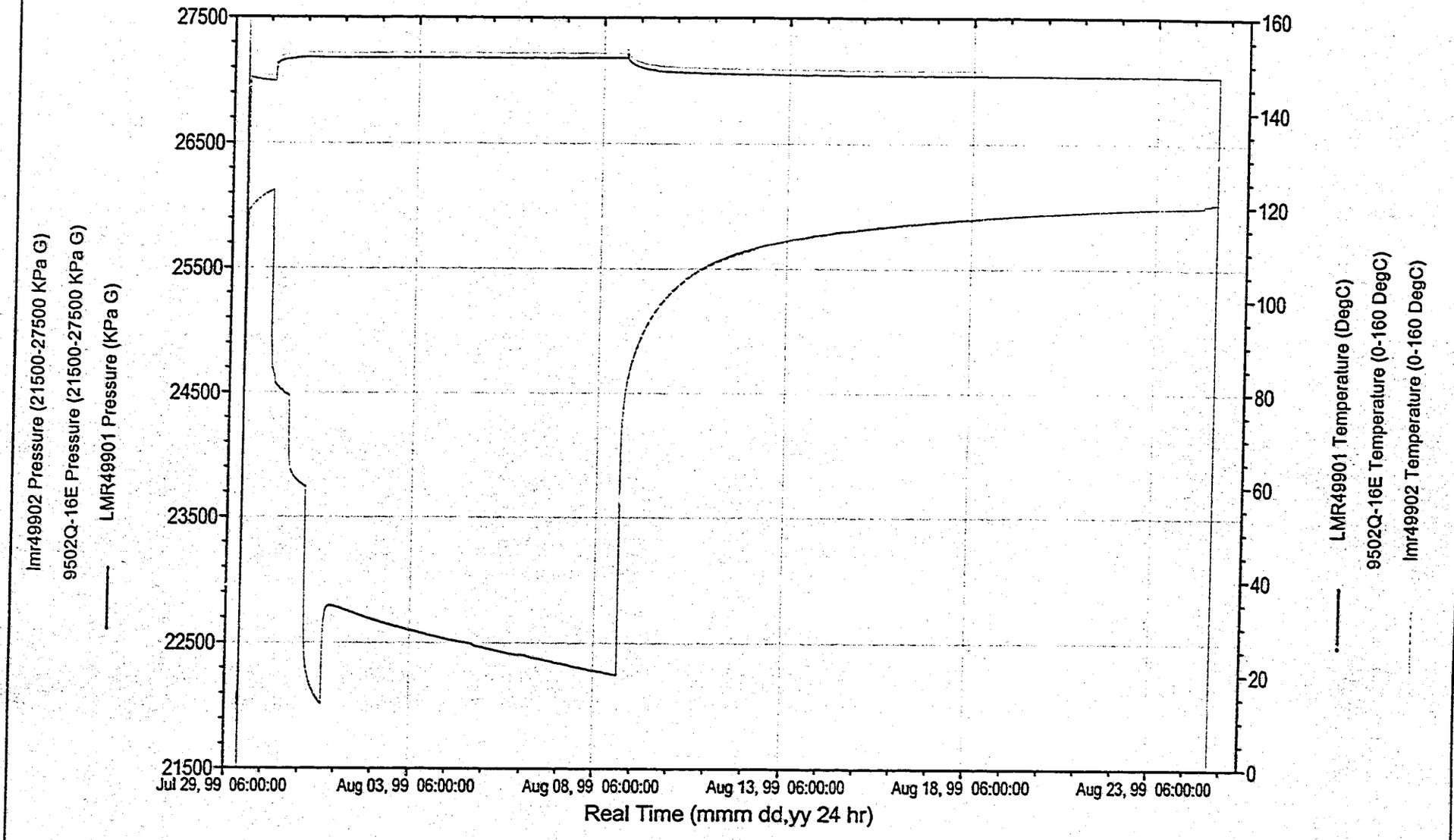
LMR49901		LMR49901	lmr49902	9502Q-16E	LMR49901	
Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	Pressure (KPa G)	Pressure (KPa G)	Pressure (KPa G)	Temperature (DegC)	Comments
18:56:00	21:04:24:00	25928.819			147.69	
19:56:00	21:05:24:00	25929.547			147.69	
20:56:00	21:06:24:00	25930.288			147.69	
21:56:00	21:07:24:00	25931.109			147.69	
22:56:00	21:08:24:00	25931.797			147.69	
23:56:00	21:09:24:00	25932.577			147.69	
Aug 20, 99 00:56:00	21:10:24:00	25933.358			147.69	
01:56:00	21:11:24:00	25934.086			147.69	
02:56:00	21:12:24:00	25934.721			147.69	
03:56:00	21:13:24:00	25935.542			147.68	
04:56:00	21:14:24:00	25936.230			147.68	
05:56:00	21:15:24:00	25937.011			147.68	
06:56:00	21:16:24:00	25937.686			147.68	
07:56:00	21:17:24:00	25938.414			147.68	
08:56:00	21:18:24:00	25939.142			147.68	
09:56:00	21:19:24:00	25939.870			147.68	
10:56:00	21:20:24:00	25940.505			147.68	
11:56:00	21:21:24:00	25941.180			147.68	
12:56:00	21:22:24:00	25941.960			147.68	
13:56:00	21:23:24:00	25942.636			147.68	
14:56:00	22:00:24:00	25943.376			147.68	
15:56:00	22:01:24:00	25944.051			147.67	
16:56:00	22:02:24:00	25944.726			147.67	
17:56:00	22:03:24:00	25945.454			147.67	
18:56:00	22:04:24:00	25946.142			147.67	
19:56:00	22:05:24:00	25946.829			147.67	
20:56:00	22:06:24:00	25947.504			147.67	
21:56:00	22:07:24:00	25948.179			147.67	
22:56:00	22:08:24:00	25948.854			147.67	
23:56:00	22:09:24:00	25949.449			147.67	
Aug 21, 99 00:56:00	22:10:24:00	25950.270			147.67	
01:56:00	22:11:24:00	25950.905			147.67	
02:56:00	22:12:24:00	25951.487			147.67	
03:56:00	22:13:24:00	25952.121			147.67	
04:56:00	22:14:24:00	25952.796			147.67	
05:56:00	22:15:24:00	25953.484			147.67	
06:56:00	22:16:24:00	25954.106			147.66	
07:56:00	22:17:24:00	25954.728			147.66	
08:56:00	22:18:24:00	25955.363			147.66	
09:56:00	22:19:24:00	25955.998			147.66	
10:56:00	22:20:24:00	25956.673			147.66	
11:56:00	22:21:24:00	25957.307			147.66	
12:56:00	22:22:24:00	25957.942			147.66	
13:56:00	22:23:24:00	25958.577			147.66	
14:56:00	23:00:24:00	25959.199			147.66	
15:56:00	23:01:24:00	25959.781			147.66	
16:56:00	23:02:24:00	25960.456			147.66	
17:56:00	23:03:24:00	25961.090			147.66	
18:56:00	23:04:24:00	25961.619			147.66	
19:56:00	23:05:24:00	25962.294			147.66	
20:56:00	23:06:24:00	25962.982			147.66	
21:56:01	23:07:24:01	25963.524			147.66	
22:56:02	23:08:24:02	25964.105			147.66	
23:56:03	23:09:24:03	25964.780			147.66	
Aug 22, 99 00:56:04	23:10:24:04	25965.375			147.66	
01:56:04	23:11:24:04	25965.997			147.66	
02:56:04	23:12:24:04	25966.526			147.66	
03:56:07	23:13:24:07	25967.239			147.66	

LMR49901		LMR49901	lmr49902	9502Q-16E	LMR49901	
Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	Pressure (KPa G)	Pressure (KPa G)	Pressure (KPa G)	Temperature (DegC)	Comments
04:56:09	23:14:24:09	25967.808			147.66	
05:56:12	23:15:24:12	25968.443			147.66	
06:56:13	23:16:24:13	25969.065			147.66	
07:56:17	23:17:24:17	25969.700			147.66	
08:56:17	23:18:24:17	25970.269			147.66	
09:56:25	23:19:24:25	25970.956			147.66	
10:56:28	23:20:24:28	25971.432			147.66	
11:56:29	23:21:24:29	25972.054			147.66	
12:56:31	23:22:24:31	25972.636			147.66	
13:56:35	23:23:24:35	25973.165			147.66	
14:56:38	24:00:24:38	25973.853			147.66	
15:56:41	24:01:24:41	25974.435			147.66	
16:56:48	24:02:24:48	25975.069			147.66	
17:56:55	24:03:24:55	25975.598			147.66	
18:57:00	24:04:25:00	25976.220			147.66	
19:57:00	24:05:25:00	25976.749			147.66	
20:57:00	24:06:25:00	25977.384			147.66	
21:57:05	24:07:25:05	25977.913			147.66	
22:57:10	24:08:25:10	25978.495			147.66	
23:57:15	24:09:25:15	25979.077			147.66	
Aug 23, 99 00:57:17	24:10:25:17	25979.553			147.66	
01:57:19	24:11:25:19	25980.215			147.65	
02:57:19	24:12:25:19	25980.744			147.65	
03:57:22	24:13:25:22	25981.273			147.65	
04:57:22	24:14:25:22	25981.789			147.65	
05:57:22	24:15:25:22	25982.265			147.65	
06:57:25	24:16:25:25	25982.847			147.65	
07:57:28	24:17:25:28	25983.481			147.65	
08:57:28	24:18:25:28	25983.905			147.65	
09:57:28	24:19:25:28	25984.527			147.65	
10:57:30	24:20:25:30	25985.056			147.65	
11:57:33	24:21:25:33	25985.532			147.65	
12:57:33	24:22:25:33	25986.061			147.65	
13:57:33	24:23:25:33	25986.683			147.65	
14:57:33	25:00:25:33	25987.159			147.65	
15:57:33	25:01:25:33	25987.688			147.65	
16:57:33	25:02:25:33	25988.216			147.65	
17:57:33	25:03:25:33	25988.692			147.65	
18:57:34	25:04:25:34	25989.221			147.65	
19:57:36	25:05:25:36	25989.750			147.65	
20:57:36	25:06:25:36	25990.267			147.65	
21:57:36	25:07:25:36	25990.795			147.65	
22:57:37	25:08:25:37	25991.231			147.65	
23:57:39	25:09:25:39	25991.773			147.65	
Aug 24, 99 00:57:39	25:10:25:39	25992.289			147.65	
01:57:39	25:11:25:39	25992.818			147.65	
02:57:39	25:12:25:39	25993.347			147.65	
03:57:39	25:13:25:39	25993.823			147.65	
04:57:39	25:14:25:39	25994.339			147.65	
05:57:39	25:15:25:39	25994.828			147.65	
06:57:39	25:16:25:39	25995.304			147.65	
07:57:39	25:17:25:39	25995.833			147.65	
08:57:39	25:18:25:39	25996.349			147.65	
09:57:39	25:19:25:39	25996.825			147.65	
10:57:39	25:20:25:39	25997.261			147.65	
11:57:39	25:21:25:39	25997.976			147.65	
12:57:39	25:22:25:39	25998.306			147.65	
13:57:39	25:23:25:39	26013.570			147.67	

LMR49901		LMR49901	lmr49902	9502Q-16E	LMR49901	
Real Time (mmm dd,yy 24 hr)	Elapsed Time (DDD:HH:MM:SS)	Pressure (KPa G)	Pressure (KPa G)	Pressure (KPa G)	Temperature (DegC)	Comments
14:57:39	26:00:25:39	26014.092			147.66	
15:57:39	26:01:25:39	26014.462			147.66	
16:57:39	26:02:25:39	26014.978			147.65	
17:57:39	26:03:25:39	26015.414			147.66	
18:57:39	26:04:25:39	26019.614			147.67	
19:57:39	26:05:25:39	26025.330			147.66	
20:57:39	26:06:25:39	26025.846			147.66	
21:57:39	26:07:25:39	26026.257			147.66	
22:34:00	26:08:02:00					LMR 49901 Quit

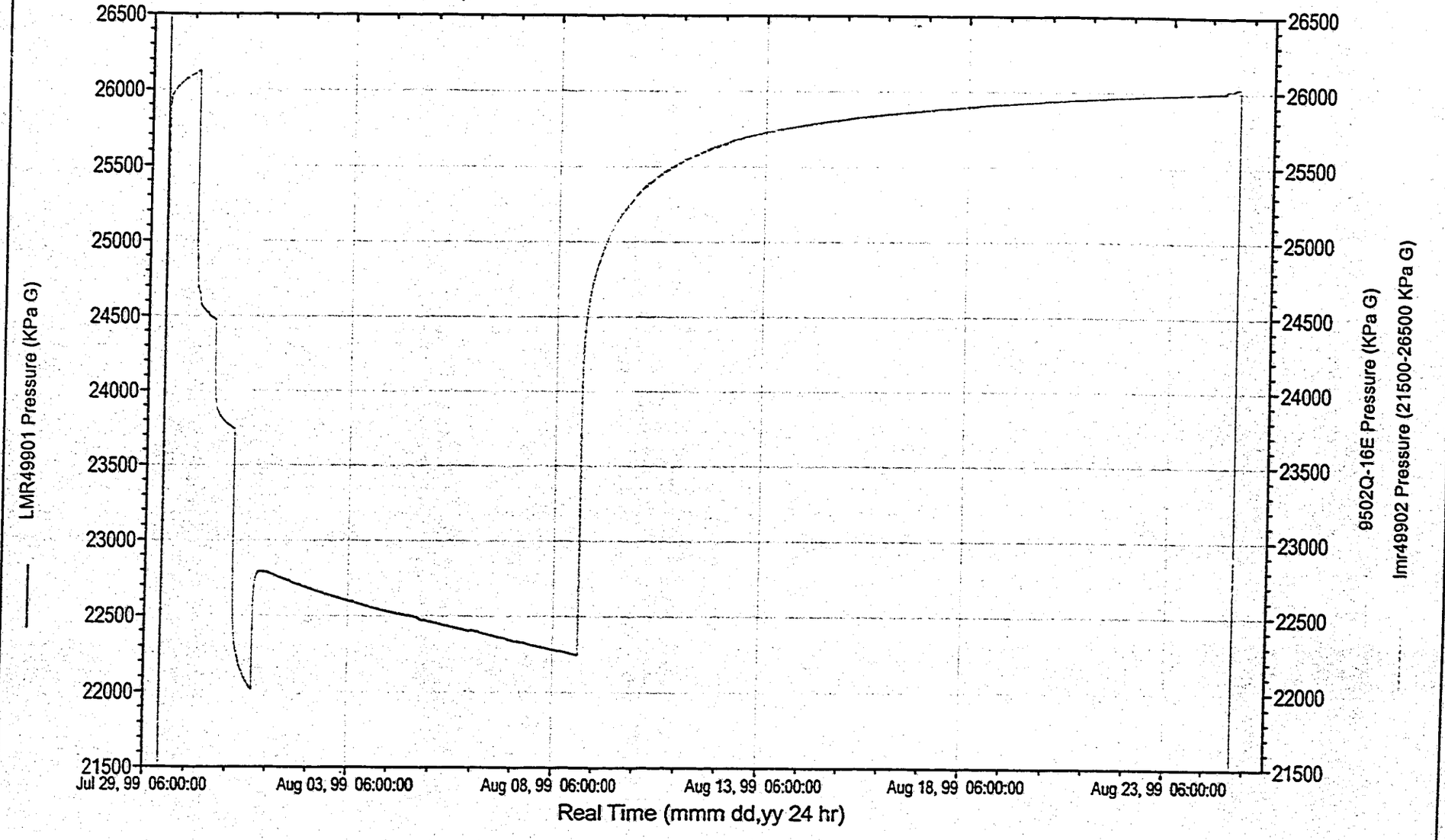
Pressure & Temperature vs. Real Time

Company:	**Lee Tool, Div. of Schlumberger**	*Field:*	**Liard**
Client:	**Ranger Oil Limited**	*Well Name:*	**Ranger Ft. Liard**
Remarks:	**9502Q-16E Bot. & 49902 Mid. & 49901 Top**	*Well Number:*	**P-66-A**



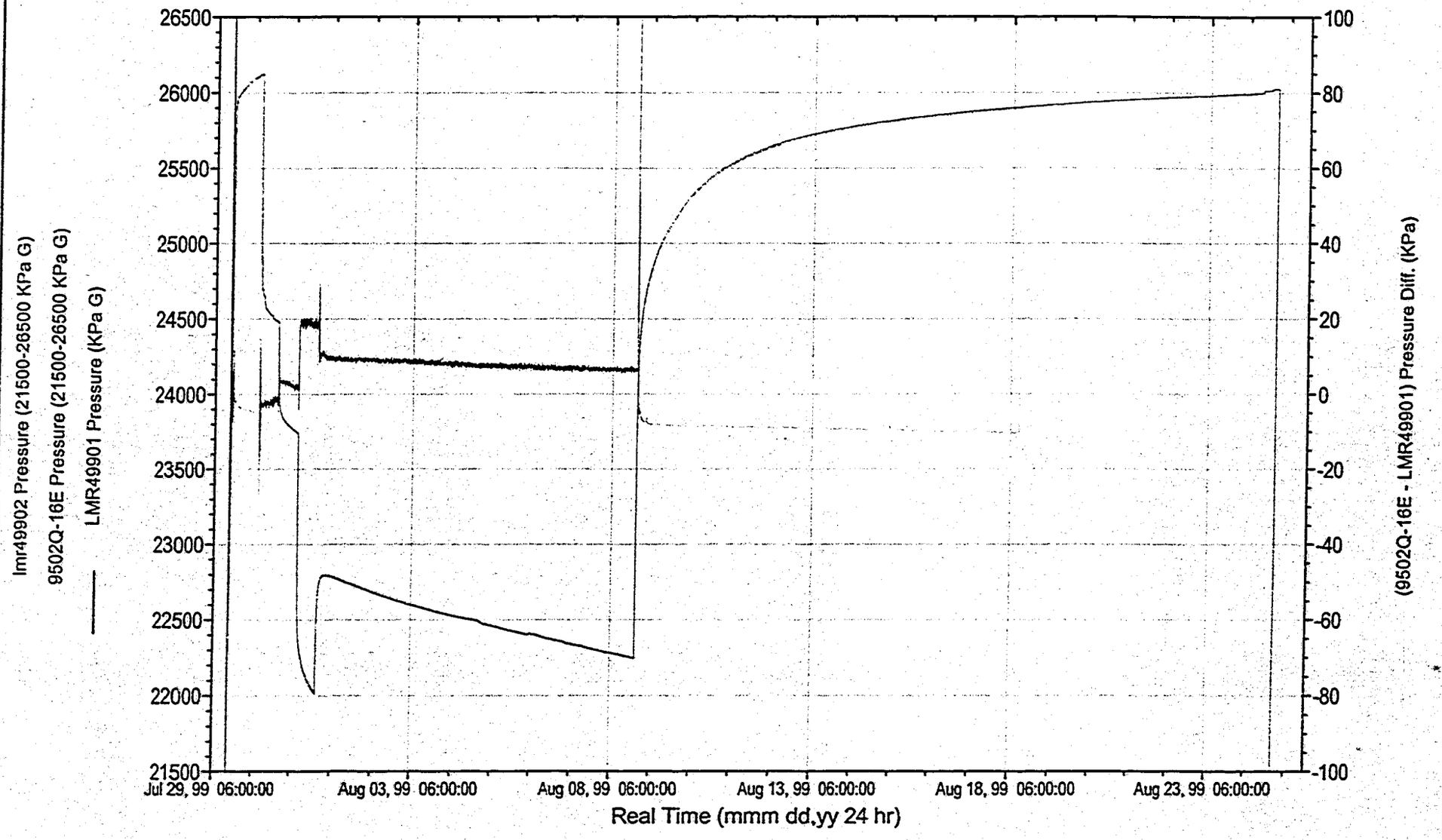
Pressure vs. Real Time

Company:	Lee Tool, Div. of Schlumberger	*Field:*	Liard
Client:	Ranger Oil Limited	*Well Name:*	Ranger Ft. Liard
Remarks:	9502Q-16E Bot. & 49902 Mid. & 49901 Top	*Well Number:*	P-66-A



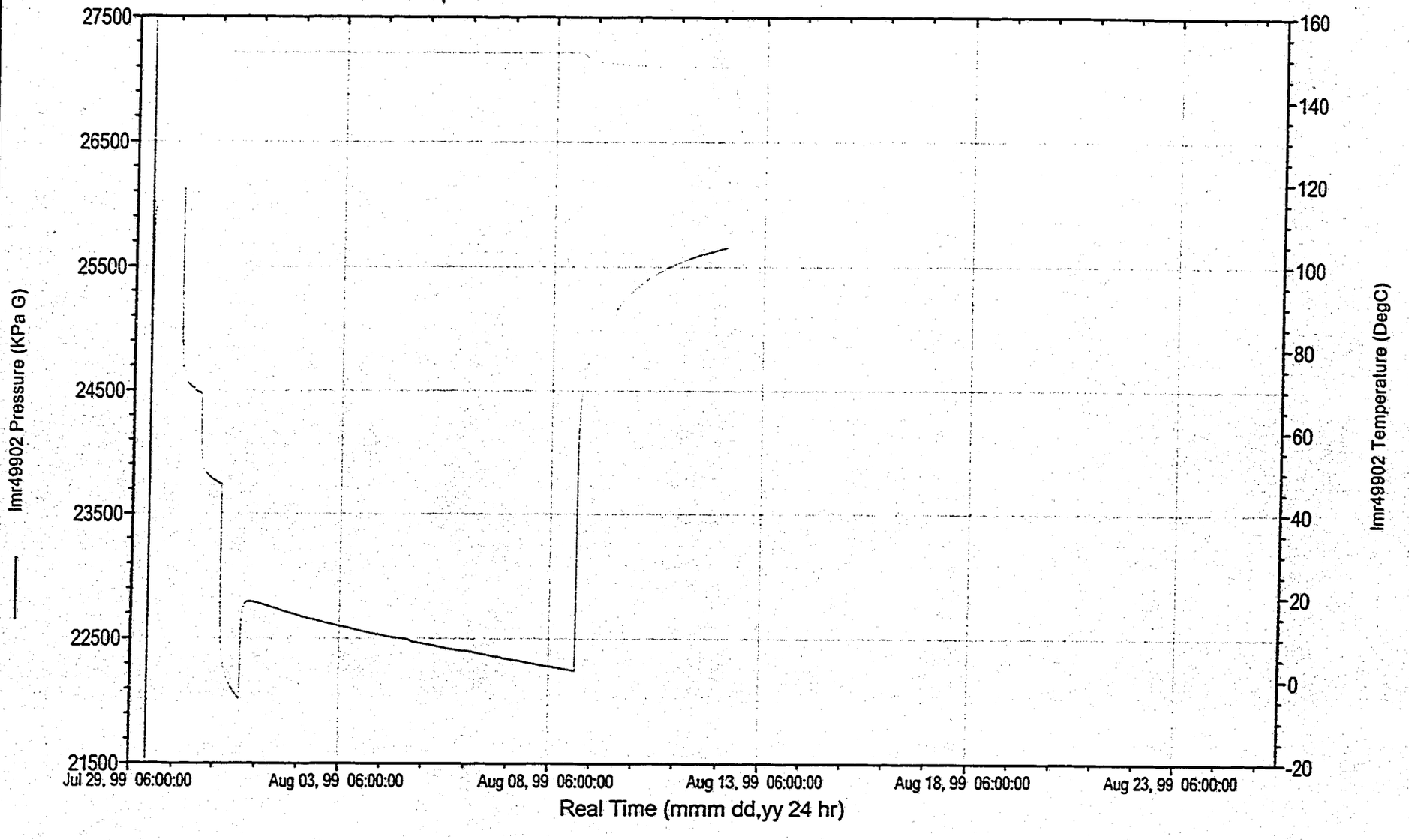
Pressure & Pressure Diff. vs. Real Time

Company:	**Lee Tool, Div. of Schlumberger**	*Field:*	**Liard**
Client:	**Ranger Oil Limited**	*Well Name:*	**Ranger Ft. Liard**
Remarks:	**9502Q-16E Bot. & 49902 Mid. & 49901 Top**	*Well Number:*	**P-66-A**



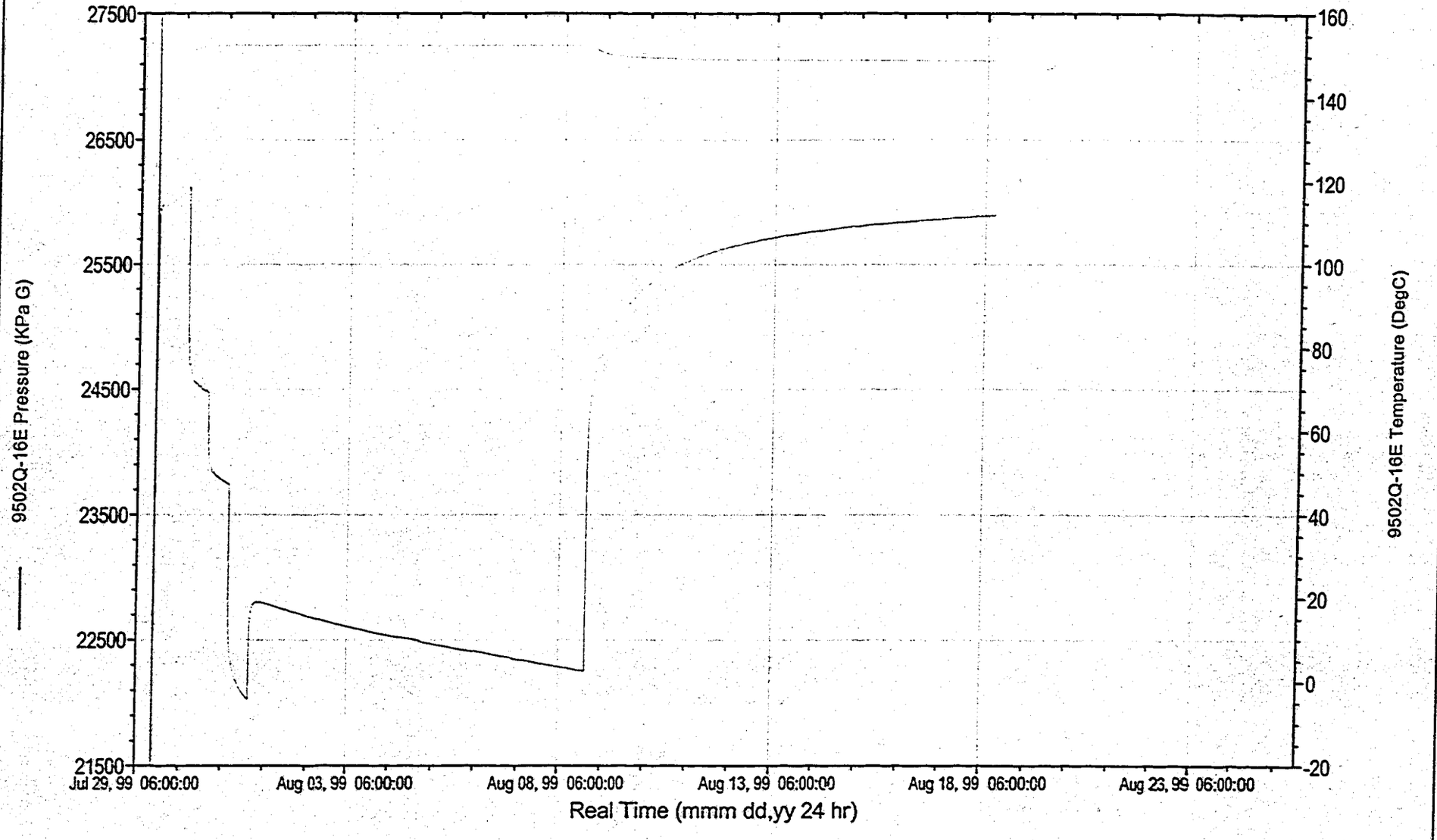
Pressure & Temperature vs. Real Time

Company:	**Lee Tool, Div. of Schlumberger**	*Field:*	**Liard**
Client:	**Ranger Oil Limited**	*Well Name:*	**Ranger Ft. Liard**
Remarks:	**Electronics Failure on August 12/99 @ 09:16 a.m.**	*Well Number:*	**P-66-A**



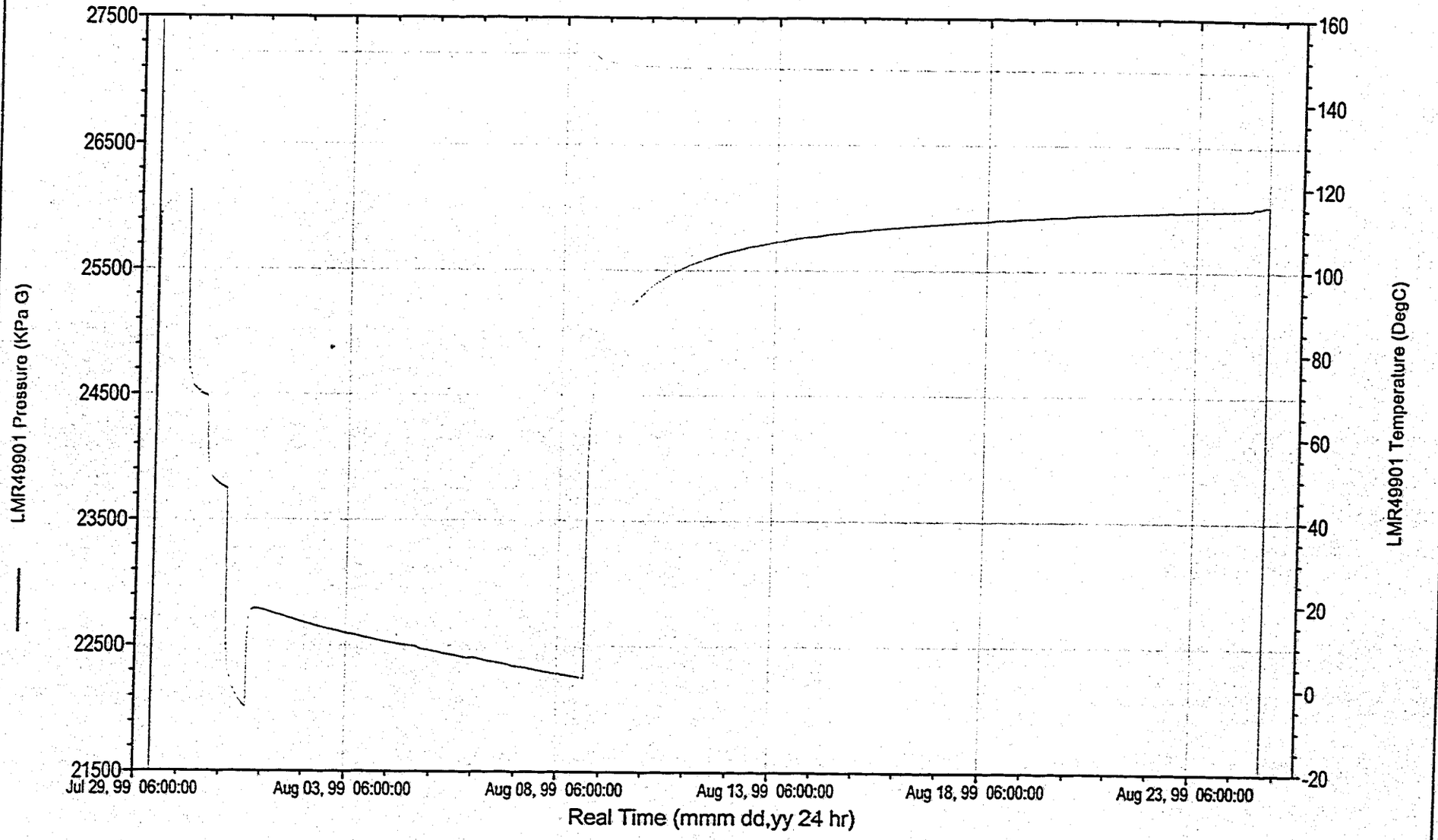
Pressure & Temperature vs. Real Time

Company:	**Lee Tool, Div. of Schlumberger**	*Field:*	**Liard**
Client:	**Ranger Oil Limited**	*Well Name:*	**Ranger Ft. Liard**
Remarks:	**Battery Failure on August 18/99 @ 10:56 a.m.**	*Well Number:*	**P-66-A**



Pressure & Temperature vs. Real Time

Company:	Lee Tool, Div. of Schlumberger	*Field:*	Liard
Client:	Ranger Oil Limited	*Well Name:*	Ranger Ft. Liard
Remarks:	Tool Quit on August 24/99 @ 22:34 p.m.	*Well Number:*	P-66-A



Norward Report
(2)

N.E.B. COPY

BAKER HUGHES

Baker Atlas

NORWARD ENERGY SERVICES

Customer: Ranger Oil Limited
Wellname: Ranger Ft. Liard
Well Location: P-66-A
Test Dates: July 26 - 30, 1999
Formation: TIGHT HOLE

File Name: GP99-085, RANGER03.FLD
Supervisors: B. Metcalf
Customer Reps: Wayne Casler
Test Unit/Tank: TU#29
Test Type: Multi Point Test

NATIONAL ENERGY BOARD
ENGINEERING
MAY 19 200

Final Edited Copy

GENERAL INFORMATION

Client Information:

Company: Ranger Oil Limited

Contact: Leroy Brown

Phone: Fax: e-mail:

Site Information:

Contact: Wayne Casler

Phone: 1-600-700-5696 Fax: e-mail:

Well Information:

Name: Ranger Ft.Liard

Operator: Ranger Oil

Location-Downhole: P-66-A

Location-Surface: Ft.Liard

Test Information:

Company: Norward Energy Services

Representative: Paul Ringrose

Supervisor: Bill Metcalf

Test Type: Multi point Test Job Number: GP99-085

Test Unit: T.U.#29

Start Date: 1999/07/26 Start Time: 16:00:00

End Date: 1999/07/30 End Time: 09:00:00

Report Date: 1999/09/01 Prepared By: C. Brunt

Remarks: Qualified By:

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/26
Final Test Date: 1999/07/30

FieldNotes

Ranger Ft.Liard

Job Number: GP99-085

Gas Meter 1

Meter Type:	Orifice Meter	
Meter Size:	154.02	mm
Previous Gas Production:	0.000	10^3m^3
Tap Type:	Flange	
Tap Location:	Downstream	
Gas Gravity (G):	0.743	
CO_2:	16.72	%
H_2S:	1.30	%
N_2:	4.91	%
Critical Temperature (T_C):	208.40	K
Critical Pressure (P_C):	5058.00	kPa

Oil Meter 1

Meter Type:	Produced Volume	
Measurement Type:	Incremental	
Columns for Produced Volume:		
Previous Oil Production:	0.000	m^3
Previous Water Production:	0.000	m^3

Water Meter 1

Meter Type:	Produced Volume	
Measurement type:	Incremental	
Columns for Produced Volume:		
Previous Water Production:	0.000	m^3

Ranger Oil Limited
P-66-A
Start Test Data: 1999/07/26
Final Test Data: 1999/07/30

FieldNotes
Field Measurements

Ranger Ft.Liard

Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/d	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
1	1999/07/26	16:00:00	Open masters and obtain opening pressures.																			
2		16:00:00	11300	200																		
3		16:15:00	Pressure up to choke.																			
4		16:19:59					0.00	0	0.0	0	0.000	0.000	0.00	0	0.00	0.00	0.00	0.000	0.000	0.000		
5		16:20:00	Open well to flow on a 9.525mm.																			
6		16:30:00	15700										3.70	100	3.70	531.91	3.70	0.000	0.000	0.000		
7		16:45:00	Increase choke to 11.11mm.																			
8		16:58:00	Meter in service with a 76.2mm orifice plate.																			
9		17:00:00	15800			11.11	76.20	2200	10.0	18	176.416	4.902	3.50	100	3.50	168.00	7.20	0.000	0.000	0.000		
10		17:20:00	Decrease back pressure, meter out of service.																			
11		17:30:00	16900		20	11.11							2.52	100	2.52	120.96	9.72	0.000	0.000	0.000		
12	1999/07/26	18:00:00	17700		21	11.11							2.68	100	2.68	128.64	12.40	0.000	0.000	0.000		
13		18:00:00	Meter out of service.																			
14		18:10:00	Meter in service with a 50.8mm orifice plate.																			
15		18:30:00	18300	13400	24	11.11	50.80	2400	68.0	9	211.773	17.033	2.30	100	2.30	110.40	14.70	0.000	0.000	0.000	4	136000
16		19:00:00	18700	13400	24	11.11	50.80	2550	70.0	13	219.726	21.528	1.35	100	1.35	64.80	16.05	0.000	0.000	0.000	4	136000
17		19:00:00	Bleed off casing.																			
18		19:30:00	18930		26	11.11	50.80	2600	77.0	16	231.371	26.227	1.25	100	1.25	60.00	17.30	0.000	0.000	0.000	4	120000
19		20:00:00	19150		27	11.11	50.80	2650	75.0	18	229.573	31.029	1.10	100	1.10	52.80	18.40	0.000	0.000	0.000	4	116000
20		20:00:00	H2S by Kitagawa = 27 ppm.																			
21		20:30:00	19350		28	11.11	50.80	2700	76.0	22	231.394	35.830	1.10	100	1.10	52.80	19.50	0.000	0.000	0.000	4	114000
22		21:00:00	19450		29	11.11	50.80	2800	81.4	24	243.029	40.772	0.75	100	0.75	36.00	20.25	0.000	0.000	0.000	5	114000
23		21:30:00	19480		30	11.11	50.80	2750	79.6	24	238.109	45.784	0.60	100	0.60	28.80	20.85	0.000	0.000	0.000	5	108000
24		22:00:00	19500		32	11.11	50.80	2750	81.0	25	239.727	50.762	1.20	100	1.20	57.60	22.05	0.000	0.000	0.000	5	102000
25		22:01:00	Open choke to 15.88 mm, meter out of service to change plate.																			
26		22:15:00	Meter in service with a 69.85mm (2.75in) plate.																			
27		22:30:00	16950		36	15.88	69.85	2850	91.0	22	502.840	58.497	1.70	100	1.70	81.60	23.75	0.000	0.000	0.000	5	102000
28		23:00:00	16900	11200	39	15.88	69.85	2850	92.0	23	504.580	68.991	1.80	100	1.80	86.40	25.55	0.000	0.000	0.000	5	100000
29		23:30:00	16900	11200	38	15.88	69.85	2850	91.0	26	498.727	79.442	1.55	100	1.55	74.40	27.10	0.000	0.000	0.000	5	90000
30		23:30:00	H2S by Kitagawa = 1.4%.																			
31	1999/07/27	00:00:00	16950	10700	42	15.88	69.85	2900	90.0	28	498.334	89.828	1.30	100	1.30	62.40	28.40	0.000	0.000	0.000	5	90000
32		00:30:00	17000	10700	42	15.88	69.85	2900	91.6	30	500.778	100.235	1.25	100	1.25	60.00	29.65	0.000	0.000	0.000	5	90000
33		01:00:00	17050	10700	47	15.88	69.85	2900	92.0	31	500.885	110.669	0.92	100	0.92	44.16	30.57	0.000	0.000	0.000	5	90000
34		01:30:00	17160	10400	50	15.88	69.85	2950	93.0	34	505.018	121.147	0.90	100	0.90	43.20	31.47	0.000	0.000	0.000	5	86000
35		02:00:00	17250	10700	51	15.88	69.85	2950	94.0	35	506.764	131.687	0.90	100	0.90	43.20	32.37	0.000	0.000	0.000	5	80000
36		02:30:00	17250	10700	51	15.88	69.85	2950	94.0	38	503.833	142.214	0.70	100	0.70	33.60	33.07	0.000	0.000	0.000	5	82000
37		03:00:00	17250	10600	55	15.88	69.85	2950	94.0	40	501.912	152.690	1.00	100	1.00	48.00	34.07	0.000	0.000	0.000	5	82000
38		03:00:00	H2S by Kitagawa = 1.2%.																			
39		03:30:00	17270	10600	56	15.88	69.85	2970	94.4	42	502.803	163.156	0.60	100	0.60	28.80	34.67	0.000	0.000	0.000	5	78000
40		04:00:00	17300	10900	55	15.88	69.85	3000	95.0	42	506.981	173.675	0.85	100	0.85	40.80	35.52	0.000	0.000	0.000	5	74000
41		04:30:00	17370	11100	56	15.88	69.85	3000	95.0	44	505.081	184.217	0.75	100	0.75	36.00	36.27	0.000	0.000	0.000	5	66000
42		05:00:00	17400	11200	57	15.88	69.85	3000	96.0	46	505.875	194.748	0.70	100	0.70	33.60	36.97	0.000	0.000	0.000	5	60000
43		05:30:00	17400	11000	58	15.88	69.85	3000	96.0	48	504.014	205.267	0.60	100	0.60	28.80	37.57	0.000	0.000	0.000	5	64000
44	1999/07/27	06:00:00	17400	10800	58	15.88	69.85	3000	96.0	50	502.178	215.749	0.80	100	0.80	38.40	38.37	0.000	0.000	0.000	5	68000
45		06:30:00	17400	10800	59	15.88	69.85	3900	74.0	44	509.171	226.283	0.76	100	0.76	36.48	39.13	0.000	0.000	0.000	5	66000
46		07:00:00	17400	11100	63	15.88	69.85	3900	74.0	42	511.185	236.912	0.65	100	0.65	31.20	39.78	0.000	0.000	0.000	5	64000
47		07:30:00	17450	11400	61	15.88	69.85	3800	75.0	40	509.806	247.548	0.60	100	0.60	28.80	40.38	0.000	0.000	0.000	5	64000

Fast

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/26
Final Test Date: 1999/07/30

FieldNotes
Field Measurements

Ranger Ft.Liard
Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/d	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
48	1999/07/27	08:00:00	17520	11600	62	15.88	69.85	3850	72.0	39	503.838	258.106	0.55	100	0.55	26.40	40.93	0.000	0.000	0.000	5	66000
49		08:30:00	17520	11600	64	15.88	69.85	3800	71.5	39	498.688	268.549	0.55	100	0.55	26.40	41.48	0.000	0.000	0.000	5	64000
50		09:00:00	17530	12000	64	15.88	69.85	3800	71.5	38	499.691	278.949	0.50	100	0.50	24.00	41.98	0.000	0.000	0.000	5	64000
51		09:30:00	17530	11100	63	15.88	69.85	3800	71.5	38	499.691	289.359	0.60	100	0.60	28.80	42.58	0.000	0.000	0.000	5	62000
52		09:44:00	Open choke to 17.46mm and change orifice plate to 88.9mm.																			
53	1999/07/27	10:00:00	16400	10700	67	17.46	88.90	2650	47.0	38	568.141	300.483	1.00	100	1.00	48.00	43.58	0.000	0.000	0.000	5	60000
54		10:30:00	16900	10100	70	17.46	88.90	2650	47.0	38	568.141	312.319	0.30	100	0.30	14.40	43.88	0.000	0.000	0.000	5	60000
55		11:00:00	16600	9500	72	17.46	88.90	2700	47.0	39	572.445	324.200	0.65	100	0.65	31.20	44.53	0.000	0.000	0.000	5	60000
56		11:30:00	16610	8700	69	17.46	88.90	2700	47.0	40	571.372	336.115	0.62	100	0.62	29.76	45.15	0.000	0.000	0.000	5	60000
57		12:00:00	16610	8200	69	17.46	88.90	2700	47.0	40	571.372	348.018	0.60	100	0.60	28.80	45.75	0.000	0.000	0.000	5	56000
58		12:30:00	16815	8200	69	17.46	88.90	2700	47.0	40	571.372	359.922	0.40	100	0.40	19.20	46.15	0.000	0.000	0.000	5	50000
59		12:30:00	Shut in well and monitor buildups.																			
60		12:35:00	21500	7500			0.00	0	0.0	0	0.000	359.922										
61		12:40:00	21500	7250																		
62		12:45:00	21570	7100																		
63		13:00:00	21700	6750																		
64		13:00:00	Shut in master valve, and bleed off and begin to rig in Tree Savers.																			
65		14:20:00	Dowell rigged in, hold pre-job safety meeting.																			
66		14:40:00	Dowell begin acid frac.																			
67		15:20:00	Frac completed.																			
68		15:50:00	Rig Dowell and T.S.I. off of wellhead.																			
69		17:00:00	1000	1200																		
70		17:00:00	Open well to flow on a 9.525mm.																			
71		17:00:01	1000	1200			0.00	0	0.0	0	0.000	359.922	0.00	0	0.00	0.00	46.15	0.000	0.000	0.000		
72		17:08:01	Increase choke to 11.11mm.																			
73		17:30:00	2250	900	32	11.11							4.95	100	4.95	237.73	51.10	0.000	0.000	0.000		
74	1999/07/27	18:00:00	2960	700	35	11.11							5.85	100	5.85	280.80	56.95	0.000	0.000	0.000		
75		18:30:00	3920	650	36	11.11							3.25	100	3.25	156.00	60.20	0.000	0.000	0.000		
76		19:00:00	7500	650	38	11.11							5.70	100	5.70	273.60	65.90	0.000	0.000	0.000	5	226000
77		19:30:00	10530	400	39	11.11							3.95	100	3.95	189.60	69.85	0.000	0.000	0.000	5	238000
78		20:00:00	10750	200	40	11.11	88.90	850	1.0	36	47.945	365.915	2.89	100	2.89	138.72	72.74	0.000	0.000	0.000	5	240000
79		20:30:00	13350	300	43	11.11	88.90	1100	1.5	38	65.936	367.101	3.80	100	3.80	182.40	76.54	0.000	0.000	0.000	5	236000
80		21:00:00	14600	300	40	11.11	88.90	1350	2.0	38	83.898	368.662	2.50	100	2.50	120.00	79.04	0.000	0.000	0.000	5	224000
81		21:30:00	15510	200	42	11.11	88.90	1500	3.0	36	108.470	370.665	2.33	100	2.33	111.84	81.37	0.000	0.000	0.000	5	224000
82		22:00:00	16270	250	43	11.11	88.90	1450	3.5	36	115.255	372.996	2.65	100	2.65	127.20	84.02	0.000	0.000	0.000	5	222000
83		22:30:00	16750	250	41	11.11	88.90	1450	4.0	34	123.651	375.484	2.00	100	2.00	96.00	86.02	0.000	0.000	0.000	5	214000
84		23:00:00	17290	250	43	11.11	88.90	1500	4.5	32	133.800	378.168	2.15	100	2.15	103.20	88.17	0.000	0.000	0.000	5	208000
85		23:30:00	17600	250	42	11.11	88.90	1600	5.0	36	144.487	381.065	1.60	100	1.60	76.80	89.77	0.000	0.000	0.000	5	206000
86	1999/07/28	00:00:00	17960	250	38	11.11	88.90	1575	5.5	42	148.805	384.120	1.72	100	1.72	82.56	91.49	0.000	0.000	0.000	5	200000
87		00:00:00	H2S by Kitagawa = 1.1%																			
88		00:30:00	18250	250	42	11.11	88.90	1600	6.0	40	157.165	387.307	1.50	100	1.50	72.00	92.99	0.000	0.000	0.000	5	198000
89		00:35:00	Open choke to 12.70mm.																			
90		01:00:00	17700	250	40	12.70	88.90	1400	7.0	36	160.281	390.614	1.65	100	1.65	79.20	94.64	0.000	0.000	0.000	5	197000
91		01:30:00	17800	250	44	12.70	88.90	1600	8.0	32	184.109	394.201	2.10	100	2.10	100.80	96.74	0.000	0.000	0.000	5	194000
92		02:00:00	18150	300	46	12.70	88.90	1950	9.7	32	223.434	398.447	1.35	100	1.95	93.60	98.69	0.000	0.000	0.000	5	188000
93		02:30:00	18300	350	42	12.70	88.90	2000	10.0	28	231.466	403.185	2.11	100	2.11	101.28	100.80	0.000	0.000	0.000	5	184000
94		03:00:00	18550	300	44	12.70	88.90	2100	10.0	34	234.493	408.039	1.40	100	1.40	67.20	102.20	0.000	0.000	0.000	5	176000

Fast

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/26
Final Test Date: 1999/07/30

FieldNotes
Field Measurements

Ranger Ft.Liard

Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/d	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
95	1999/07/28	03:30:00	18860	300	46	12.70	88.90	2200	11.5	36	256.429	413.153	1.50	100	1.50	72.00	103.70	0.000	0.000	0.000	S	172000
96		04:00:00	18650	300	46	12.70	88.90	2200	11.5	38	255.485	418.485	1.20	100	1.20	57.60	104.90	0.000	0.000	0.000	S	170000
97		04:30:00	18800	300	46	12.70	88.90	2250	11.0	38	252.681	423.779	1.00	100	1.00	48.00	105.90	0.000	0.000	0.000	S	168000
98		05:00:00	19100	300	46	12.70	88.90	2100	13.0	38	265.444	429.178	1.10	100	1.10	52.80	107.00	0.000	0.000	0.000	S	166000
99		05:05:00	Open choke to 15.88 mm.																			
100		05:30:00	16800	400	54	15.88	88.90	2300	32.0	37	437.066	436.494	3.21	100	3.21	154.08	110.21	0.000	0.000	0.000	S	164000
101		06:00:00	H2S by Kitagawa = 1.3%.																			
102	1999/07/28	06:00:00	16900	400	56	15.88	88.90	2350	32.0	37	441.789	445.648	1.85	100	1.85	88.80	112.06	0.000	0.000	0.000	S	162000
103		06:30:00	16730	400	56	15.88	88.90	2300	36.0	38	462.835	455.071	1.65	100	1.65	79.20	113.71	0.000	0.000	0.000	S	162000
104		07:00:00	16760	400	54	15.88	88.90	2350	36.5	38	471.083	464.800	1.85	100	1.85	88.80	115.56	0.000	0.000	0.000	S	150000
105		07:30:00	16830	0	52	15.88	88.90	2350	36.5	38	471.083	474.614	1.25	100	1.25	60.00	116.81	0.000	0.000	0.000	S	150000
106		08:00:00	16800	0	53	15.88	88.90	2400	37.0	38	479.334	484.514	1.10	100	1.10	52.80	117.91	0.000	0.000	0.000	S	138000
107		08:30:00	16950	0	62	15.88	88.90	2400	37.5	39	481.683	494.525	1.15	100	1.15	55.20	119.06	0.000	0.000	0.000	S	136000
108		09:00:00	17000	0	60	15.88	88.90	2450	37.5	43	483.118	504.575	1.00	100	1.00	48.00	120.06	0.000	0.000	0.000	S	134000
109		09:30:00	17050	0	58	15.88	88.90	2450	37.5	41	484.889	514.658	0.95	100	0.95	45.60	121.01	0.000	0.000	0.000	S	132000
110	1999/07/28	10:00:00	17050	0	61	15.88	88.90	2450	37.5	40	485.782	524.769	0.80	100	0.80	38.40	121.81	0.000	0.000	0.000	S	132000
111		10:30:00	17080	0	62	15.88	88.90	2450	37.5	39	486.682	534.899	0.80	100	0.80	38.40	122.61	0.000	0.000	0.000	S	126000
112		11:00:00	17110	0	65	15.88	88.90	2450	37.5	38	487.587	545.048	0.70	100	0.70	33.60	123.31	0.000	0.000	0.000	S	120000
113		11:30:00	17130	0	66	15.88	88.90	2450	37.7	39	487.983	555.210	0.85	100	0.85	40.80	124.16	0.000	0.000	0.000	S	120000
114		12:00:00	17150	0	66	15.88	88.90	2480	37.7	39	490.970	565.407	0.60	100	0.60	28.80	124.76	0.000	0.000	0.000	S	118000
115		12:30:00	17170	0	65	15.88	88.90	2480	37.7	39	490.970	575.636	0.65	100	0.65	31.20	125.41	0.000	0.000	0.000	S	118000
116		12:30:00	Increase choke to 17.46mm.																			
117		13:00:00	16080	0	70	17.46	88.90	2800	42.1	42	548.595	586.465	0.85	100	0.85	40.80	126.26	0.000	0.000	0.000	S	116000
118		13:30:00	16080	0	71	17.46	88.90	2800	42.5	46	547.146	597.879	0.95	100	0.95	45.60	127.21	0.000	0.000	0.000	S	118000
119	1999/07/28	14:00:00	16090	0	72	17.46	88.90	2800	42.5	46	547.146	609.278	0.75	100	0.75	36.00	127.96	0.000	0.000	0.000	S	118000
120		14:30:00	16100	0	72	17.46	88.90	2800	42.8	46	549.083	620.697	0.70	100	0.70	33.60	128.66	0.000	0.000	0.000	S	120000
121		15:00:00	16120	0	71	17.46	88.90	2800	43.0	46	550.370	632.149	0.70	100	0.70	33.60	129.36	0.000	0.000	0.000	S	112000
122		15:30:00	16120	0	72	17.46	88.90	2800	43.0	48	548.367	643.595	0.80	100	0.80	38.40	130.16	0.000	0.000	0.000	S	112000
123		16:00:00	16150	0	72	17.46	88.90	2850	43.0	48	553.278	655.070	0.87	100	0.87	41.76	131.03	0.000	0.000	0.000	S	112000
124		16:30:00	16180	0	74	17.46	88.90	2850	43.0	48	553.278	666.597	0.60	100	0.60	28.80	131.63	0.000	0.000	0.000	S	104000
125		17:00:00	16220	0	74	17.46	88.90	2880	43.0	48	556.208	678.154	0.65	100	0.65	31.20	132.28	0.000	0.000	0.000	S	100000
126		17:30:00	16220	0	74	17.46	88.90	2900	43.5	48	561.404	689.796	0.60	100	0.60	28.80	132.88	0.000	0.000	0.000	S	98000
127	1999/07/28	18:00:00	16230	0	74	17.46	88.90	2900	43.5	49	560.383	701.481	0.55	100	0.55	26.40	133.43	0.000	0.000	0.000	S	96000
128		18:30:00	16230	0	74	17.46	88.90	2900	43.5	49	560.383	713.155	0.70	100	0.70	33.60	134.13	0.000	0.000	0.000	S	94000
129		19:00:00	16240	0	74	17.46	88.89	2900	43.5	50	559.227	724.818	0.45	100	0.45	21.60	134.58	0.000	0.000	0.000	S	98000
130		19:30:00	16250	0	74	17.46	88.89	2900	43.5	50	559.227	736.469	0.70	100	0.70	33.60	135.28	0.000	0.000	0.000	S	94000
131		20:00:00	16310	0	74	17.46	88.89	2900	43.5	50	559.227	748.119	0.60	100	0.60	28.80	135.88	0.000	0.000	0.000	S	88000
132		20:30:00	16310	0	74	17.46	88.89	2900	43.5	50	559.227	759.770	0.45	100	0.45	21.60	136.33	0.000	0.000	0.000	S	88000
133		21:00:00	16310	0	74	17.46	88.89	2900	43.5	50	559.227	771.420	0.55	100	0.55	26.40	136.88	0.000	0.000	0.000	S	88000
134		21:30:00	16310	0	75	17.46	88.89	2900	43.7	50	560.517	783.084	0.50	100	0.50	24.00	137.38	0.000	0.000	0.000	S	86000
135		22:00:00	16310	0	75	17.46	88.89	2900	43.7	50	560.517	794.762	0.45	100	0.45	21.60	137.83	0.000	0.000	0.000	S	86000
136		22:30:00	16320	0	75	17.46	88.89	2900	43.7	50	560.517	806.439	0.55	100	0.55	26.40	138.38	0.000	0.000	0.000	S	88000
137		23:00:00	16320	0	75	17.46	88.89	2900	43.7	50	560.517	818.117	0.50	100	0.50	24.00	138.88	0.000	0.000	0.000	S	88000
138		23:30:00	16320	0	76	17.46	88.89	2900	43.7	50	560.517	829.794	0.50	100	0.50	24.00	139.38	0.000	0.000	0.000	S	88000
139		23:30:00	H2S by Kitagawa = 1.5%.																			
140	1999/07/29	00:00:00	16350	0	75	17.46	88.89	2900	43.7	50	560.517	841.472	0.40	100	0.40	19.20	139.78	0.000	0.000	0.000	S	88000
141		00:01:00	Shut in, monitor pressures.																			

Fast

Ranger Oil Limited
P-86-A
Start Test Date: 1999/07/26
Final Test Date: 1999/07/30

FieldNotes
Field Measurements

Ranger Pt.Lisard
Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/d	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
142	1999/07/29	00:01:00					0.00	0	0.0	0	0.000	841.472	0.00	0	0.00	0.00	139.78	0.000	0.000	0.000		
143		00:05:00	20750	0																		
144		00:10:00	21130	0																		
145		00:15:00	21270	0																		
146		00:20:00	21350	0																		
147		00:25:00	21400	0																		
148		00:30:00	21450	0																		
149		00:45:00	21540	0																		
150		01:00:00	21550	40		0.00	0.00	0	0.0	0	0.000	841.472	0.00	0	0.00	0.00	139.78	0.000	0.000	0.000		
151		01:00:00	Pressure up to choke and open to flow on a 17.46mm choke.																			
152		01:05:00	17200	30																		
153		01:05:00	Meter in service with a 88.89mm orifice plate.																			
154		01:10:00	17100	10																		
155		01:15:00	16860	10	64	17.46	88.89	2950	45.7	40	589.048	847.607	0.00	0	0.00	0.00	139.78	0.000	0.000	0.000		
156		01:30:00	16550	0	68	17.46	88.89	2850	43.7	42	563.848	853.612	0.40	100	0.40	38.40	140.18	0.000	0.000	0.000	5	88000
157		01:45:00	16460	0	69	17.46	88.89	2850	43.8	44	562.398	859.478										
158		02:00:00	17460	0	71	17.46	88.89	2850	43.9	44	563.042	865.340	0.55	100	0.55	26.40	140.73	0.000	0.000	0.000	5	88000
159		02:01:00	Shut in and monitor pressures.																			
160		02:01:00					0.00	0	0.0	0	0.000	865.340	0.00	0	0.00	0.00	140.73	0.000	0.000	0.000		
161		02:05:00	20500	60																		
162		02:10:00	21100	90																		
163		02:15:00	21330	120																		
164		02:20:00	21400	140																		
165		02:25:00	21450	170																		
166		02:30:00	21500	200																		
167		02:45:00	21560	260																		
168		03:00:00	21600	320			0.00	0	0.0	0	0.000	865.340	0.00	0	0.00	0.00	140.73	0.000	0.000	0.000		
169		03:01:00	Pressure up to choke and open up on a 17.46mm choke.																			
170		03:05:00	17200	360																		
171		03:05:00	Meter in service with a 88.89mm orifice plate.																			
172		03:10:00	17040	400																		
173		03:15:00	16860	445																		
174		03:30:00	16580	525	65	17.46	88.89	2800	44.0	40	562.855	877.068	0.45	100	0.45	21.60	141.18	0.000	0.000	0.000	5	80000
175		03:45:00	16500	660																		
176		04:00:00	16450	750	68	17.46	88.89	2800	44.0	40	562.855	888.792	0.45	100	0.45	21.60	141.63	0.000	0.000	0.000	5	80000
177		04:30:00	16450	940	70	17.46	88.89	2800	44.0	42	560.750	900.496	0.65	100	0.65	31.20	142.28	0.000	0.000	0.000	5	80000
178		05:00:00	16460	1130	70	17.46	88.89	2800	44.0	44	558.672	912.157	0.40	100	0.40	19.20	142.68	0.000	0.000	0.000	5	80000
179		05:30:00	16460	1290	71	17.46	88.89	2800	44.0	44	558.672	923.796	0.50	100	0.50	24.00	143.18	0.000	0.000	0.000	5	80000
180	1999/07/29	06:00:00	16460	1460	72	17.46	88.89	2800	44.0	44	558.672	935.435	0.60	100	0.60	28.80	143.78	0.000	0.000	0.000	5	80000
181		06:30:00	16460	1460	72	17.46	88.90	2800	44.0	44	558.814	947.075	0.45	100	0.45	21.60	144.23	0.000	0.000	0.000	5	80000
182		07:00:00	16460	1600	72	17.46	88.90	2800	44.0	44	558.814	958.717	0.40	100	0.40	19.20	144.63	0.000	0.000	0.000	5	74000
183		07:30:00	16470	1775	72	17.46	88.90	2800	44.0	44	558.814	970.359	0.45	100	0.45	21.60	145.08	0.000	0.000	0.000	5	76000
184		08:00:00	16470	0	72	17.46	88.90	2800	44.0	44	558.814	982.001	0.40	100	0.40	19.20	145.48	0.000	0.000	0.000	5	76000
185		08:30:00	16450	0	72	17.46	88.90	2800	44.0	44	558.814	993.643	0.40	100	0.40	19.20	145.88	0.000	0.000	0.000	5	74000
186		08:30:00	Shut in well and monitor buildups.																			
187		08:35:00	20900				0.00	0	0.0	0	0.000	993.643	0.00	0	0.00	0.00	145.88	0.000	0.000	0.000		
188		08:40:00	21180																			

Fast

FieldNotes
Field Measurements

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/d	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
189	1999/07/29	08:45:00	21300																			
190		09:00:00	21440																			
191		09:15:00	21680																			
192		09:20:00	Shut in master valve and bleed off well head, and take perf ball catcher apart.																			
193		10:24:00	347 perf balls recovered.																			
194		11:19:00	Begin to pressure test flowline and Bonnett's B.O.P.'s and lubricator.																			
195		12:45:00	Wireline running in hole.																			
196		14:14:00	Wireline at surface.																			
197		19:55:00	Start pressure testing.																			
198		20:35:00	Pressure test complete.																			
199		21:00:00	Open masters and monitor buildups.																			
200		21:00:00	21450	2200																		
201		22:00:00	21450	2200																		
202		23:00:00	21430	2150																		
203	1999/07/30	00:00:00	21430	2125																		
204		01:00:00	21420	2125																		
205		02:00:00	21420	2125																		
206		03:00:00	21360	2100																		
207		04:00:00	21370	2075																		
208		05:00:00	21380	2075																		
209	1999/07/30	06:00:00	21380	2050																		
210		07:00:00	21300	2000																		
211		08:00:00	21540	1800																		
212		09:00:00	21690	1300																		
213		09:00:00	FILE CONTINUED ON RANGER04.FLD.																			
214		09:00:00					0.00	0	0.0	0	0.000	993.643	0.00	0	0.00	0.00	145.88	0.000	0.000	0.000		

AGAT Laboratories

GAS ANALYSIS

CONTAINER IDENTIFICATION: AGAT 21885

LABORATORY NUMBER: GG41644C

OPERATOR NAME: RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER:

WELL NAME:

ELEVATIONS KB m: GRD m:

FIELD OR AREA: FORT LIARD

POOL OR ZONE: TIGHT HOLE

NAME OF SAMPLER:

COMPANY: NORWARD

TEST TYPE: AO

TEST RECOVERY:

TEST INTERVAL OR PERFS:

SAMPLING POINT: TEST UNIT

	SEPARATOR	TREATER	RESERVOIR	SOURCE	SAMPLED	RECEIVED
GAUGE PRESSURE kPa				2800	2800	2830
TEMPERATURE °C				44	44	21

DATE SAMPLED (Y-M-D): 99-07-29

DATE RECEIVED (Y-M-D): 99-08-12

DATE REPORTED (Y-M-D): 99-08-19

ANALYST: LQ NCO

OTHER INFORMATION: P-66-A

COMP	MOLE FRACTION AIR FREE AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	PETROLEUM LIQUID ESTIMATE m³/10³ m³
H_2	0.0013	0.0015	
He	0.0011	0.0013	
N_2	0.0491	0.0598	
CO_2	0.1672	0.0000	
H_2S	0.0130	0.0000	
C_1	0.7682	0.9373	
C_2	0.0001	0.0001	
C_3	0.0000	0.0000	0.0
iC_4	0.0000	0.0000	0.0
nC_4	0.0000	0.0000	0.0
iC_5	0.0000	0.0000	0.0
nC_5	0.0000	0.0000	0.0
C_6	0.0000	0.0000	0.0
C_7 +	0.0000	0.0000	0.0
C_8			
C_9			
C_{10}-			
TOTAL	1.0000	1.0000	0.0

GROSS HEATING VALUE MJ/m³ 15°C AND 101.325 kPa

MOISTURE AND ACID GAS FREE: 35.43

AIR FREE AS RECEIVED: 29.38

VAPOUR PRESSURE PENTANES PLUS: 0.0 kPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED		MOISTURE AND ACID GAS FREE	
MEASURED	CALCULATED	MEASURED	CALCULATED
	0.743		0.577

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED		ACID GAS FREE	
pPc (abs)	pTc	pPc (abs)	pTc
5058 kPa	208.4 K	4521 kPa	186.2 K

RELATIVE MOLECULAR MASS

TOTAL GAS: 21.5

C_{7+}: 0.0

H_2S g/m³: 18.67

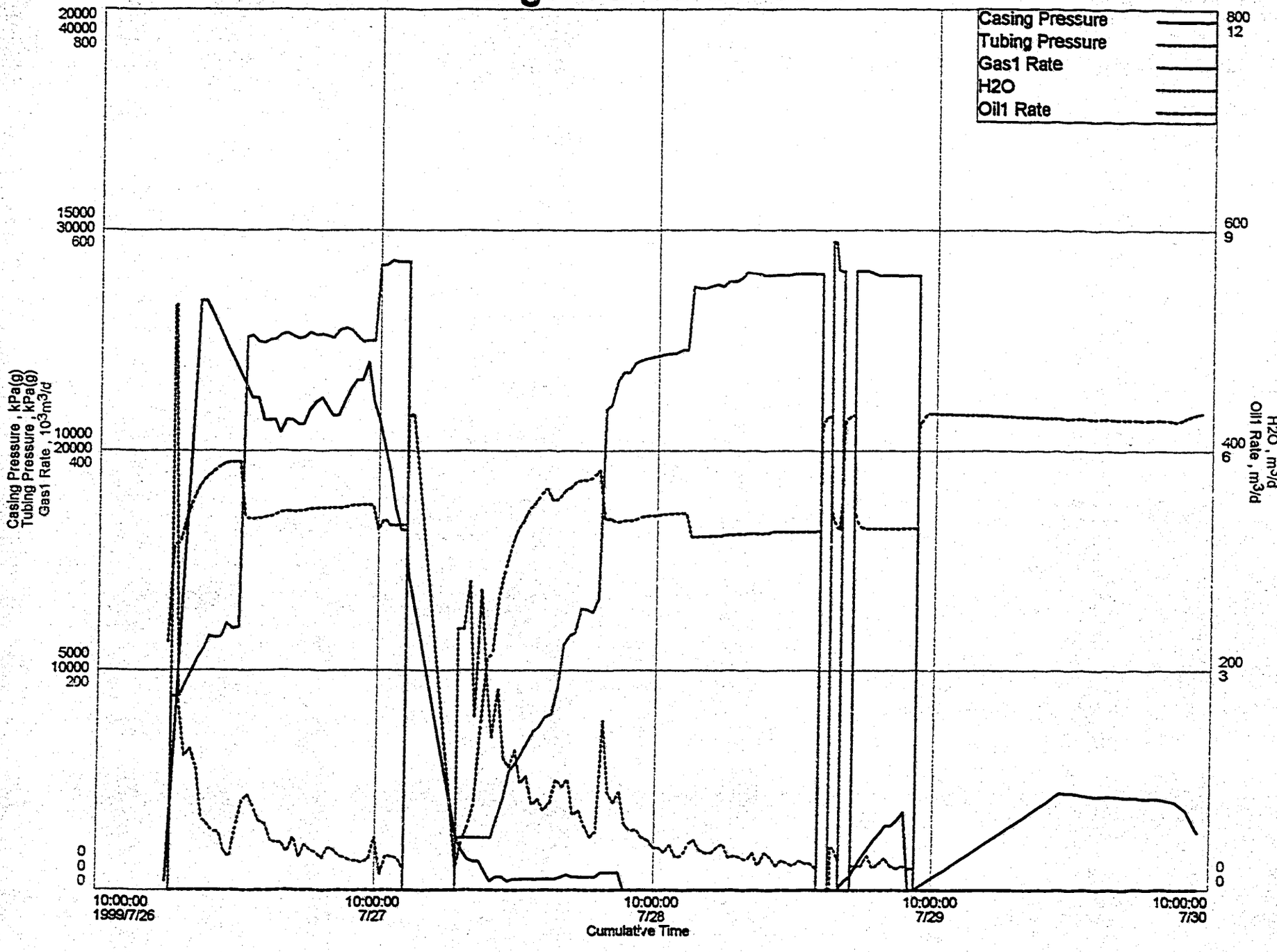
REMARKS:

EXCEED NORMAL LIMITS : CO2
FIELD H2S = 1.3%/LAB = 0.62%

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/26
Final Test Date: 1999/07/30

Ranger Ft. Liard P-66-A

Ranger Ft.Liard
Job Number: GP99-086



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Fast

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BAKER HUGHES

Baker Atlas

NORWARD ENERGY SERVICES

Customer: Ranger Oil Limited
Wellname: Ranger Ft. Liard
Well Location: P-66-A
Test Dates: July 30 - Aug 09, 1999
Formation: TIGHT HOLE

File Name: GP99-085, RANGER04.FLD
Supervisors: B. Metcalf
Customer Reps: Wayne Casler
Test Unit/Tank: TU#29
Test Type: Multi Rate Test

NATIONAL ENERGY BOARD
ENGINEERING BRANCH
MAY 19 2000

Final Edited Copy

GENERAL INFORMATION

Client Information:

Company: Ranger Oil Limited

Contact: Leroy Brown

Phone: 1-600-700-5696 Fax: e-mail:

Site Information:

Contact: Wayne Casler

Phone: Fax: e-mail:

Well Information:

Name: Ranger Ft.Liard

Operator: Ranger Oil

Location-Downhole: P-66-A

Location-Surface:

Test Information:

Company: Norward Energy Services

Representative: Paul Ringrose

Supervisor: Bill Metcalf

Test Type: Multi-Rate Test

Test Unit: T.U.#29

Start Date: 1999/07/30

End Date: 1999/08/09

Report Date: 1999/09/01

Job Number: GP99-085

Start Time: 09:00:00

End Time: 18:00:00

Prepared By: C. Brunt

Qualified By:

Remarks:

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/30
Final Test Date: 1999/08/09

FieldNotes

Ranger Ft.Liard

Job Number: GP99-085

Gas Meter 1

Meter Type:	Orifice Meter	
Meter Size:	147.07	mm
Previous Gas Production:	0.000	10^3m^3
Tap Type:	Flange	
Tap Location:	Downstream	
Gas Gravity (G):	0.742	
CO_2:	16.95	%
H_2S:	0.45	%
N_2:	5.32	%
Critical Temperature (T_c):	207.00	K
Critical Pressure (P_c):	5026.00	kPa

Oil Meter 1

Meter Type:	Produced Volume	
Measurement Type:	Incremental	
Columns for Produced Volume:		
Previous Oil Production:	0.000	m^3
Previous Water Production:	0.000	m^3

Water Meter 1

Meter Type:	Produced Volume	
Measurement type:	Incremental	
Columns for Produced Volume:		
Previous Water Production:	0.000	m^3

Fast

Ranger Oil Limited
P-65-A
Start Test Date: 1999/07/30
Final Test Date: 1999/08/09

FieldNotes
Field Measurements

Ranger Ft.Liard

Job Number: GP99-065

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/dd	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
1	1999/07/30	09:30:00	Obtain opening pressure.																			
2		09:00:00	21690	1300																		
3		09:02:00					0.00	0	0.0	0	0.000	0.000	0.00	0	0.00	0.00	0.00	0.000	0.000	0.000		
4		09:03:00	Open well to flow on 15.08mm choke.																			
5		09:03:00	19500	1300		15.08																
6		09:08:00	18700	1250		15.08							0.40	100	0.40	95.73	0.40	0.000	0.000	0.000		
7		09:13:00	17700	950		15.08	88.90	2000	42.0	29	481.036	3.680	0.10	100	0.10	28.80	0.50	0.000	0.000	0.000		
8		09:13:00	Cut choke to 14.29mm.																			
9		09:18:00	18000	750	34	14.29	88.90	1800	39.0	29	440.015	5.279										
10		09:22:00	Cut choke to 13.49mm.																			
11		09:30:00	18890	400	36	13.49	88.90	1500	36.2	29	387.868	8.724	0.10	100	0.10	8.48	0.60	0.000	0.000	0.000		
12		09:33:00	Open choke to 13.89mm.																			
13		09:48:00	18680	120	37	13.89	88.90	1750	37.5	29	425.509	13.808										
14		10:00:00	18570	70	38	13.89	88.90	1700	36.3	28	413.487	17.303	0.20	100	0.20	9.60	0.80	0.000	0.000	0.000		
15		10:30:00	18660	30	40	13.89	88.90	1700	36.5	29	413.862	25.922	0.40	100	0.40	19.20	1.20	0.000	0.000	0.000		
16		11:00:00	18720	0	42	13.89	88.90	1700	37.0	29	416.704	34.573	0.45	100	0.45	21.60	1.65	0.000	0.000	0.000	5	78000
17		11:30:00	18630	0	42	13.89	88.90	1700	38.0	30	421.552	43.305	0.45	100	0.45	21.60	2.10	0.000	0.000	0.000	5	76000
18		12:00:00	18640	0	48	13.89	88.90	1700	38.0	31	420.777	52.079	0.30	100	0.30	14.40	2.40	0.000	0.000	0.000	5	68000
19		12:30:00	18660	0	49	13.89	88.90	1750	38.1	32	426.552	60.906	0.40	100	0.40	19.20	2.80	0.000	0.000	0.000	5	64000
20		13:00:00	18700	0	52	13.89	88.90	1750	38.1	34	424.997	69.776	0.20	100	0.20	9.60	3.00	0.000	0.000	0.000	5	62000
21		13:30:00	18730	0	53	13.89	88.90	1750	38.2	36	424.021	78.620	0.45	100	0.45	21.60	3.45	0.000	0.000	0.000	5	60000
22	1999/07/30	14:00:00	18740	0	54	13.89	88.90	1750	38.2	38	422.503	87.436	0.20	100	0.20	9.60	3.65	0.000	0.000	0.000	5	60000
23		14:30:00	18740	0	56	13.89	88.90	1750	38.5	38	42- 168	96.257	0.40	100	0.40	19.20	4.05	0.000	0.000	0.000	5	54000
24		15:00:00	18750	0	56	13.89	88.90	1750	38.5	40	422.663	105.079	0.35	100	0.35	16.80	4.40	0.000	0.000	0.000	5	52000
25		15:30:00	18760	0	58	13.89	88.90	1750	38.5	41	421.916	113.876	0.20	100	0.20	9.60	4.60	0.000	0.000	0.000	5	52000
26		16:00:00	18790	0	58	13.89	88.90	1750	38.0	39	420.638	122.653	0.30	100	0.30	14.40	4.90	0.000	0.000	0.000	5	50000
27		16:30:00	18800	0	60	13.89	88.90	1750	37.8	37	421.025	131.420	0.20	100	0.20	9.60	5.10	0.000	0.000	0.000	5	50000
28		17:00:00	18790	0	60	13.89	88.90	1800	38.2	39	427.585	140.260	0.25	100	0.25	12.00	5.35	0.000	0.000	0.000	5	50000
29		17:30:00	18800	0	60	13.89	88.90	1750	38.0	37	422.143	149.111	0.35	100	0.35	16.80	5.70	0.000	0.000	0.000	5	46000
30	1999/07/30	18:00:00	18800	0	60	13.89	88.90	1800	38.0	39	426.458	157.951	0.30	100	0.30	14.40	6.00	0.000	0.000	0.000	5	44000
31		18:30:00	18800	0	60	13.89	88.89	1800	38.5	39	429.159	166.864	0.30	100	0.30	14.40	6.30	0.000	0.000	0.000	5	44000
32		19:00:00	18810	0	62	13.89	88.89	1800	38.2	39	427.474	175.787	0.25	100	0.25	12.00	6.55	0.000	0.000	0.000	5	48000
33		19:30:00	18820	0	62	13.89	88.89	1750	38.0	39	420.529	184.620	0.25	100	0.25	12.00	6.80	0.000	0.000	0.000	5	46000
34		20:00:00	18820	0	62	13.89	88.89	1750	38.0	39	420.529	193.381	0.30	100	0.30	14.40	7.10	0.000	0.000	0.000	5	40000
35		20:30:00	18820	0	64	13.89	88.89	1750	38.0	42	418.306	202.119	0.25	100	0.25	12.00	7.35	0.000	0.000	0.000	5	42000
36		21:00:00	18820	0	65	13.89	88.89	1750	38.0	42	418.306	210.834	0.30	100	0.30	14.40	7.65	0.000	0.000	0.000	5	40000
37		21:01:00	Rate # 2 = Increase choke to 15.08mm.																			
38		21:03:00	Increase choke to 15.88mm.																			
39		21:05:00	17680	0	63	15.88	88.89	2270	46.7	40	529.211	212.484										
40		21:10:00	17070	0																		
41		21:10:00	Increase choke to 16.67mm.																			
42		21:15:00	17070	0	66	16.67	88.89	2370	48.8	40	552.784	216.235										
43		21:30:00	17000	0	67	16.67	88.89	2410	49.6	40	561.996	222.041	0.60	100	0.60	28.80	8.25	0.000	0.000	0.000	5	42000
44		21:45:00	16980	0	68	16.67	88.89	2410	49.6	40	561.996	227.895										
45		22:00:00	16980	0	69	16.67	88.89	2400	49.0	39	558.437	233.731	0.50	100	0.50	24.00	8.75	0.000	0.000	0.000	5	42000
46		22:30:00	16950	0	70	16.67	88.89	2400	49.0	40	557.409	245.354	0.45	100	0.45	21.60	9.20	0.000	0.000	0.000	5	44000
47		23:00:00	16960	0	72	16.67	88.89	2400	49.5	46	554.198	256.933	0.40	100	0.40	19.20	9.60	0.000	0.000	0.000	5	60000

Fast

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/30
Final Test Date: 1999/08/09

FieldNotes
Field Measurements

Ranger Pt.Lisrd

Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/dd	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
48	1999/07/30	23:30:00	16960	0	72	16.67	88.89	2400	49.5	44	556.194	268.500	0.45	100	0.45	21.60	10.05	0.000	0.000	0.000	S	48000
49	1999/07/31	00:00:00	16960	0	73	16.67	88.89	2400	49.5	44	556.194	280.087	0.30	100	0.30	14.40	10.35	0.000	0.000	0.000	S	58000
50		00:00:00	H2S by kitagawa = 1.2%.																			
51		00:00:00	Slight blow on casing = 120ppm C02.																			
52		00:30:00	16960	0	73	16.67	88.89	2400	49.5	44	556.194	291.675	0.35	100	0.35	16.80	10.70	0.000	0.000	0.000	S	60000
53		01:00:00	16960	0	74	16.67	88.89	2400	49.5	44	556.194	303.262	0.35	100	0.35	16.80	11.05	0.000	0.000	0.000	S	60000
54		01:30:00	16960	0	74	16.67	88.89	2400	49.5	44	556.194	314.849	0.45	100	0.45	21.60	11.50	0.000	0.000	0.000	S	58000
55		02:00:00	16970	0	74	16.67	88.89	2400	49.5	44	556.194	326.437	0.35	100	0.35	16.80	11.85	0.000	0.000	0.000	S	56000
56		02:30:00	16970	0	75	16.67	88.89	2400	49.5	44	556.194	338.024	0.30	100	0.30	14.40	12.15	0.000	0.000	0.000	S	54000
57		03:00:00	16980	0	76	16.67	88.89	2400	49.5	46	554.198	349.591	0.40	100	0.40	19.20	12.55	0.000	0.000	0.000	S	54000
58		03:30:00	16980	0	76	16.67	88.89	2400	49.5	46	554.198	361.137	0.35	100	0.35	16.80	12.90	0.000	0.000	0.000	S	54000
59		04:00:00	17000	0	76	16.67	88.89	2400	49.5	46	554.198	372.682	0.30	100	0.30	14.40	13.20	0.000	0.000	0.000	S	52000
60		04:30:00	17000	0	76	16.67	88.89	2400	49.5	46	554.198	384.228	0.30	100	0.30	14.40	13.50	0.000	0.000	0.000	S	52000
61		05:00:00	17000	0	76	16.67	88.89	2400	49.5	46	554.198	395.774	0.50	100	0.50	24.00	14.00	0.000	0.000	0.000	S	52000
62		05:30:00	17000	0	77	16.67	88.89	2400	49.5	47	553.210	407.309	0.30	100	0.30	14.40	14.30	0.000	0.000	0.000	S	52000
63	1999/07/31	06:00:00	17000	0	78	16.67	88.89	2400	49.5	47	553.210	418.835	0.40	100	0.40	19.20	14.70	0.000	0.000	0.000	S	50000
64		06:30:00	17000	0	78	16.67	88.90	2400	49.5	47	553.353	430.361	0.30	100	0.30	14.40	15.00	0.000	0.000	0.000	S	50000
65		07:00:00	17000	0	78	16.67	88.90	2400	49.5	47	553.353	441.890	0.20	100	0.20	9.60	15.20	0.000	0.000	0.000	S	50000
66		07:30:00	17000	0	78	16.67	88.90	2400	49.5	48	552.371	453.408	0.35	100	0.35	16.80	15.55	0.000	0.000	0.000	S	50000
67		08:00:00	17010	0	78	16.67	88.90	2400	49.5	49	551.394	464.905	0.40	100	0.40	19.20	15.95	0.000	0.000	0.000	S	50000
68		08:30:00	17000	0	78	16.67	88.90	2400	49.5	49	551.394	476.392	0.40	100	0.40	19.20	16.35	0.000	0.000	0.000	S	48000
69		08:45:00	Meter out of service.																			
70		08:48:00	Meter in service with 101.6mm orifice plate.																			
71		09:00:00	17000	0	80	16.67	101.60	2400	25.5	49	544.605	487.809	0.35	100	0.35	16.80	16.70	0.000	0.000	0.000	S	50000
72		09:01:00	Slowly open choke to 30.16mm.																			
73		09:30:00	10080	0	82	30.16	101.60	3300	43.0	62	811.770	501.938	0.85	100	0.85	40.80	17.55	0.000	0.000	0.000	S	50000
74	1999/07/31	10:00:00	10050	0	82	30.16	101.60	3300	43.7	68	809.971	518.831	0.65	100	0.65	31.20	18.20	0.000	0.000	0.000	S	54000
75		10:30:00	10050	0	82	30.16	101.60	3300	44.0	70	810.013	535.706	0.55	100	0.55	26.40	18.75	0.000	0.000	0.000	S	52000
76		11:00:00	10050	0	84	30.16	101.60	3300	44.0	71	808.654	552.567	0.45	100	0.45	21.60	19.20	0.000	0.000	0.000	S	50000
77		11:30:00	10050	0	84	30.16	101.60	3350	44.0	71	814.809	569.478	0.45	100	0.45	21.60	19.65	0.000	0.000	0.000	S	50000
78		12:00:00	10030	0	84	30.16	101.60	3350	44.0	72	813.445	586.439	0.70	100	0.70	33.60	20.35	0.000	0.000	0.000	S	50000
79		12:30:00	10020	0	84	30.16	101.60	3350	44.0	72	813.445	603.386	0.45	100	0.45	21.60	20.80	0.000	0.000	0.000	S	48000
80		13:00:00	10020	0	84	30.16	101.60	3350	44.0	72	813.445	620.333	0.45	100	0.45	21.60	21.25	0.000	0.000	0.000	S	50000
81		13:30:00	10010	0	82	30.16	101.60	3350	43.5	72	808.796	637.231	0.45	100	0.45	21.60	21.70	0.000	0.000	0.000	S	104000
82	1999/07/31	14:00:00	10000	0	82	30.16	101.60	3350	43.5	72	808.796	654.081	0.50	100	0.50	24.00	22.20	0.000	0.000	0.000	S	116000
83		14:30:00	10000	0	82	30.16	101.60	3350	43.5	72	808.796	670.931	0.40	100	0.40	19.20	22.60	0.000	0.000	0.000	S	122000
84		15:00:00	9990	0	84	30.16	101.60	3350	43.5	73	807.448	687.767	0.50	100	0.50	24.00	23.10	0.000	0.000	0.000	S	122000
85		15:30:00	9990	0	84	30.16	101.60	3350	43.5	74	806.108	704.575	0.40	100	0.40	19.20	23.50	0.000	0.000	0.000	S	124000
86		16:00:00	9990	0	84	30.16	101.60	3350	43.5	74	806.108	721.369	0.41	100	0.41	19.68	23.91	0.000	0.000	0.000	S	124000
87		16:30:00	9980	0	84	30.16	101.60	3350	43.5	74	806.108	738.162	0.35	100	0.35	16.80	24.26	0.000	0.000	0.000	S	122000
88		17:00:00	9980	0	84	30.16	101.60	3350	44.0	74	810.741	755.005	0.40	100	0.40	19.20	24.66	0.000	0.000	0.000	S	122000
89		17:30:00	9980	0	84	30.16	101.60	3350	44.0	74	810.741	771.895	0.45	100	0.45	21.60	25.11	0.000	0.000	0.000	S	126000
90	1999/07/31	18:00:00	9980	0	84	30.16	101.60	3350	44.0	74	810.741	788.786	0.45	100	0.45	21.60	25.56	0.000	0.000	0.000	S	132000
91		18:30:00	9980	0	84	30.16	101.60	3350	44.0	74	810.741	805.676	0.35	100	0.35	16.80	25.91	0.000	0.000	0.000	S	132000
92		19:00:00	9990	0	84	30.16	101.60	3350	44.0	74	810.741	822.566	0.50	100	0.50	24.00	26.41	0.000	0.000	0.000	S	130000
93		19:30:00	9990	0	86	30.16	101.60	3350	44.0	74	810.741	839.457	0.55	100	0.55	26.40	26.96	0.000	0.000	0.000	S	130000
94		20:00:00	9990	0	84	30.16	101.60	3350	44.0	76	808.069	856.319	0.55	100	0.55	26.40	27.51	0.000	0.000	0.000	S	82000

Fast

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/30
Final Test Date: 1999/08/09

FieldNotes
Field Measurements

Ranger Pt.Liard
Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/dd	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
95	1999/07/31	20:30:00	9990	0	84	30.16	101.60	3350	44.0	76	808.069	873.154	0.35	100	0.35	16.80	27.86	0.000	0.000	0.000	5	82000
96		21:00:00	9990	0	84	30.16	101.60	3350	44.0	76	808.069	889.989	0.25	100	0.25	12.00	28.11	0.000	0.000	0.000	5	84000
97		21:01:00	Rate # 4 = Decrease choke to 20.64mm.																			
98		21:05:00	13750	0																		
99		21:06:00	Decrease back pressure.																			
100		21:10:00	13930	0																		
101		21:15:00	14040	0																		
102		21:30:00	14150	0	85	20.64	101.60	2600	40.0	67	688.765	905.581	0.30	100	0.30	14.40	28.41	0.000	0.000	0.000	5	84000
103		21:45:00	14150	0																		
104		22:00:00	14160	0	85	20.64	101.60	2600	40.0	64	692.211	919.966	0.30	100	0.30	14.40	28.71	0.000	0.000	0.000	5	36000
105		22:30:00	14160	0	85	20.64	101.60	2600	39.9	64	691.342	934.378	0.20	100	0.20	9.60	28.91	0.000	0.000	0.000	5	48000
106		23:00:00	14160	0	85	20.64	101.60	2600	39.9	64	691.342	948.781	0.35	100	0.35	16.80	29.26	0.000	0.000	0.000	5	56000
107		23:30:00	14160	0	85	20.64	101.60	2600	39.9	64	691.342	963.184	0.30	100	0.30	14.40	29.56	0.000	0.000	0.000	5	56000
108	1999/08/01	00:00:00	14160	0	85	20.64	101.60	2600	39.9	64	691.342	977.587	0.35	100	0.35	16.80	29.91	0.000	0.000	0.000	5	58000
109		00:30:00	14160	0	85	20.64	101.60	2600	39.9	64	691.342	991.990	0.30	100	0.30	14.40	30.21	0.000	0.000	0.000	5	58000
110		01:00:00	14160	0	85	20.64	101.60	2600	39.9	64	691.342	1006.393	0.30	100	0.30	14.40	30.51	0.000	0.000	0.000	5	56000
111		01:30:00	14160	0	85	20.64	101.60	2600	39.9	64	691.342	1020.796	0.30	100	0.30	14.40	30.81	0.000	0.000	0.000	5	56000
112		02:00:00	14160	0	85	20.64	101.60	2600	39.9	64	691.342	1035.199	0.35	100	0.35	16.80	31.16	0.000	0.000	0.000	5	58000
113		02:30:00	14160	0	85	20.64	101.60	2600	39.9	64	691.342	1049.602	0.35	100	0.35	16.80	31.51	0.000	0.000	0.000	5	58000
114		03:00:00	14160	0	85	20.64	101.60	2600	39.9	64	691.342	1064.005	0.25	100	0.25	12.00	31.76	0.000	0.000	0.000	5	68000
115		03:30:00	14160	0	85	20.64	101.60	2600	39.9	64	691.342	1078.408	0.35	100	0.35	16.80	32.11	0.000	0.000	0.000	5	58000
116		04:00:00	14170	0	85	20.64	101.60	2600	39.9	64	691.342	1092.811	0.40	100	0.40	19.20	32.51	0.000	0.000	0.000	5	58000
117		04:30:00	14170	0	85	20.64	101.60	2600	39.9	64	691.342	1107.214	0.25	100	0.25	12.00	32.76	0.000	0.000	0.000	5	58000
118		05:00:00	14170	0	85	20.64	101.60	2600	39.9	64	691.342	1121.617	0.45	100	0.45	21.60	33.21	0.000	0.000	0.000	5	58000
119		05:30:00	14170	0	85	20.64	101.60	2600	39.9	64	691.342	1136.020	0.35	100	0.35	16.80	33.56	0.000	0.000	0.000	5	56000
120	1999/08/01	06:00:00	14170	0	85	20.64	101.60	2600	39.9	64	691.342	1150.423	0.25	100	0.25	12.00	33.81	0.000	0.000	0.000	5	60000
121		06:30:00	14170	0	86	20.64	101.60	2600	39.9	64	691.342	1164.826	0.30	100	0.30	14.40	34.11	0.000	0.000	0.000	5	66000
122		07:00:00	14170	0	86	20.64	101.60	2600	39.9	64	691.342	1179.229	0.35	100	0.35	16.80	34.46	0.000	0.000	0.000	5	68000
123		07:30:00	14170	0	87	20.64	101.60	2600	40.0	64	692.211	1193.641	0.30	100	0.30	14.40	34.76	0.000	0.000	0.000	5	70000
124		08:00:00	14170	0	87	20.64	101.60	2600	40.0	64	692.211	1208.062	0.30	100	0.30	14.40	35.06	0.000	0.000	0.000	5	72000
125		08:30:00	14180	0	87	20.64	101.60	2600	40.0	64	692.211	1222.483	0.35	100	0.35	16.80	35.41	0.000	0.000	0.000	5	66000
126		09:00:00	14190	0	88	20.64	101.60	2550	39.9	64	684.695	1236.825	0.30	100	0.30	14.40	35.71	0.000	0.000	0.000	5	62000
127		09:30:00	14190	0	88	20.64	101.60	2550	39.9	64	684.695	1251.090	0.30	100	0.30	14.40	36.01	0.000	0.000	0.000	5	60000
128	1999/08/01	10:00:00	14190	0	88	20.64	101.60	2550	39.9	64	684.695	1265.354	0.30	100	0.30	14.40	36.31	0.000	0.000	0.000	5	58000
129		10:30:00	14190	0	88	20.64	101.60	2550	39.9	64	684.695	1279.619	0.25	100	0.25	12.00	36.56	0.000	0.000	0.000	5	56000
130		11:00:00	14190	0	88	20.64	101.60	2550	39.9	64	684.695	1293.883	0.50	100	0.50	24.00	37.06	0.000	0.000	0.000	5	56000
131		11:30:00	14190	0	88	20.64	101.60	2550	39.9	64	684.695	1308.148	0.20	100	0.20	9.60	37.26	0.000	0.000	0.000	5	56000
132		12:00:00	14190	0	88	20.64	101.60	2550	39.9	64	684.695	1322.412	0.30	100	0.30	14.40	37.56	0.000	0.000	0.000	5	56000
133		12:30:00	14190	0	84	20.64	101.60	2550	39.9	64	684.695	1336.677	0.45	100	0.45	21.60	38.01	0.000	0.000	0.000	5	56000
134		13:00:00	14190	0	84	20.64	101.60	2550	39.9	64	684.695	1350.941	0.25	100	0.25	12.00	38.26	0.000	0.000	0.000	5	68000
135		13:30:00	14180	0	84	20.64	101.60	2550	39.9	64	684.954	1365.209	0.30	100	0.30	14.40	38.56	0.000	0.000	0.000	5	74000
136	1999/08/01	14:00:00	14180	0	84	20.64	101.60	2550	39.9	64	684.695	1379.476	0.30	100	0.30	14.40	38.86	0.000	0.000	0.000	5	98000
137		14:30:00	14170	0	84	20.64	101.60	2550	39.9	64	684.695	1393.740	0.30	100	0.30	14.40	39.16	0.000	0.000	0.000	5	78000
138		15:00:00	14170	0	84	20.64	101.60	2550	39.9	64	684.695	1408.005	0.35	100	0.35	16.80	39.51	0.000	0.000	0.000	5	60000
139		15:30:00	14170	0	84	20.64	101.60	2550	39.9	64	684.695	1422.269	0.35	100	0.35	16.80	39.86	0.000	0.000	0.000	5	72000
140		16:00:00	14150	0	84	20.64	101.60	2550	39.9	64	684.695	1436.534	0.30	100	0.30	14.40	40.16	0.000	0.000	0.000	5	78000
141		16:30:00	14150	0	84	20.64	101.60	2550	39.9	64	684.695	1450.798	0.44	100	0.44	21.12	40.60	0.000	0.000	0.000	5	74000

Fast

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/30
Final Test Date: 1999/08/09

FieldNotes
Field Measurements

Ranger Ft.Liard
Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/dd	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
142	1999/08/01	17:00:00	14150	0	85	20.64	101.60	2550	39.9	64	684.635	1465.063	0.35	100	0.35	16.80	40.95	0.000	0.000	0.000	S	72000
143		17:30:00	14150	0	84	20.64	101.60	2550	39.9	64	684.695	1479.327	0.15	100	0.15	7.20	41.10	0.000	0.000	0.000	S	72000
144	1999/08/01	18:00:00	14150	0	84	20.64	101.60	2550	39.9	64	684.695	1493.592	0.70	100	0.70	33.60	41.80	0.000	0.000	0.000	S	72000
145		18:30:00	14150	0	84	20.64	101.60	2550	39.9	65	683.555	1507.844	0.15	100	0.15	7.20	41.95	0.000	0.000	0.000	S	66000
146		19:00:00	14150	0	84	20.64	101.60	2550	39.9	65	683.555	1522.085	0.15	100	0.15	7.20	42.10	0.000	0.000	0.000	S	68000
147		19:30:00	14150	0	84	20.64	101.60	2550	39.9	65	683.555	1536.326	0.40	100	0.40	19.20	42.50	0.000	0.000	0.000	S	70000
148		20:00:00	14150	0	85	20.64	101.60	2550	39.9	65	683.555	1550.566	0.20	100	0.20	9.60	42.70	0.000	0.000	0.000	S	96000
149		20:30:00	14150	0	83	20.64	101.60	2550	39.9	65	683.555	1564.807	0.30	100	0.30	14.40	43.00	0.000	0.000	0.000	S	58000
150		21:00:00	14150	0	84	20.64	101.60	2550	39.9	65	683.555	1579.048	0.30	100	0.30	14.40	43.30	0.000	0.000	0.000	S	56000
151		21:30:00	14150	0	84	20.64	101.60	2550	39.9	65	683.555	1593.289	0.20	100	0.20	9.60	43.50	0.000	0.000	0.000	S	50000
152		22:00:00	14150	0	84	20.64	101.60	2550	39.9	65	683.555	1607.529	0.60	100	0.60	28.80	44.10	0.000	0.000	0.000	S	46000
153		22:30:00	14150	0	85	20.64	101.60	2550	39.9	65	683.555	1621.770	0.25	100	0.25	12.00	44.35	0.000	0.000	0.000	S	48000
154		23:00:00	14150	0	86	20.64	101.60	2550	39.9	65	683.555	1636.011	0.25	100	0.25	12.00	44.60	0.000	0.000	0.000	S	50000
155		23:30:00	14150	0	85	20.64	101.60	2550	39.9	65	683.555	1650.252	0.30	100	0.30	14.40	44.90	0.000	0.000	0.000	S	50000
156	1999/08/02	00:00:00	14150	0	85	20.64	101.60	2550	39.9	65	683.555	1664.492	0.40	100	0.40	19.20	45.30	0.000	0.000	0.000	S	48000
157		00:30:00	14150	0	85	20.64	101.60	2550	39.9	65	683.555	1678.733	0.20	100	0.20	9.60	45.50	0.000	0.000	0.000	S	54000
158		01:00:00	14150	0	85	20.64	101.60	2550	39.9	65	683.555	1692.974	0.35	100	0.35	16.80	45.85	0.000	0.000	0.000	S	56000
159		01:30:00	14150	0	85	20.64	101.60	2550	39.9	65	683.555	1707.214	0.30	100	0.30	14.40	46.15	0.000	0.000	0.000	S	54000
160		02:00:00	14150	0	85	20.64	101.60	2550	39.9	65	683.555	1721.455	0.40	100	0.40	19.20	46.55	0.000	0.000	0.000	S	50000
161		02:30:00	14150	0	86	20.64	101.60	2550	39.9	65	683.555	1735.696	0.20	100	0.20	9.60	46.75	0.000	0.000	0.000	S	58000
162		03:00:00	14150	0	86	20.64	101.60	2550	39.9	65	683.555	1749.937	0.30	100	0.30	14.40	47.05	0.000	0.000	0.000	S	64000
163		03:30:00	14150	0	86	20.64	101.60	2550	39.9	65	683.555	1764.177	0.30	100	0.30	14.40	47.35	0.000	0.000	0.000	S	58000
164		04:00:00	14150	0	86	20.64	101.60	2550	39.9	65	683.555	1778.418	0.35	100	0.35	16.80	47.70	0.000	0.000	0.000	S	64000
165		04:30:00	14150	0	86	20.64	101.60	2550	39.9	65	683.555	1792.659	0.35	100	0.35	16.80	48.05	0.000	0.000	0.000	S	56000
166		05:00:00	14150	0	86	20.64	101.60	2550	39.9	65	683.555	1806.900	0.15	100	0.15	7.20	48.20	0.000	0.000	0.000	S	58000
167		05:30:00	14150	0	86	20.64	101.60	2550	39.9	65	683.555	1821.140	0.35	100	0.35	16.80	48.55	0.000	0.000	0.000	S	54000
168	1999/08/02	06:00:00	14150	0	86	20.64	101.60	2550	39.9	65	683.555	1835.381	0.30	100	0.30	14.40	48.85	0.000	0.000	0.000	S	56000
169		06:00:00	H2S by kitagawa = 1.0%.																			
170		06:30:00	14150	0	86	20.64	101.60	2550	39.9	65	683.555	1849.622	0.25	100	0.25	12.00	49.10	0.000	0.000	0.000	S	50000
171		07:00:00	14150	0	86	20.64	101.60	2550	39.9	64	684.695	1863.874	0.20	100	0.20	9.60	49.30	0.000	0.000	0.000	S	52000
172		07:30:00	14150	0	86	20.64	101.60	2550	39.9	64	684.695	1878.139	0.30	100	0.30	14.40	49.60	0.000	0.000	0.000	S	54000
173		08:00:00	14140	0	87	20.64	101.60	2550	39.9	64	684.695	1892.403	0.30	100	0.30	14.40	49.90	0.000	0.000	0.000	S	58000
174		08:30:00	14140	0	88	20.64	101.60	2550	39.9	64	684.695	1906.668	0.30	100	0.30	14.40	50.20	0.000	0.000	0.000	S	58000
175		09:00:00	14150	0	88	20.64	101.60	2550	39.9	64	684.695	1920.932	0.25	100	0.25	12.00	50.45	0.000	0.000	0.000	S	58000
176		09:30:00	14150	0	88	20.64	101.60	2550	39.9	65	683.555	1935.185	0.35	100	0.35	16.80	50.80	0.000	0.000	0.000	S	54000
177	1999/08/02	10:00:00	14150	0	88	20.64	101.60	2550	39.9	65	683.555	1949.426	0.25	100	0.25	12.00	51.05	0.000	0.000	0.000	S	50000
178		10:30:00	14150	0	88	20.64	101.60	2550	39.9	65	683.555	1963.666	0.35	100	0.35	16.80	51.40	0.000	0.000	0.000	S	52000
179		11:00:00	14150	0	88	20.64	101.60	2550	39.9	66	682.422	1977.895	0.40	100	0.40	19.20	51.80	0.000	0.000	0.000	S	52000
180		11:30:00	14150	0	88	20.64	101.60	2550	39.9	64	684.695	1992.136	0.30	100	0.30	14.40	52.10	0.000	0.000	0.000	S	64000
181		12:00:00	14150	40	88	20.64	101.60	2550	39.9	64	684.695	2006.401	0.40	100	0.40	19.20	52.50	0.000	0.000	0.000	S	72000
182		12:30:00	14130	40	88	20.64	101.60	2550	39.9	65	683.555	2020.653	0.20	100	0.20	9.60	52.70	0.000	0.000	0.000	S	98000
183		13:00:00	14130	40	88	20.64	101.60	2550	39.9	68	680.174	2034.859	0.30	100	0.30	14.40	53.00	0.000	0.000	0.000	S	112000
184		13:30:00	14130	0	88	20.64	101.60	2550	39.9	67	681.294	2049.041	0.10	100	0.10	4.80	53.10	0.000	0.000	0.000	S	110000
185	1999/08/02	14:00:00	14140	0	88	20.64	101.60	2550	39.9	67	681.294	2063.234	0.40	100	0.40	19.20	53.50	0.000	0.000	0.000	S	100000
186		14:30:00	14140	0	88	20.64	101.60	2550	39.9	68	680.174	2077.416	0.30	100	0.30	14.40	53.80	0.000	0.000	0.000	S	108000
187		15:00:00	14140	0	88	20.64	101.60	2550	39.9	68	680.174	2091.587	0.25	100	0.25	12.00	54.05	0.000	0.000	0.000	S	112000
188		15:30:00	14140	0	88	20.64	101.60	2550	39.9	67	681.294	2105.769	0.15	100	0.15	7.20	54.20	0.000	0.000	0.000	S	112000

Fast

Ranger Oil Limited
P-65-A
Start Test Date: 1999/07/30
Final Test Date: 1999/08/09

FieldNotes
Field Measurements

Ranger Pt.Liard
Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/dd	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
189	1999/08/02	16:00:00	14140	0	88	20.64	101.60	2550	39.9	66	682.422	2119.974	0.40	100	0.40	19.20	54.60	0.000	0.000	0.000	5	110000
190		16:30:00	14140	0	87	20.64	101.60	2550	39.9	66	682.422	2134.191	0.30	100	0.30	14.40	54.90	0.000	0.000	0.000	5	112000
191		17:00:00	14140	0	87	20.64	101.60	2550	39.9	66	682.422	2148.408	0.35	100	0.35	16.80	55.25	0.000	0.000	0.000	5	112000
192		17:30:00	14140	0	87	20.64	101.60	2550	39.9	66	682.422	2162.625	0.30	100	0.30	14.40	55.55	0.000	0.000	0.000	5	106000
193	1999/08/02	18:00:00	14140	0	86	20.64	101.60	2550	39.9	66	682.422	2176.842	0.44	100	0.44	21.12	55.99	0.000	0.000	0.000	5	98000
194		18:30:00	14140	0	86	20.64	101.60	2550	39.9	66	682.422	2191.060	0.25	100	0.25	12.00	56.24	0.000	0.000	0.000	5	96000
195		19:00:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2205.318	0.25	100	0.25	12.00	56.49	0.000	0.000	0.000	5	100000
196		19:30:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2219.618	0.40	100	0.40	19.20	56.89	0.000	0.000	0.000	5	118000
197		20:00:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2233.918	0.30	100	0.30	14.40	57.19	0.000	0.000	0.000	5	96000
198		20:30:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2248.218	0.30	100	0.30	14.40	57.49	0.000	0.000	0.000	5	94000
199		21:00:00	14120	0	87	20.64	101.60	2580	39.9	67	685.265	2262.506	0.25	100	0.25	12.00	57.74	0.000	0.000	0.000	5	112000
200		21:30:00	14120	0	87	20.64	101.60	2580	39.9	67	685.265	2276.783	0.30	100	0.30	14.40	58.04	0.000	0.000	0.000	5	102000
201		22:00:00	14120	0	87	20.64	101.60	2580	39.9	67	685.265	2291.059	0.25	100	0.25	12.00	58.29	0.000	0.000	0.000	5	100000
202		22:30:00	14120	0	87	20.64	101.60	2580	39.9	67	685.265	2305.335	0.30	100	0.30	14.40	58.59	0.000	0.000	0.000	5	90000
203		23:00:00	14120	0	86	20.64	101.60	2580	39.9	67	685.265	2319.612	0.40	100	0.40	19.20	58.99	0.000	0.000	0.000	5	74000
204		23:30:00	14120	0	86	20.64	101.60	2580	39.9	67	685.265	2333.888	0.40	100	0.40	19.20	59.39	0.000	0.000	0.000	5	74000
205	1999/08/03	00:00:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2348.176	0.25	100	0.25	12.00	59.64	0.000	0.000	0.000	5	50000
206		00:30:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2362.476	0.30	100	0.30	14.40	59.94	0.000	0.000	0.000	5	58000
207		01:00:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2376.776	0.30	100	0.30	14.40	60.24	0.000	0.000	0.000	5	62000
208		01:30:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2391.076	0.35	100	0.35	16.80	60.59	0.000	0.000	0.000	5	58000
209		02:00:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2405.376	0.30	100	0.30	14.40	60.89	0.000	0.000	0.000	5	52000
210		02:30:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2419.676	0.25	100	0.25	12.00	61.14	0.000	0.000	0.000	5	50000
211		03:00:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2433.976	0.20	100	0.20	9.60	61.34	0.000	0.000	0.000	5	62000
212		03:30:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2448.276	0.35	100	0.35	16.80	61.69	0.000	0.000	0.000	5	58000
213		04:00:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2462.576	0.25	100	0.25	12.00	61.94	0.000	0.000	0.000	5	50000
214		04:30:00	14120	0	85	20.64	101.60	2580	39.9	66	686.400	2476.876	0.30	100	0.30	14.40	62.24	0.000	0.000	0.000	5	54000
215		05:00:00	14120	0	84	20.64	101.60	2580	39.9	66	686.400	2491.176	0.30	100	0.30	14.40	62.54	0.000	0.000	0.000	5	74000
216		05:30:00	14120	0	85	20.64	101.60	2580	39.9	66	686.400	2505.476	0.25	100	0.25	12.00	62.79	0.000	0.000	0.000	5	66000
217	1999/08/03	06:00:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2519.776	0.25	100	0.25	12.00	63.04	0.000	0.000	0.000	5	50000
218		06:30:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2534.076	0.25	100	0.25	12.00	63.29	0.000	0.000	0.000	5	50000
219		07:00:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2548.376	0.20	100	0.20	9.60	63.49	0.000	0.000	0.000	5	52000
220		07:30:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2562.676	0.30	100	0.30	14.40	63.79	0.000	0.000	0.000	5	54000
221		08:00:00	14120	0	86	20.64	101.60	2580	39.9	66	686.400	2576.976	0.25	100	0.25	12.00	64.04	0.000	0.000	0.000	5	58000
222		08:30:00	14120	0	88	20.64	101.60	2580	39.9	66	686.400	2591.276	0.30	100	0.30	14.40	64.34	0.000	0.000	0.000	5	56000
223		09:00:00	14120	0	88	20.64	101.60	2580	39.9	66	686.400	2605.576	0.25	100	0.25	12.00	64.59	0.000	0.000	0.000	5	50000
224		09:30:00	14110	0	88	20.64	101.60	2580	39.9	67	685.265	2619.864	0.35	100	0.35	16.80	64.94	0.000	0.000	0.000	5	62000
225	1999/08/03	10:00:00	14110	0	88	20.64	101.60	2580	39.9	67	685.265	2634.141	0.25	100	0.25	12.00	65.19	0.000	0.000	0.000	5	68000
226		10:30:00	14110	0	88	20.64	101.60	2580	39.9	67	685.265	2648.417	0.30	100	0.30	14.40	65.49	0.000	0.000	0.000	5	68000
227		11:00:00	14110	0	88	20.64	101.60	2580	39.9	67	685.265	2662.693	0.25	100	0.25	12.00	65.74	0.000	0.000	0.000	5	68000
228		11:30:00	14110	0	88	20.64	101.60	2580	39.9	67	685.265	2676.970	0.25	100	0.25	12.00	65.99	0.000	0.000	0.000	5	68000
229		12:00:00	14110	0	88	20.64	101.60	2580	39.9	68	684.136	2691.234	0.40	100	0.40	19.20	66.39	0.000	0.000	0.000	5	68000
230		12:30:00	14110	0	88	20.64	101.60	2580	39.9	68	684.136	2705.487	0.30	100	0.30	14.40	66.69	0.000	0.000	0.000	5	68000
231		13:00:00	14110	0	88	20.64	101.60	2580	39.9	68	684.136	2719.740	0.20	100	0.20	9.60	66.89	0.000	0.000	0.000	5	68000
232		13:30:00	14110	0	88	20.64	101.60	2580	39.9	66	686.400	2734.016	0.20	100	0.20	9.60	67.09	0.000	0.000	0.000	5	66000
233	1999/08/03	14:00:00	14110	0	88	20.64	101.60	2580	39.9	66	686.400	2748.316	0.35	100	0.35	16.80	67.44	0.000	0.000	0.000	5	62000
234		14:30:00	14110	0	88	20.64	101.60	2580	40.0	66	687.263	2762.625	0.30	100	0.30	14.40	67.74	0.000	0.000	0.000	5	68000
235		15:00:00	14110	0	88	20.64	101.60	2580	40.0	66	687.263	2776.943	0.25	100	0.25	12.00	67.99	0.000	0.000	0.000	5	68000

Fast

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/dd	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
236	1999/08/03	15:30:00	14110	0	88	20.64	101.60	2580	40.0	66	687.263	2791.261	0.30	100	0.30	14.40	68.29	0.000	0.000	0.000	5	68000
237		16:00:00	14110	0	88	20.64	101.60	2580	40.0	66	687.263	2805.579	0.20	100	0.20	9.60	68.49	0.000	0.000	0.000	5	68000
238		16:30:00	14100	0	88	20.64	101.60	2580	39.9	66	686.400	2819.888	0.35	100	0.35	16.80	68.84	0.000	0.000	0.000	5	68000
239		17:00:00	14100	0	88	20.64	101.60	2580	39.9	66	686.400	2834.188	0.25	100	0.25	12.00	69.09	0.000	0.000	0.000	5	68000
240		17:30:00	14100	0	88	20.64	101.60	2580	39.9	66	686.400	2848.488	0.30	100	0.30	14.40	69.39	0.000	0.000	0.000	5	68000
241	1999/08/03	18:00:00	14100	0	88	20.64	101.60	2580	40.0	66	687.263	2862.797	0.20	100	0.20	9.60	69.59	0.000	0.000	0.000	5	68000
242		18:30:00	14200	0	87	20.64	101.60	2580	40.0	67	686.126	2877.103	0.30	100	0.30	14.40	69.89	0.000	0.000	0.000	5	64000
243		19:00:00	14100	0	85	20.64	101.60	2580	40.0	67	686.126	2891.398	0.15	100	0.15	7.20	70.04	0.000	0.000	0.000	5	52000
244		19:30:00	14100	0	86	20.64	101.60	2580	40.0	67	686.126	2905.592	0.35	100	0.35	16.80	70.39	0.000	0.000	0.000	5	56000
245		20:00:00	14100	0	86	20.64	101.60	2580	40.0	67	686.126	2919.986	0.30	100	0.30	14.40	70.69	0.000	0.000	0.000	5	48000
246		20:30:00	14100	0	86	20.64	101.60	2580	40.0	68	684.996	2934.269	0.25	100	0.25	12.00	70.94	0.000	0.000	0.000	5	50000
247		21:00:00	14100	0	86	20.64	101.60	2580	40.0	68	684.996	2948.540	0.30	100	0.30	14.40	71.24	0.000	0.000	0.000	5	46000
248		21:30:00	14100	0	87	20.64	101.60	2580	40.0	68	684.996	2962.810	0.25	100	0.25	12.00	71.49	0.000	0.000	0.000	5	42000
249		22:00:00	14100	0	87	20.64	101.60	2580	40.0	68	684.996	2977.081	0.25	100	0.25	12.00	71.74	0.000	0.000	0.000	5	50000
250		22:30:00	14100	0	86	20.64	101.60	2580	40.0	68	684.996	2991.352	0.25	100	0.25	12.00	71.99	0.000	0.000	0.000	5	58000
251		23:00:00	14100	0	86	20.64	101.60	2580	40.0	68	684.996	3005.623	0.35	100	0.35	16.80	72.34	0.000	0.000	0.000	5	62000
252		23:30:00	14100	0	87	20.64	101.60	2580	39.9	68	684.136	3019.884	0.20	100	0.20	9.60	72.54	0.000	0.000	0.000	5	56000
253	1999/08/04	00:00:00	14100	0	86	20.64	101.60	2580	39.9	68	684.136	3034.137	0.25	100	0.25	12.00	72.79	0.000	0.000	0.000	5	62000
254		00:30:00	14100	0	85	20.64	101.60	2580	39.9	68	684.136	3048.390	0.30	100	0.30	14.40	73.09	0.000	0.000	0.000	5	60000
255		01:00:00	14100	0	85	20.64	101.60	2580	39.9	67	685.265	3062.655	0.35	100	0.35	16.80	73.44	0.000	0.000	0.000	5	60000
256		01:30:00	14100	0	85	20.64	101.60	2580	39.9	67	685.265	3076.931	0.25	100	0.25	12.00	73.69	0.000	0.000	0.000	5	58000
257		02:00:00	14090	0	86	20.64	101.60	2580	39.9	67	685.265	3091.207	0.25	100	0.25	12.00	73.94	0.000	0.000	0.000	5	62000
258		02:30:00	14090	0	86	20.64	101.60	2580	39.9	67	685.265	3105.484	0.30	100	0.30	14.40	74.24	0.000	0.000	0.000	5	60000
259		03:00:00	14090	0	86	20.64	101.60	2580	39.9	67	685.265	3119.760	0.25	100	0.25	12.00	74.49	0.000	0.000	0.000	5	58000
260		03:30:00	14090	0	86	20.64	101.60	2580	39.9	68	684.136	3134.025	0.15	100	0.15	7.20	74.64	0.000	0.000	0.000	5	64000
261		04:00:00	14090	0	86	20.64	101.60	2580	39.9	68	684.136	3148.277	0.25	100	0.25	12.00	74.89	0.000	0.000	0.000	5	60000
262		04:30:00	14090	0	86	20.64	101.60	2580	39.9	68	684.136	3162.530	0.20	100	0.20	9.60	75.09	0.000	0.000	0.000	5	62000
263		05:00:00	14090	0	86	20.64	101.60	2580	39.9	67	685.265	3176.795	0.30	100	0.30	14.40	75.39	0.000	0.000	0.000	5	68000
264		05:30:00	14090	0	87	20.64	101.60	2580	39.9	67	685.265	3191.071	0.35	100	0.35	16.80	75.74	0.000	0.000	0.000	5	46000
265	1999/08/04	06:00:00	14090	0	87	20.64	101.60	2580	39.9	68	684.136	3205.336	0.20	100	0.20	9.60	75.94	0.000	0.000	0.000	5	42000
266		06:30:00	14080	0	87	20.64	101.60	2560	39.9	67	682.620	3219.573	0.25	100	0.25	12.00	76.19	0.000	0.000	0.000	5	50000
267		07:00:00	14080	0	87	20.64	101.60	2560	39.9	68	681.497	3233.782	0.20	100	0.20	9.60	76.39	0.000	0.000	0.000	5	52000
268		07:30:00	14080	0	87	20.64	101.60	2560	39.9	68	681.497	3247.980	0.30	100	0.30	14.40	76.69	0.000	0.000	0.000	5	50000
269		08:00:00	14080	0	86	20.64	101.60	2560	39.9	68	681.497	3262.178	0.20	100	0.20	9.60	76.89	0.000	0.000	0.000	5	60000
270		08:30:00	14080	0	86	20.64	101.60	2560	39.9	68	681.497	3276.376	0.25	100	0.25	12.00	77.14	0.000	0.000	0.000	5	56000
271		09:00:00	14080	0	86	20.64	101.60	2560	39.9	68	681.497	3290.574	0.30	100	0.30	14.40	77.44	0.000	0.000	0.000	5	58000
272		09:30:00	14080	0	87	20.64	101.60	2560	39.9	68	681.497	3304.772	0.25	100	0.25	12.00	77.69	0.000	0.000	0.000	5	54000
273		10:00:00	14080	0	87	20.64	101.60	2560	39.9	68	681.497	3318.969	0.35	100	0.35	16.80	78.04	0.000	0.000	0.000	5	52000
274		10:30:00	14080	0	87	20.64	101.60	2560	39.9	68	681.497	3333.167	0.30	100	0.30	14.40	78.34	0.000	0.000	0.000	5	52000
275		11:00:00	14080	0	87	20.64	101.60	2560	39.9	68	681.497	3347.365	0.20	100	0.20	9.60	78.54	0.000	0.000	0.000	5	32000
276		11:30:00	14080	0	92	20.64	101.60	2560	39.9	68	681.497	3361.563	0.35	100	0.35	16.80	78.89	0.000	0.000	0.000	5	32000
277	1999/08/04	12:00:00	14080	0	92	20.64	101.60	2560	39.9	68	681.497	3375.761	0.30	100	0.30	14.40	79.19	0.000	0.000	0.000	5	32000
278		12:30:00	14080	0	93	20.64	101.60	2560	39.9	68	681.497	3389.959	0.20	100	0.20	9.60	79.39	0.000	0.000	0.000	5	30000
279		13:00:00	14080	0	93	20.64	101.60	2560	39.9	68	681.497	3404.156	0.20	100	0.20	9.60	79.59	0.000	0.000	0.000	5	30000
280		13:30:00	14080	0	93	20.64	101.60	2560	39.9	68	681.497	3418.354	0.40	100	0.40	19.20	79.99	0.000	0.000	0.000	5	30000
281		14:00:00	14080	0	94	20.64	101.60	2560	39.9	68	681.497	3432.552	0.15	100	0.15	7.20	80.14	0.000	0.000	0.000	5	32000
282		14:30:00	14080	0	94	20.64	101.60	2560	39.9	68	681.497	3446.750	0.20	100	0.20	9.60	80.34	0.000	0.000	0.000	5	32000

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/30
Final Test Date: 1999/08/09

FieldNotes
Field Measurements

Ranger Pt.Liard
Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/dd	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
283	1999/08/04	15:00:00	14080	0	94	20.64	101.60	2560	39.9	68	681.497	3460.948	0.25	100	0.25	12.00	80.59	0.000	0.000	0.000	S	24000
284		15:30:00	14080	0	94	20.64	101.60	2560	39.9	68	681.497	3475.146	0.40	100	0.40	19.20	80.99	0.000	0.000	0.000	S	26000
285		16:00:00	14080	0	94	20.64	101.60	2560	39.9	68	681.497	3489.344	0.25	100	0.25	12.00	81.24	0.000	0.000	0.000	S	24000
286		16:30:00	14080	0	94	20.64	101.60	2560	39.9	68	681.497	3503.541	0.30	100	0.30	14.40	81.54	0.000	0.000	0.000	S	24000
287		17:00:00	14080	0	95	20.64	101.60	2560	40.0	68	682.353	3517.748	0.25	100	0.25	12.00	81.79	0.000	0.000	0.000	S	22000
288		17:30:00	14080	0	96	20.64	101.60	2560	40.0	68	682.353	3531.964	0.25	100	0.25	12.00	82.04	0.000	0.000	0.000	S	22000
289	1999/08/04	18:00:00	14080	0	97	20.64	101.60	2560	40.0	68	682.353	3546.180	0.25	100	0.25	12.00	82.29	0.000	0.000	0.000	S	26000
290		18:30:00	14080	0	97	20.64	101.60	2560	40.0	68	682.353	3560.395	0.25	100	0.25	12.00	82.54	0.000	0.000	0.000	S	26000
291		19:00:00	14085	0	98	20.64	101.60	2560	40.0	69	681.234	3574.599	0.25	100	0.25	12.00	82.79	0.000	0.000	0.000	S	24000
292		19:30:00	14085	0	88	20.64	101.60	2560	40.0	70	680.122	3588.780	0.30	100	0.30	14.40	83.09	0.000	0.000	0.000	S	26000
293		20:00:00	14085	0	88	20.64	101.60	2560	40.0	70	680.122	3602.949	0.15	100	0.15	7.20	83.24	0.000	0.000	0.000	S	26000
294		20:30:00	14085	0	88	20.64	101.60	2560	40.0	70	680.122	3617.118	0.25	100	0.25	12.00	83.49	0.000	0.000	0.000	S	26000
295		21:00:00	14085	0	87	20.64	101.60	2560	40.0	70	680.122	3631.288	0.25	100	0.25	12.00	83.74	0.000	0.000	0.000	S	26000
296		21:00:00	H2S by Kitagawa = 0.8% @ meter run, 0.5% @ casing.																			
297		21:30:00	14085	0	86	20.64	101.60	2560	40.0	70	680.122	3645.457	0.30	100	0.30	14.40	84.04	0.000	0.000	0.000	S	26000
298		22:00:00	14085	0	85	20.64	101.60	2560	40.0	70	680.122	3659.626	0.25	100	0.25	12.00	84.29	0.000	0.000	0.000	S	26000
299		22:30:00	14085	0	85	20.64	101.60	2560	40.0	70	680.122	3673.795	0.20	100	0.20	9.60	84.49	0.000	0.000	0.000	S	26000
300		23:00:00	14085	0	85	20.64	101.60	2560	40.0	70	680.122	3687.965	0.25	100	0.25	12.00	84.74	0.000	0.000	0.000	S	24000
301		23:30:00	14050	0	85	20.64	101.60	2560	40.0	68	682.353	3702.157	0.20	100	0.20	9.60	84.94	0.000	0.000	0.000	S	26000
302	1999/08/05	00:00:00	14050	0	85	20.64	101.60	2560	40.0	68	682.353	3716.373	0.30	100	0.30	14.40	85.24	0.000	0.000	0.000	S	26000
303		00:30:00	14030	0	83	20.64	101.60	2560	40.0	66	684.609	3730.612	0.25	100	0.25	12.00	85.49	0.000	0.000	0.000	S	26000
304		01:00:00	14030	0	83	20.64	101.60	2550	40.0	67	682.151	3744.849	0.25	100	0.25	12.00	85.74	0.000	0.000	0.000	S	30000
305		01:30:00	14030	0	83	20.64	101.60	2550	40.0	68	681.028	3759.049	0.30	100	0.30	14.40	86.04	0.000	0.000	0.000	S	28000
306		02:00:00	14030	0	83	20.64	101.60	2550	40.0	68	681.028	3773.237	0.25	100	0.25	12.00	86.29	0.000	0.000	0.000	S	28000
307		02:30:00	14030	0	84	20.64	101.60	2550	40.0	67	682.151	3787.437	0.35	100	0.35	16.80	86.64	0.000	0.000	0.000	S	28000
308		03:00:00	14030	0	84	20.64	101.60	2550	40.0	68	681.028	3801.636	0.25	100	0.25	12.00	86.89	0.000	0.000	0.000	S	28000
309		03:30:00	14030	0	84	20.64	101.60	2550	40.0	67	682.151	3815.836	0.30	100	0.30	14.40	87.19	0.000	0.000	0.000	S	28000
310		04:00:00	14030	0	84	20.64	101.60	2550	40.0	67	682.151	3830.048	0.25	100	0.25	12.00	87.44	0.000	0.000	0.000	S	26000
311		04:30:00	14030	0	84	20.64	101.60	2550	40.0	67	682.151	3844.259	0.25	100	0.25	12.00	87.69	0.000	0.000	0.000	S	28000
312		05:00:00	14030	0	84	20.64	101.60	2550	40.0	67	682.151	3858.471	0.25	100	0.25	12.00	87.94	0.000	0.000	0.000	S	30000
313		05:30:00	14030	0	83	20.64	101.60	2550	40.0	67	682.151	3872.682	0.20	100	0.20	9.60	88.14	0.000	0.000	0.000	S	30000
314	1999/08/05	06:00:00	14030	0	82	20.64	101.60	2550	40.0	67	682.151	3886.893	0.20	100	0.20	9.60	88.34	0.000	0.000	0.000	S	28000
315		06:00:00	H2S by Kitagawa = 1.0%.																			
316		06:30:00	14030	0	83	20.64	101.60	2550	40.0	67	682.151	3901.105	0.20	100	0.20	9.60	88.54	0.000	0.000	0.000	S	26000
317		07:00:00	14030	0	83	20.64	101.60	2550	40.0	67	682.151	3915.316	0.20	100	0.20	9.60	88.74	0.000	0.000	0.000	S	26000
318		07:30:00	14030	0	84	20.64	101.60	2550	40.0	67	682.151	3929.528	0.20	100	0.20	9.60	88.94	0.000	0.000	0.000	S	28000
319		08:00:00	14030	0	84	20.64	101.60	2550	40.0	68	681.028	3943.728	0.20	100	0.20	9.60	89.14	0.000	0.000	0.000	S	28000
320		08:30:00	14040	0	84	20.64	101.60	2550	40.0	68	681.028	3957.916	0.20	100	0.20	9.60	89.34	0.000	0.000	0.000	S	22000
321		09:00:00	14040	0	84	20.64	101.60	2550	39.8	68	679.318	3972.086	0.20	100	0.20	9.60	89.54	0.000	0.000	0.000	S	22000
322		09:30:00	14040	0	86	20.64	101.60	2550	39.8	68	679.318	3986.239	0.20	100	0.20	9.60	89.74	0.000	0.000	0.000	S	23000
323		10:00:00	14040	0	86	20.64	101.60	2550	39.8	68	679.318	4000.391	0.20	100	0.20	9.60	89.94	0.000	0.000	0.000	S	22000
324		10:30:00	14040	0	86	20.64	101.60	2550	39.8	68	679.318	4014.543	0.20	100	0.20	9.60	90.14	0.000	0.000	0.000	S	22000
325		11:00:00	14040	0	86	20.64	101.60	2550	39.8	68	679.318	4028.696	0.20	100	0.20	9.60	90.34	0.000	0.000	0.000	S	11000
326		11:30:00	14040	0	86	20.64	101.60	2550	39.8	68	679.318	4042.848	0.20	100	0.20	9.60	90.54	0.000	0.000	0.000	S	10000
327	1999/08/05	12:00:00	14040	0	86	20.64	101.60	2550	39.8	68	679.318	4057.001	0.20	100	0.20	9.60	90.74	0.000	0.000	0.000	S	20000
328		12:30:00	14040	0	86	20.64	101.60	2550	39.8	68	679.318	4071.153	0.30	100	0.30	14.40	91.04	0.000	0.000	0.000	S	20000
329		13:00:00	14040	0	86	20.64	101.60	2550	39.8	68	679.318	4085.306	0.35	100	0.35	16.80	91.39	0.000	0.000	0.000	S	20000

Fast

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/30
Final Test Date: 1999/09/09

FieldNotes
Field Measurements

Ranger Pt.Liard
Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/dd	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
330	1999/08/05	13:30:00	14040	0	86	20.64	101.60	2550	39.8	68	679.318	4099.458	0.15	100	0.15	7.20	91.54	0.000	0.000	0.000	S	20000
331		14:00:00	14020	0	85	20.64	101.60	2550	39.8	68	679.318	4113.611	0.30	100	0.30	14.40	91.84	0.000	0.000	0.000	S	24000
332		14:30:00	14020	0	85	20.64	101.60	2550	39.8	67	680.437	4127.775	0.35	100	0.35	16.80	92.19	0.000	0.000	0.000	S	24000
333		15:00:00	14020	0	84	20.64	101.60	2550	39.8	67	680.437	4141.950	0.15	100	0.15	7.20	92.34	0.000	0.000	0.000	S	22000
334		15:30:00	14020	0	84	20.64	101.60	2550	39.6	67	678.719	4156.108	0.25	100	0.25	12.00	92.59	0.000	0.000	0.000	S	20000
335		16:00:00	14020	0	83	20.64	101.60	2550	39.6	67	678.719	4170.248	0.30	100	0.30	14.40	92.89	0.000	0.000	0.000	S	22000
336		16:30:00	13990	0	82	20.64	101.60	2550	39.6	66	679.842	4184.400	0.25	100	0.25	12.00	93.14	0.000	0.000	0.000	S	22000
337		17:00:00	13990	0	84	20.64	101.60	2550	39.6	66	679.842	4198.563	0.25	100	0.25	12.00	93.39	0.000	0.000	0.000	S	22000
338		17:30:00	13990	0	84	20.64	101.60	2550	39.6	66	679.842	4212.727	0.35	100	0.35	16.80	93.74	0.000	0.000	0.000	S	22000
339	1999/08/05	18:00:00	13990	0	84	20.64	101.60	2550	39.8	66	681.563	4226.908	0.15	100	0.15	7.20	93.89	0.000	0.000	0.000	S	24000
340		18:30:00	13990	0	84	20.64	101.60	2550	39.7	66	680.703	4241.098	0.25	100	0.25	12.00	94.14	0.000	0.000	0.000	S	26000
341		19:00:00	13990	0	84	20.64	101.60	2550	39.7	67	679.579	4255.268	0.20	100	0.20	9.60	94.34	0.000	0.000	0.000	S	26000
342		19:30:00	13990	0	84	20.64	101.60	2550	39.7	67	679.579	4269.426	0.25	100	0.25	12.00	94.59	0.000	0.000	0.000	S	26000
343		20:00:00	13990	0	84	20.64	101.60	2550	39.7	67	679.579	4283.584	0.30	100	0.30	14.40	94.89	0.000	0.000	0.000	S	26000
344		20:30:00	13990	0	84	20.64	101.60	2550	39.7	67	679.579	4297.742	0.25	100	0.25	12.00	95.14	0.000	0.000	0.000	S	26000
345		21:00:00	13990	0	84	20.64	101.60	2550	39.7	67	679.579	4311.900	0.30	100	0.30	14.40	95.44	0.000	0.000	0.000	S	30000
346		21:30:00	13990	0	83	20.64	101.60	2550	39.7	67	679.579	4326.057	0.20	100	0.20	9.60	95.64	0.000	0.000	0.000	S	28000
347		21:45:00	Replace thermometer at wellhead.																			
348		22:00:00	13990	0	94	20.64	101.60	2550	39.7	67	679.579	4340.215	0.25	100	0.25	12.00	95.89	0.000	0.000	0.000	S	24000
349		22:30:00	13990	0	96	20.64	101.60	2550	39.7	67	679.579	4354.373	0.25	100	0.25	12.00	96.14	0.000	0.000	0.000	S	26000
350		23:00:00	13990	0	94	20.64	101.60	2550	39.7	67	679.579	4368.531	0.35	100	0.35	16.80	96.49	0.000	0.000	0.000	S	28000
351		23:30:00	13990	0	96	20.64	101.60	2550	39.7	67	679.579	4382.689	0.20	100	0.20	9.60	96.69	0.000	0.000	0.000	S	26000
352	1999/08/06	00:00:00	13990	0	96	20.64	101.60	2550	39.7	67	679.579	4396.847	0.25	100	0.25	12.00	96.94	0.000	0.000	0.000	S	28000
353		00:30:00	13990	0	96	20.64	101.60	2550	39.7	67	679.579	4411.005	0.30	100	0.30	14.40	97.24	0.000	0.000	0.000	S	28000
354		01:00:00	13990	0	96	20.64	101.60	2550	39.7	67	679.579	4425.163	0.25	100	0.25	12.00	97.49	0.000	0.000	0.000	S	26000
355		01:30:00	13990	0	96	20.64	101.60	2550	39.7	67	679.579	4439.321	0.35	100	0.35	16.80	97.84	0.000	0.000	0.000	S	26000
356		02:00:00	13980	0	95	20.64	101.60	2545	39.7	67	678.917	4453.472	0.25	100	0.25	12.00	98.09	0.000	0.000	0.000	S	26000
357		02:30:00	13980	0	95	20.64	101.60	2545	39.7	67	678.917	4467.616	0.25	100	0.25	12.00	98.34	0.000	0.000	0.000	S	26000
358		03:00:00	13980	0	96	20.64	101.60	2545	39.7	67	678.917	4481.760	0.25	100	0.25	12.00	98.59	0.000	0.000	0.000	S	26000
359		03:30:00	13980	0	96	20.64	101.60	2545	39.7	67	678.917	4495.904	0.25	100	0.25	12.00	98.84	0.000	0.000	0.000	S	26000
360		04:00:00	13980	0	96	20.64	101.60	2545	39.7	67	678.917	4510.048	0.35	100	0.35	16.80	99.19	0.000	0.000	0.000	S	26000
361		04:30:00	13990	0	96	20.64	101.60	2545	39.7	67	678.917	4524.192	0.20	100	0.20	9.60	99.39	0.000	0.000	0.000	S	26000
362		05:00:00	13990	0	96	20.64	101.60	2545	39.7	67	678.917	4538.336	0.20	100	0.20	9.60	99.59	0.000	0.000	0.000	S	26000
363		05:30:00	14000	0	97	20.64	101.60	2545	39.8	67	679.774	4552.489	0.35	100	0.35	16.80	99.94	0.000	0.000	0.000	S	26000
364	1999/08/06	06:00:00	14000	0	97	20.64	101.60	2545	39.8	67	679.774	4566.651	0.15	100	0.15	7.20	100.09	0.000	0.000	0.000	S	26000
365		06:00:00	H2S by Kitagawa = 0.5%.																			
366		06:30:00	14030	0	97	20.64	101.60	2545	39.8	68	678.656	4580.801	0.15	100	0.15	7.20	100.24	0.000	0.000	0.000	S	26000
367		07:00:00	14030	0	97	20.64	101.60	2545	39.8	68	678.656	4594.940	0.20	100	0.20	9.60	100.44	0.000	0.000	0.000	S	24000
368		07:30:00	14030	0	97	20.64	101.60	2545	39.8	68	678.656	4609.079	0.15	100	0.15	7.20	100.59	0.000	0.000	0.000	S	24000
369		08:00:00	14030	0	97	20.64	101.60	2545	39.8	68	678.656	4623.218	0.30	100	0.30	14.40	100.89	0.000	0.000	0.000	S	25000
370		08:30:00	14030	0	97	20.64	101.60	2545	39.8	68	678.656	4637.356	0.25	100	0.25	12.00	101.14	0.000	0.000	0.000	S	24000
371		09:00:00	14020	0	96	20.64	101.60	2545	39.7	68	677.800	4651.486	0.25	100	0.25	12.00	101.39	0.000	0.000	0.000	S	25000
372		09:30:00	14020	0	97	20.64	101.60	2545	39.7	68	677.800	4665.607	0.20	100	0.20	9.60	101.59	0.000	0.000	0.000	S	24000
373		10:00:00	14020	0	97	20.64	101.60	2545	39.6	68	676.943	4679.719	0.25	100	0.25	12.00	101.84	0.000	0.000	0.000	S	20000
374		10:30:00	14020	0	98	20.64	101.60	2545	39.6	68	676.943	4693.822	0.25	100	0.25	12.00	102.09	0.000	0.000	0.000	S	20000
375		11:00:00	14020	0	97	20.64	101.60	2545	39.6	68	676.943	4707.925	0.15	100	0.15	7.20	102.24	0.000	0.000	0.000	S	16000
376		11:30:00	14000	0	97	20.64	101.60	2545	39.6	68	676.943	4722.028	0.35	100	0.35	16.80	102.59	0.000	0.000	0.000	S	18000

Fast

Ranger Oil Limited
P-65-A
Start Test Date: 1999/07/30
Final Test Date: 1999/08/09

FieldNotes
Field Measurements

Ranger Ft.Liard

Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/dd	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
377	1999/08/06	12:00:00	14000	0	97	20.64	101.60	2545	39.6	68	676.943	4736.131	0.25	100	0.25	12.00	102.84	0.000	0.000	0.000	5	20000
378		12:30:00	14000	0	96	20.64	101.60	2545	39.6	68	676.943	4750.234	0.30	100	0.30	14.40	103.14	0.000	0.000	0.000	5	20000
379		13:00:00	14000	0	96	20.64	101.60	2545	39.6	68	676.943	4764.337	0.20	100	0.20	9.60	103.34	0.000	0.000	0.000	5	26000
380		13:30:00	14000	0	95	20.64	101.60	2545	39.6	68	676.943	4778.440	0.25	100	0.25	12.00	103.59	0.000	0.000	0.000	5	26000
381		14:00:00	14000	0	94	20.64	101.60	2545	39.6	68	676.943	4792.543	0.20	100	0.20	9.60	103.79	0.000	0.000	0.000	5	22000
382		14:30:00	14000	0	94	20.64	101.60	2545	39.6	68	676.943	4806.645	0.30	100	0.30	14.40	104.09	0.000	0.000	0.000	5	22000
383		15:00:00	13990	0	94	20.64	101.60	2545	39.6	68	676.943	4820.748	0.25	100	0.25	12.00	104.34	0.000	0.000	0.000	5	26000
384		15:30:00	13990	0	94	20.64	101.60	2545	39.6	68	676.943	4834.851	0.25	100	0.25	12.00	104.59	0.000	0.000	0.000	5	24000
385		16:00:00	13990	0	94	20.64	101.60	2545	39.6	68	676.943	4848.954	0.25	100	0.25	12.00	104.84	0.000	0.000	0.000	5	20000
386		16:30:00	13970	0	94	20.64	101.60	2545	39.6	68	676.943	4863.057	0.25	100	0.25	12.00	105.09	0.000	0.000	0.000	5	22000
387		17:00:00	13980	0	94	20.64	101.60	2545	39.6	68	676.943	4877.160	0.25	100	0.25	12.00	105.34	0.000	0.000	0.000	5	22000
388		17:30:00	13970	0	94	20.64	101.60	2545	39.6	68	676.943	4891.263	0.25	100	0.25	12.00	105.59	0.000	0.000	0.000	5	22000
389	1999/08/06	18:00:00	13970	0	94	20.64	101.60	2545	39.6	68	676.943	4905.366	0.20	100	0.20	9.60	105.79	0.000	0.000	0.000	5	22000
390		18:30:00	13970	0	94	20.64	101.60	2545	39.6	68	676.943	4919.469	0.20	100	0.20	9.60	105.99	0.000	0.000	0.000	5	24000
391		19:00:00	13970	0	95	20.64	101.60	2545	39.6	69	675.834	4933.561	0.20	100	0.20	9.60	106.19	0.000	0.000	0.000	5	28000
392		19:30:00	13970	0	95	20.64	101.60	2545	39.6	69	675.834	4947.641	0.25	100	0.25	12.00	106.44	0.000	0.000	0.000	5	28000
393		20:00:00	13970	0	95	20.64	101.60	2545	39.6	69	675.834	4961.721	0.25	100	0.25	12.00	106.69	0.000	0.000	0.000	5	26000
394		20:30:00	13970	0	95	20.64	101.60	2545	39.6	69	675.834	4975.800	0.25	100	0.25	12.00	106.94	0.000	0.000	0.000	5	24000
395		21:00:00	13970	0	95	20.64	101.60	2545	39.6	69	675.834	4989.880	0.25	100	0.25	12.00	107.19	0.000	0.000	0.000	5	24000
396		21:30:00	13970	0	96	20.64	101.60	2545	39.6	69	675.834	5003.960	0.25	100	0.25	12.00	107.44	0.000	0.000	0.000	5	26000
397		22:00:00	13970	0	99	20.64	101.60	2545	39.6	69	675.834	5018.040	0.25	100	0.25	12.00	107.69	0.000	0.000	0.000	5	22000
398		22:30:00	13970	0	98	20.64	101.60	2545	39.6	69	675.834	5032.120	0.20	100	0.20	9.60	107.89	0.000	0.000	0.000	5	24000
399		23:00:00	13970	0	99	20.64	101.60	2545	39.6	69	675.834	5046.200	0.25	100	0.25	12.00	108.14	0.000	0.000	0.000	5	24000
400		23:30:00	13970	0	99	20.64	101.60	2545	39.6	69	675.834	5060.280	0.25	100	0.25	12.00	108.39	0.000	0.000	0.000	5	24000
401	1999/08/07	00:00:00	13970	0	98	20.64	101.60	2545	39.6	69	675.834	5074.360	0.25	100	0.25	12.00	108.64	0.000	0.000	0.000	5	24000
402		00:30:00	13970	0	98	20.64	101.60	2545	39.6	69	675.834	5088.439	2.00	100	2.00	96.00	110.64	0.000	0.000	0.000	5	24000
403		01:00:00	13970	0	99	20.64	101.60	2530	39.6	69	673.855	5102.499	0.40	100	0.40	19.20	111.04	0.000	0.000	0.000	5	24000
404		01:30:00	13960	0	99	20.64	101.60	2530	39.6	68	674.960	5116.549	0.30	100	0.30	14.40	111.34	0.000	0.000	0.000	5	24000
405		02:00:00	13960	0	99	20.64	101.60	2530	39.6	69	673.855	5130.599	0.15	100	0.15	7.20	111.49	0.000	0.000	0.000	5	18000
406		02:30:00	13960	0	98	20.64	101.60	2530	39.6	69	673.855	5144.638	0.30	100	0.30	14.40	111.79	0.000	0.000	0.000	5	20000
407		03:00:00	13960	0	98	20.64	101.60	2530	39.6	69	673.855	5158.676	0.20	100	0.20	9.60	111.99	0.000	0.000	0.000	5	20000
408		03:30:00	13940	0	98	20.64	101.60	2530	39.6	69	673.855	5172.715	0.25	100	0.25	12.00	112.24	0.000	0.000	0.000	5	20000
409		04:00:00	13940	0	98	20.64	101.60	2530	39.6	68	674.960	5186.765	0.20	100	0.20	9.60	112.44	0.000	0.000	0.000	5	20000
410		04:30:00	13930	0	98	20.64	101.60	2530	39.6	68	674.960	5200.827	0.30	100	0.30	14.40	112.74	0.000	0.000	0.000	5	20000
411		05:00:00	13930	0	96	20.64	101.60	2530	39.6	68	674.960	5214.888	0.25	100	0.25	12.00	112.99	0.000	0.000	0.000	5	20000
412		05:30:00	13930	0	97	20.64	101.60	2530	39.6	68	674.960	5228.950	0.20	100	0.20	9.60	113.19	0.000	0.000	0.000	5	20000
413	1999/08/07	06:00:00	13930	0	97	20.64	101.60	2530	39.6	68	674.960	5243.012	0.10	100	0.10	4.80	113.29	0.000	0.000	0.000	5	20000
414		06:00:00	H2S by Kitagawa = 0.4%.																			
415		06:30:00	13930	0	96	20.64	101.60	2530	39.6	68	674.960	5257.073	0.15	100	0.15	7.20	113.44	0.000	0.000	0.000	5	20000
416		07:00:00	13930	0		20.64	101.60	2530	39.2	68	671.531	5271.099	0.25	100	0.25	12.00	113.69	0.000	0.000	0.000	5	18000
417		07:30:00	13930	0	94	20.64	101.60	2530	39.2	67	672.636	5285.101	0.15	100	0.15	7.20	113.84	0.000	0.000	0.000	5	20000
418		08:00:00	13930	0	94	20.64	101.60	2530	39.2	67	672.636	5299.114	0.40	100	0.40	19.20	114.24	0.000	0.000	0.000	5	16000
419		08:30:00	13930	0	96	20.64	101.60	2530	39.0	67	670.912	5313.110	0.15	100	0.15	7.20	114.39	0.000	0.000	0.000	5	16000
420		09:00:00	13930	0	96	20.64	101.60	2530	39.0	67	670.912	5327.087	0.20	100	0.20	9.60	114.59	0.000	0.000	0.000	5	20000
421		09:30:00	13930	0	100	20.64	101.60	2530	39.0	68	669.810	5341.053	0.25	100	0.25	12.00	114.84	0.000	0.000	0.000	5	22000
422		10:00:00	13930	0	100	20.64	101.60	2530	39.0	68	669.810	5355.007	0.25	100	0.25	12.00	115.09	0.000	0.000	0.000	5	22000
423		10:30:00	13930	0	99	20.64	101.60	2530	39.0	68	669.810	5368.962	0.25	100	0.25	12.00	115.34	0.000	0.000	0.000	5	20000

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/30
Final Test Date: 1999/08/09

FieldNotes
Field Measurements

Ranger Pt.Liard
Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/dd	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
424	1999/08/07	11:00:00	13930	0	99	20.64	101.60	2530	39.0	68	669.810	5382.916	0.20	100	0.20	9.60	115.54	0.000	0.000	0.000	5	20000
425		11:30:00	13940	0	100	20.64	101.60	2530	39.0	68	669.810	5396.870	0.30	100	0.30	14.40	115.84	0.000	0.000	0.000	5	20000
426	1999/08/07	12:00:00	13940	0	99	20.64	101.60	2530	39.0	68	669.810	5410.825	0.20	100	0.20	9.60	116.04	0.000	0.000	0.000	5	20000
427		12:30:00	13940	0	98	20.64	101.60	2530	39.0	68	669.810	5424.779	0.25	100	0.25	12.00	116.29	0.000	0.000	0.000	5	22000
428		13:00:00	13940	0	100	20.64	101.60	2520	39.0	68	668.495	5438.720	0.25	100	0.25	12.00	116.54	0.000	0.000	0.000	5	22000
429		13:30:00	13940	0	100	20.64	101.60	2520	39.0	68	668.495	5452.647	0.30	100	0.30	14.40	116.84	0.000	0.000	0.000	5	20000
430		14:00:00	13920	0	98	20.64	101.60	2520	39.0	68	668.495	5466.574	0.30	100	0.30	14.40	117.14	0.000	0.000	0.000	5	18000
431		14:30:00	13920	0	98	20.64	101.60	2520	39.0	68	668.495	5480.501	0.20	100	0.20	9.60	117.34	0.000	0.000	0.000	5	18000
432		15:00:00	13910	0	98	20.64	101.60	2520	39.0	68	668.495	5494.428	0.30	100	0.30	14.40	117.64	0.000	0.000	0.000	5	16000
433		15:30:00	13910	0	98	20.64	101.60	2520	39.0	68	668.495	5508.355	0.20	100	0.20	9.60	117.84	0.000	0.000	0.000	5	16000
434		16:00:00	13910	0	100	20.64	101.60	2520	39.0	68	668.495	5522.282	0.25	100	0.25	12.00	118.09	0.000	0.000	0.000	5	14000
435		16:30:00	13920	0	99	20.64	101.60	2520	39.0	68	668.495	5536.209	0.35	100	0.35	16.80	118.44	0.000	0.000	0.000	5	14000
436		17:00:00	13910	0	99	20.64	101.60	2520	39.2	68	670.213	5550.153	0.20	100	0.20	9.60	118.64	0.000	0.000	0.000	5	12000
437		17:30:00	13900	0	99	20.64	101.60	2520	39.2	68	670.213	5564.116	0.20	100	0.20	9.60	118.84	0.000	0.000	0.000	5	12000
438	1999/08/07	18:00:00	13900	0	98	20.64	101.60	2530	39.2	68	671.531	5578.093	0.20	100	0.20	9.60	119.04	0.000	0.000	0.000	5	12000
439		18:30:00	13900	0	98	20.64	101.60	2520	39.2	68	670.213	5592.069	0.15	100	0.15	7.20	119.19	0.000	0.000	0.000	5	16000
440		19:00:00	13900	0	98	20.64	101.60	2520	39.2	68	670.213	5606.032	0.25	100	0.25	12.00	119.44	0.000	0.000	0.000	5	14000
441		19:30:00	13900	0	98	20.64	101.60	2520	39.2	68	670.213	5619.995	0.25	100	0.25	12.00	119.69	0.000	0.000	0.000	5	16000
442		20:00:00	13900	0	97	20.64	101.60	2520	39.2	68	670.213	5633.957	0.15	100	0.15	7.20	119.84	0.000	0.000	0.000	5	16000
443		20:30:00	13900	0	98	20.64	101.60	2520	39.2	68	670.213	5647.920	0.30	100	0.30	14.40	120.14	0.000	0.000	0.000	5	16000
444		21:00:00	13890	0	96	20.64	101.60	2520	39.2	68	670.213	5661.883	0.25	100	0.25	12.00	120.39	0.000	0.000	0.000	5	16000
445		21:30:00	13890	0	96	20.64	101.60	2520	39.2	68	670.213	5675.846	0.25	100	0.25	12.00	120.64	0.000	0.000	0.000	5	16000
446		22:00:00	13890	0	96	20.64	101.60	2520	39.2	68	670.213	5689.809	0.20	100	0.20	9.60	120.84	0.000	0.000	0.000	5	16000
447		22:30:00	14000	0	96	20.64	101.60	2520	39.2	68	670.213	5703.771	0.25	100	0.25	12.00	121.09	0.000	0.000	0.000	5	16000
448		23:00:00	14000	0	96	20.64	101.60	2520	39.2	68	670.213	5717.734	0.25	100	0.25	12.00	121.34	0.000	0.000	0.000	5	16000
449		23:30:00	13980	0	96	20.64	101.60	2510	39.2	66	671.099	5731.706	0.25	100	0.25	12.00	121.59	0.000	0.000	0.000	5	14000
450	1999/08/08	00:00:00	13895	0	96	20.64	101.60	2510	39.2	66	671.099	5745.687	0.25	100	0.25	12.00	121.84	0.000	0.000	0.000	5	14000
451		00:30:00	13890	0	96	20.64	101.60	2510	39.2	68	668.892	5759.646	0.30	100	0.30	14.40	122.14	0.000	0.000	0.000	5	14000
452		01:00:00	13890	0	96	20.64	101.60	2510	39.2	68	668.892	5773.581	0.30	100	0.30	14.40	122.44	0.000	0.000	0.000	5	16000
453		01:30:00	13890	0	96	20.64	101.60	2510	39.2	68	668.892	5787.516	0.30	100	0.30	14.40	122.74	0.000	0.000	0.000	5	14000
454		02:00:00	13890	0	95	20.64	101.60	2510	39.2	67	669.993	5801.463	0.20	100	0.20	9.60	122.94	0.000	0.000	0.000	5	16000
455		02:30:00	13890	0	95	20.64	101.60	2510	39.2	67	669.993	5815.421	0.25	100	0.25	12.00	123.19	0.000	0.000	0.000	5	16000
456		03:00:00	13870	0	95	20.64	101.60	2510	39.2	67	669.993	5829.379	0.20	100	0.20	9.60	123.39	0.000	0.000	0.000	5	20000
457		03:30:00	13870	0	95	20.64	101.60	2510	39.2	67	669.993	5843.337	0.25	100	0.25	12.00	123.64	0.000	0.000	0.000	5	18000
458		04:00:00	13870	0	95	20.64	101.60	2510	39.2	67	669.993	5857.295	0.25	100	0.25	12.00	123.89	0.000	0.000	0.000	5	14000
459		04:30:00	13880	0	95	20.64	101.60	2510	39.2	67	669.993	5871.254	0.30	100	0.30	14.40	124.19	0.000	0.000	0.000	5	16000
460		05:00:00	13880	0	96	20.64	101.60	2510	39.2	67	669.993	5885.212	0.20	100	0.20	9.60	124.39	0.000	0.000	0.000	5	16000
461		05:30:00	13880	0	96	20.64	101.60	2510	39.2	67	669.993	5899.170	0.20	100	0.20	9.60	124.59	0.000	0.000	0.000	5	16000
462	1999/08/08	06:00:00	13870	0	96	20.64	101.60	2510	39.2	67	669.993	5913.128	0.25	100	0.25	12.00	124.84	0.000	0.000	0.000	5	16000
463		06:00:00	H2S by Kitagawa = 0.4%.																			
464		06:30:00	13880	0	96	20.64	101.60	2510	39.2	67	669.993	5927.086	0.20	100	0.20	9.60	125.04	0.000	0.000	0.000	5	14000
465		07:00:00	13870	0																		
466		07:30:00	13870	0	96	20.64	101.60	2500	39.0	68	665.859	5954.917	0.25	100	0.25	6.00	125.29	0.000	0.000	0.000	5	20000
467		08:00:00	13870	0	96	20.64	101.60	2500	39.0	68	665.859	5968.789	0.15	100	0.15	7.20	125.44	0.000	0.000	0.000	5	20000
468		08:30:00	13870	0	98	20.64	101.60	2500	39.0	68	665.859	5982.661	0.25	100	0.25	12.00	125.69	0.000	0.000	0.000	5	20000
469		09:00:00	13870	0	98	20.64	101.60	2500	39.0	68	665.859	5996.533	0.25	100	0.25	12.00	125.94	0.000	0.000	0.000	5	20000
470		09:30:00	13870	0	98	20.64	101.60	2500	39.0	68	665.859	6010.405	0.10	100	0.10	4.80	126.04	0.000	0.000	0.000	5	18000

Fast

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/30
Final Test Date: 1999/08/09

FieldNotes
Field Measurements

Ranger Ft.Liard
Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/dd	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
471	1999/08/08	10:00:00	13870	0	98	20.64	101.60	2500	39.0	67	666.953	6024.288	0.25	100	0.25	12.00	126.29	0.000	0.000	0.000	S	18000
472		10:30:00	13870	0	98	20.64	101.60	2500	39.0	67	666.953	6038.183	0.35	100	0.35	16.80	126.64	0.000	0.000	0.000	S	16000
473		11:00:00	13870	0	98	20.64	101.60	2500	39.0	67	666.953	6052.078	0.25	100	0.25	12.00	126.89	0.000	0.000	0.000	S	18000
474		11:30:00	13850	0	98	20.64	101.60	2500	39.0	67	666.953	6065.973	0.30	100	0.30	14.40	127.19	0.000	0.000	0.000	S	16000
475	1999/08/08	12:00:00	13850	0	98	20.64	101.60	2500	39.0	67	666.953	6079.868	0.25	100	0.25	12.00	127.44	0.000	0.000	0.000	S	16000
476		12:30:00	13950	0	98	20.64	101.60	2500	39.0	67	666.953	6093.763	0.20	100	0.20	9.60	127.64	0.000	0.000	0.000	S	14000
477		13:00:00	13850	0	98	20.64	101.60	2500	39.0	67	666.953	6107.657	0.20	100	0.20	9.60	127.84	0.000	0.000	0.000	S	12000
478		13:30:00	13840	0	96	20.64	101.60	2500	39.0	67	666.953	6121.552	0.35	100	0.35	16.80	128.19	0.000	0.000	0.000	S	14000
479		14:00:00	13850	0	97	20.64	101.60	2500	39.0	67	666.953	6135.447	0.15	100	0.15	7.20	128.34	0.000	0.000	0.000	S	11000
480		14:30:00	13850	0	97	20.64	101.60	2500	39.0	67	666.953	6149.342	0.25	100	0.25	12.00	128.59	0.000	0.000	0.000	S	11000
481		15:00:00	13840	0	97	20.64	101.60	2500	39.0	67	666.953	6163.237	0.30	100	0.30	14.40	128.89	0.000	0.000	0.000	S	12000
482		15:30:00	13850	0	97	20.64	101.60	2500	39.0	67	666.953	6177.132	0.10	100	0.10	4.80	128.99	0.000	0.000	0.000	S	12000
483		16:00:00	13850	0	97	20.64	101.60	2500	39.0	67	666.953	6191.027	0.30	100	0.30	14.40	129.29	0.000	0.000	0.000	S	14000
484		16:30:00	13850	0	97	20.64	101.60	2500	39.0	67	666.953	6204.921	0.20	100	0.20	9.60	129.49	0.000	0.000	0.000	S	14000
485		17:00:00	13840	0	97	20.64	101.60	2500	39.0	67	666.953	6218.816	0.25	100	0.25	12.00	129.74	0.000	0.000	0.000	S	12000
486		17:30:00	13840	0	97	20.64	101.60	2500	39.0	67	666.953	6232.711	0.20	100	0.20	9.60	129.94	0.000	0.000	0.000	S	12000
487	1999/08/08	18:00:00	13840	0	97	20.64	101.60	2500	39.0	67	666.953	6246.606	0.25	100	0.25	12.00	130.19	0.000	0.000	0.000	S	12000
488		18:30:00	13840	0	97	20.64	101.60	2500	39.0	67	666.953	6260.501	0.25	100	0.25	12.00	130.44	0.000	0.000	0.000	S	16000
489		19:00:00	13840	0	96	20.64	101.60	2500	39.0	67	666.953	6274.396	0.25	100	0.25	12.00	130.69	0.000	0.000	0.000	S	16000
490		19:30:00	13840	0	95	20.64	101.60	2500	39.0	67	666.953	6288.291	0.30	100	0.30	14.40	130.99	0.000	0.000	0.000	S	16000
491		20:00:00	13840	0	95	20.64	101.60	2500	39.0	67	666.953	6302.186	0.15	100	0.15	7.20	131.14	0.000	0.000	0.000	S	12000
492		20:30:00	13840	0	95	20.64	101.60	2500	39.0	67	666.953	6316.080	0.30	100	0.30	14.40	131.44	0.000	0.000	0.000	S	14000
493		21:00:00	13840	0	95	20.64	101.60	2500	39.0	67	666.953	6329.975	0.30	100	0.30	14.40	131.74	0.000	0.000	0.000	S	14000
494		21:00:00	Shut in well, monitor buildups.																			
495		21:01:00					0.00	0	0.0	0	0.000	6329.975	0.00	0	0.00	0.00	131.74	0.000	0.000	0.000		
496		21:05:00	19600	30																		
497		21:10:00	20000	30																		
498		21:15:00	20130	30																		
499		21:30:00	20340	125																		
500		21:45:00	20450	250																		
501		22:00:00	20480	275																		
502		22:30:00	20550	300																		
503		23:00:00	20560	350																		
504		23:30:00	20600	400																		
505	1999/08/09	00:00:00	20640	420																		
506		00:30:00	20660	420																		
507		01:00:00	20690	500																		
508		01:30:00	20690	500																		
509		02:00:00	20700	560																		
510		02:30:00	20700	600																		
511		03:00:00	20700	660																		
512		04:00:00	20740	780																		
513		05:00:00	20740	900																		
514		06:00:00	20740	1000																		
515		06:30:00	20740	1100																		
516		07:00:00	20750	1100																		
517		07:30:00	20750	1100																		

Fast

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/dd	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
518	1999/08/09	08:00:00	20760	1100																		
519		08:30:00	20760	1100																		
520		09:00:00	20780	1100																		
521		09:30:00	20780	1100																		
522		10:00:00	20800	1100																		
523		10:30:00	20800	1100																		
524		11:00:00	20800	1100																		
525		11:30:00	20810	1100																		
526		12:00:00	20815	1100																		
527		12:30:00	20820	1100																		
528		13:00:00	20830	1100																		
529		13:30:00	20835	1100																		
530		14:00:00	20840	1100																		
531		14:30:00	20845	1100																		
532		15:00:00	20850	1200																		
533		15:30:00	20850	1400																		
534		16:00:00	20850	1500																		
535		16:30:00	20880	1800																		
536		17:00:00	20910	2200																		
537		17:30:00	20935	2300																		
538	1999/08/09	18:00:00	20950	2350																		
539		18:00:00	End of test.																			

AGAT Laboratories

GAS ANALYSIS

CONTAINER IDENTIFICATION: CK 5870

LABORATORY NUMBER: GG41644B

OPERATOR NAME: RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER:

WELL NAME:

ELEVATIONS: KB m / GRD m

FIELD OR AREA: FORT LIARD

POOL OR ZONE: TIGHT HOLE

NAME OF SAMPLER:

COMPANY: NORWARD

TEST TYPE:

NO:

TEST RECOVERY:

TEST INTERVAL OR PERFS:

SAMPLING POINT: METER RUN

	SEPARATOR	TREATER	RESERVOIR	SOURCE	SAMPLED	RECEIVED
FLOWING PRESSURE kPa				2500	2500	2275
TEMPERATURE °C				67	67	21

DATE SAMPLED (Y M D): 99-08-09

DATE RECEIVED (Y-M-D): 99-08-12

DATE REPORTED (YM-D): 99-08-19

ANALYST: LQ NCO

OTHER INFORMATION: P-66-A @ 21:00hrs

COMP	MOLE FRACTION AIR FREE AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	PETROLEUM LIQUID CONTENT mL/m³
H_2	0.0001	0.0002	
He	0.0010	0.0013	
N_2	0.0532	0.0544	
CO_2	0.1695	0.0000	
H_2S	0.0045	0.0000	
C_1	0.7716	0.9340	
C_2	0.0001	0.0001	
C_3	0.0000	0.0000	0.0
iC_4	0.0000	0.0000	0.0
nC_4	0.0000	0.0000	0.0
iC_5	0.0000	0.0000	0.0
nC_5	0.0000	0.0000	0.0
C_6	0.0000	0.0000	0.0
C_7 +	0.0000	0.0000	0.0
C_8			
C_9			
C_{10+}			
TOTAL	1.0000	1.0000	0.0

GROSS HEATING VALUE MJ/m³ 15°C AND 101.325 kPa

MOISTURE AND ACID GAS FREE	AIR FREE AS RECEIVED	VAPOUR PHASE OF PENTANES PLUS
35.29	29.28	0.0 kPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED		MOISTURE AND ACID GAS FREE	
MEASURED	CALCULATED	MEASURED	CALCULATED
	0.742		0.580

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED		ACID GAS FREE	
P_c (abs)	T_c	P_c (abs)	T_c
5026 kPa	207.0 K	4521 kPa	186.1 K

RELATIVE MOLECULAR MASS

TOTAL GAS	C_{7+}
21.5	0.0

H_2S g/m³: 6.46

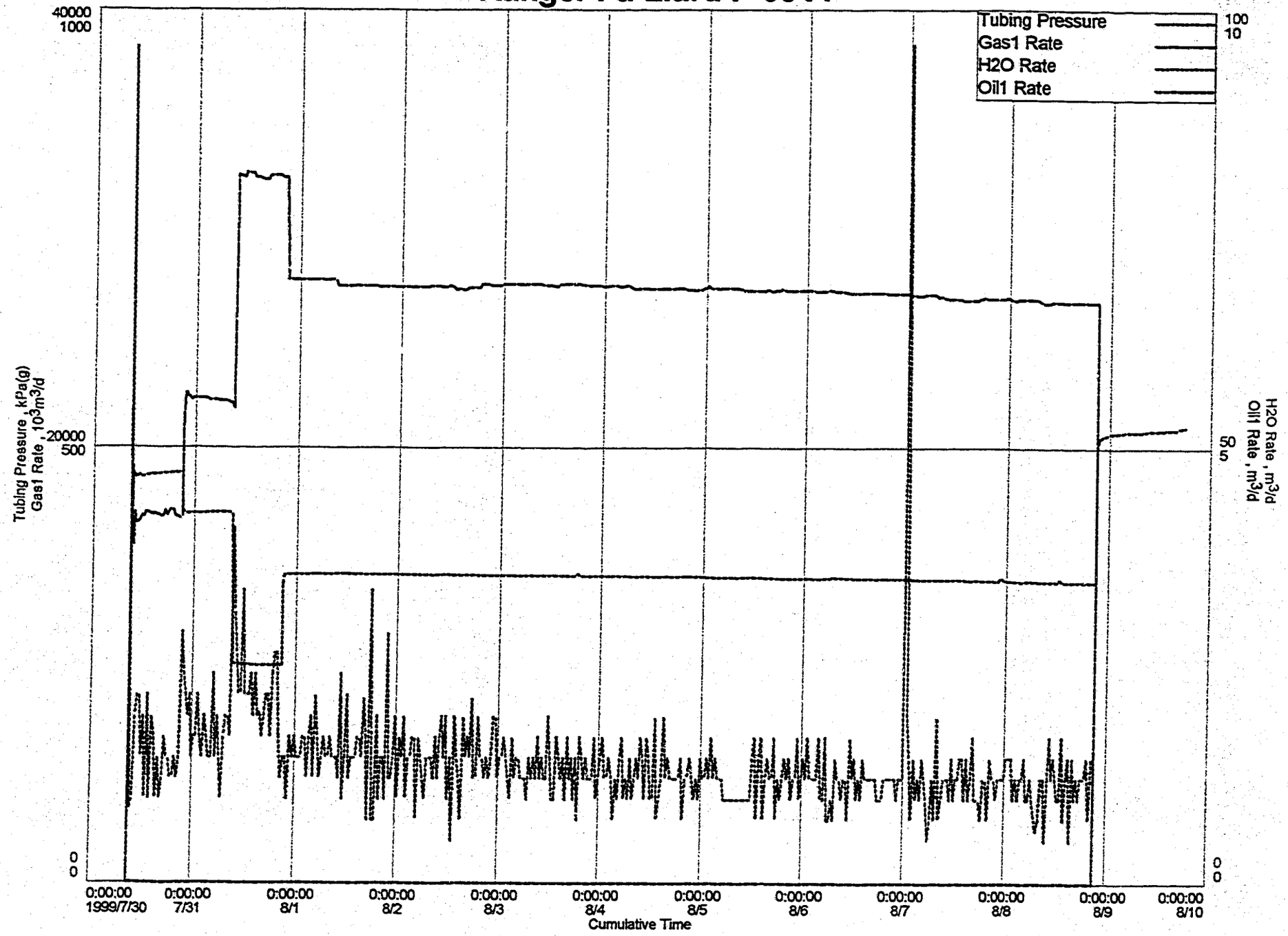
REMARKS:

EXCEED NORMAL LIMITS : N2 ,CO2
FIELD H2S = 0.4%/LAB = 0.45%

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/30
Final Test Date: 1999/08/09

Ranger Ft. Liard P-66-A

Ranger Ft.Liard
Job Number: GP99-085



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Fast

APPROVAL TO ALTER CONDITION OF A WELL

National Energy Board | Office national de l'énergie

CANADA

APPROVAL TO ALTER CONDITION OF A WELL

This application is to be submitted to the Chief Conservation Officer at least 45 days before commencement of operations.

Well Name: Ranger Fort Liard P-66 A Area: Liard

Operator: Ranger Oil Limited Contractor: Bonus Well Service

Drilling Rig or Unit: Precision Rig #416 Depth: 3499 m KB MD

Coordinates: Lat: 60° 35' 55.66" Long: 123° 41' 25.31"

Date ADW Issued: December 24, 1996 Date of last Operation: February 23, 1999

Elevation-KB/RT: 459.89 m (ASL) GL/Seafloor: 449.49 m

TYPE OF OPERATION

Workover

SUMMARY OF PROPOSED OPERATIONS

See attached program

As part of this application, it is anticipated that a flow and clean-up test will be required, followed by a single point AOF test to a maximum rate of 850 x $10^3 m^3$ / day. Ranger would be required to flow well for up to eight (8) days with an extended shut-in. Under these clean-up and testing conditions, it is expected we would flow a total 9500 x $10^3 m^3$ gas.

Signed: J L Brown *Responsible Officer* Title: Senior Completions Engineer

Name: J. L. Brown Company: Ranger Oil Limited

Date: June 7, 1999 Phone: (403) 303-7329

APPROVAL

An approved copy of this notice is to be posted at each wellsite.

Date: June 18/99 Signed: T M Baker *Chief Conservation Officer*

File: 9211-R36-1-2RE

WID: 1823. UWI 300P666040123O4

Well Status

Suspended ☒

Completed ☐

Abandoned ☐

WELL TERMINATION RECORD (with attachment)

Office national
de l'énergie

WELL TERMINATION RECORD

This record is submitted in compliance with Section 184 of the *Canada Oil and Gas Drilling Regulations*.

Well Name: Ranger North Liard P-66A Area: Fort Liard, NT

Grid Area: 60° 40', 123° 30' Field / Pool: Exploration

Interest Identifier: Final Coordinates: Lat: 60°35' 55.66" Long: 123°41' 25.31"

Drilling Unit: Precision Rig #426E Elevations-KB/RT: 459.89 (ASL) GL/Seafloor: 449.49

Spud Date: July 14, 1997 R.R.: March 9, 1998 Total Depth: 3500 mKB measured 3000 m TVD

O.D. (mm)	Weight (kg/m)	Grade	Depth Set (m KB)	Cement (m³)
508. mm	139.7 kg/m	K-55	262 m	80t + 2% $CaCl_2$ 5t
339.7 mm	101.2 kg/m	K-55	1005 m	92t "G" + .2% D13 + .5% D65
244.5 mm	79.6 kg/m	L-80	3115 m	17t"G"+35%D66+1.25%D160+.5%D28+5%D65
244.5 mm	69.9 kg/m	L-80	2452 m	68t"G"+.3%B71+.5%D65
177.8 mm liner	38.7 kg/m	L-80	3499 m	14t"G"+35%D66+.5%D65+.3% D28+.2%D121100LD135+1960+76LD47

PLUGGING PROGRAM

Approval of the following program was obtained by (person) J. Leroy Brown, Ranger

from (person) Andrew Graw of the N.E.B.

by means of correspondence on March 29, 2000

Type of Plug	Interval (m KB)	Felt	Cement (m³)
Baker TE-5 SSSV	148.5m	In OTIS 96.82 mm "X" nipple	
		Tubing Empty	
		Pressure tested 114.3/177.8/244.5mm ann. to 28Mpa.	

Lost Circulation/Overpressure Zones: Partial loss circulation 1275-1290 m, 3292-3298 m. Overpressures 2023 m, 2973 m

Equipment left on Seafloor (Describe): n/a

Provision for Re-entry (Describe and attach sketch): Wellhead chained and locked, wellsign installed

Cores: Type: Intervals:

No cores
No DSTs

Other Downhole Completion/Suspension Equipment:

244.5 mm stage cementer at 1300.4 mKB. 177.8 mm liner hanger at 2909.4 mKB. See attached downhole well profile for tubing string details.

CERTIFICATION

I certify on the basis of personal knowledge of operations undertaken at the above named well that the above information is accurate.

Signed: _____ Acknowledged By: _____

Name: J.L. Brown Chief Conservation Officer

Title: Sr. Completions Engineer

Company: Ranger Oil Limited Date: April 11/00 File: 9211-R36-1-2RE

Date: April 3, 2000 UWI: 300P666040123300 WID: 1823

Well Status:
Suspended ☐
Completed ☒
Abandoned ☐

Canada
444 Seventh Avenue SW
Calgary, Alberta T2P 0X8
444 Septième Avenue S.-O.

Telephone/Téléphone : (403) 292-4800
Facsimile/Télécopieur : (403) 292-5876
http://www.neb.gc.ca
01/07/99
M:\energy\wtrtrm.wpd

EXISTING DOWNHOLE WELL PROFILE

Location: Ranger Fort Liard P-66A — Date: 10-Jan-00

KB (m): 459.89 — GL (m): 449.49 — KB to CF: 10.35 — KB to THF: 8.60

	No. of Joints	Size OD mm	Weight kg/m	Thread Collar	Grade	Landed @ mKB	Top @ mKB
Conductor Casing:	22	508.00	139.87	BT & C	K-55	262.66	Surface
Cement: Stage 1	80t 0:1:0 'G' + CaCl2 w/Lost circulation on displacement.						
Surface Casing:	79	339.70	101.20	BT & C	K-55	1008.00	Surface
Stage 1	63t 0:1:0 'G' + .2% D-13 + .5% D-65						
Intermediate Casing	51	244.50	79.62	BT & C	L-80	3115.00	2452.00
	180	244.50	89.94	BT & C	L-80	2452.00	Surface
Cement: Stage 1	171 0:1:0 'G' + .35% D66 + 1.25% D160 + .5% D65 + .5% D28						
Stage 2	68t 0:1:0 'G' + .3% B71 + .5% D65 w/continuous returns. Est. Cement top @ 800m.						
Production Liner:	42	177.80	38.70	LT & C	L80	3499.00	2909.00
Cement: Stage 1	14.7t 0:1:0 'G' + .35% Sec a + .3% D65 + .3% D28 + .2% D121 + 100l D135 + 165l D600						
	+ 76t D47 displaced @ .5m3/min w/continuous returns throughout						
Production Tubing:	215	88.90	13.84	NS-CT	L-80	3071.00	Surface

Perforations:				
	Upper Nihanni (gross interval)	3115.00	to	3172.00
	Middle Nihanni (gross interval Abandon)	3234.00	to	3302.00
	Lower Nihanni (w/TTG, net interval)	3324.00	to	3334.00
	Lower Nihanni (w/TTG, net interval)	3349.00	to	3356.00

Item	Description	Length (m)	TVD mKB	Top mKB
	FINAL TUBING STRING (Bottom Up)			
1	1 - 120.65 x 86.6mm wireline re-entry guide w/EUE thread.	0.15		2964.61
2	2 - 86.9mm x 1.89 & 3.10m L-80 EUE pup jts @ 13.69kg/m	4.99		2959.62
3	1 - 88.9mm x 49m Otis 'XN' EUE nipple w/69.85mm profile & 66.93mm No-Go.	0.43		2959.19
4	1 - 88.9mm x 3.08m L-80 EUE pup jt @ 13.69kg/m	3.08		2956.11
5	1 - 88.9mm x 1.22m L-80 EUE perforated nipple @ 13.69kg/m	1.22		2954.89
6	1 - 150.8x88.9mm L-80 NSCT casing centralizer	0.26		2954.61
7	1 - 88.9mm x .31m Otis 'X' nipple w/69.85mm profile w/EUE pin x NSCT box	0.34		2954.27
8	1 - 88.9mm x 2.95m L-80 NS-CT pup jt @ 13.69kg/m	2.95		2951.32
9	1 - 88.9mm x .34m INCOLOY 925 NSCT Otis 'X' nipple w/69.85mm profile.	0.34		2950.98
10	1 - 88.9mm x 1.25m INCOLOY 925 NSCT pup jt @ 13.69kg/m down.	1.24		2949.74
11	1 - 88.9mm x 177.8mm INCOLOY 925 Guiberson Magnum perm packer (HTE)	0.94		2948.80
12	1 - 88.9mm premium latch assembly w/extra seal (High Temp. Elastomer)	0.47		2948.33
13	1 - 88.9mm x 114.3mm L-80 NSCT swedge	0.77		2947.56
14	1 - 114.3mm x 3.00m L-80 NSCT tubing pup jt @ 18.75kg/m	2.96		2944.60
15	1 - 114.3mm Otis 'X' nipple w/98.85mm profile & NSCT thread.	0.31		2944.29
16	290 - 114.3mm L-80 NSCT tubing jts @ 18.75kg/m	2794.41		149.88
17	1 - 114.3mm NSCT L-80 Baker Flow Coupleing	1.41		148.47
18	1 - 114.3mm Baker Model TE-5 Inconel SSSV w/98.82mm Otis 'X' Nipple	1.58		146.89
19	1 - 114.3mm NSCT L-80 Baker Flow Coupleing	1.42		145.47
20	15 - 114.3mm L-80 NSCT tbg jts @ 18.75kg/m	136.62		8.85
21	1 - 114.3mm Tubing Hanger	0.25		8.60
	Note: .0625mm stainless control line run from SSSV to surface.			
	Dropped tools - Top Down			Top @
8a	1 - 73mm x 177.8mm x 1.65 m INCOLOY 925 Halliburton 'SWB' perm packer	1.65		3338.00
8a	1 - 73mm x 1.06m INCOLOY 925 NSCT pup jt @ 9.67kg/m down.	1.05		3339.65
7a	1 - 73mm x .30m INCOLOY 925 NSCT Otis 'X' nipple w/56.75mm profile.	0.30		3340.71
6a	1 - 73mm x 2.99m L-80 NS-CT pup jt @ 9.67kg/m	2.99		3341.01
5a	1 - 73mm x .31m Otis 'R' nipple w/55.58mm profile. EUE pin x NSCT box	0.31	2915.25	3344.40
4a	1 - 73mm x 1.24m L-80 EUE perforated nipple @ 9.67kg/m	1.24	2915.51	3344.71
3a	1 - 73mm x 3.04m L-80 EUE pup jt @ 9.67kg/m	3.04	2918.52	3365.95
2a	1 - 73mm x .46m Otis 'RN' EUE nipple w/55.58 profile & 51.05mm NO-Go.	0.59	2918.99	3368.99
1a	1 - 73mm x .10m Otis wireline re-entry guide w/EUE thread.	0.10	2919.47	3382.58
	Total String Length (m) (Item 6 to 22)	2956.16		
	KB to Tubing Hanger Range	8.60		
	Tubing Landed Depth (mKB)	2964.76		

Tubing Weight	40120	daN	Wt. on Packer	9000	daN	Wt. on Hanger	31120	daN

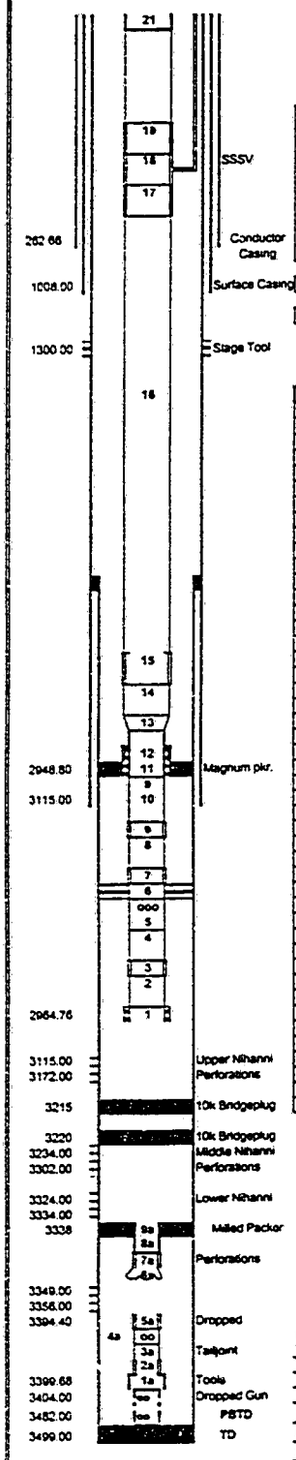
Wellhead	Make:	Rector	W.P.	35MPa	Type:	Flanged	
Dual Master Valve	Make:	Rector	W.P.	35MPa	Type:	Flanged	
	Size:	103.19mm	Trim	L. HH.			
Casing Valves	Make:	Rector	W.P.	35MPa	Type:	Flanged	
	Size:	103.19mm	Trim	L. HH.			
Choke	Make:	N/A					
Surf. Casing Status:							

Well Status: Well SSSV is closed & wellhead chained and locked.

The tubing is void of any fluid. The 114.3/244.5/177.8mm annulus is filled w/diesel and pressure tested to 28MPa

NOTE: *Dropped tools were pushed w/drill tools and do not represent a logged depth.*

Net Perforations: 3115-3122; 3125-3130; 3134-3148; 3152-3159; 3165-3172; 3234-3248; 3260-3272; 3276-3280; 3285-3292; 3295-3302; 3324-3334 and 3349-3356mKB



WELL TERMINATION RECORD (with attachment)

National Energy Board / Office national de l'énergie

WELL TERMINATION RECORD

This record is submitted in compliance with Section 184 of the *Canada Oil and Gas Drilling Regulations*.

Well Name: Ranger North Liard P-66A Area:

Grid Area: N60°40'00"W123°30'00" Field / Pool: Nahanni

Interest ____ Final Lat 60°40'00" Long: 123°30'00"

Drilling ____ Elevations: KB459.9m (ASL) GL/Seafloo KB-CF10.35m

Spud Date: ____ R.R.: ____ Total Depth: 3,499m KB

O.D. (mm)	Weight (kg/m)	Grade	Depth Set (m KB)	Cement (m³)
339.7	101.2	K-55	1,008	92t
244.5	79.6&69.9	L-80	3,115	85t
177.8	38.7	L-80	3,499	14t
114.3		L-80	2,964	tubing

PLUGGING PROGRAM

Approval of the following program was obtained by (person) ____

from (person) ____ of the ____

by means of ____ on ____

Type of Plug	Interval (m KB)	Felt	Cement (m³)

Pump 2m3 inhibited diesel in tubing. Run and pull the lock open mandrel from the sub-surface safety valve (SSSV) at 146.9m KB. Run and set Otis 96.82mm X plug in SSSV at 146.89m. PT with 1.2m3 inhibited diesel to 21 MPa. Set dog nut plug in wellhead and PT to 21 MPa.

Lost Circulation/Overpressure Zones: ____

Equipment left on Seafloor (Describe): ____

Provision for Re-entry (Describe and attach sketch): See Attachment 2-Downhole diagrams

Cores: Type: ____ Interval ____

Other Downhole Completion/Suspension ____

CERTIFICATION

I certify on the basis of personal knowledge of operations undertaken at the above named well that the above information is accurate.

Signed: Robert D Hallett Title: Production Eng

Name: Robert D Hallett P.Eng. Date: 01/06/11

Company: Canadian Natural Resources Ltd.

Well Status

Suspended ☒

Completed ☐

Abandoned ☐

Acknowledged by ____

Chief Conservation Officer

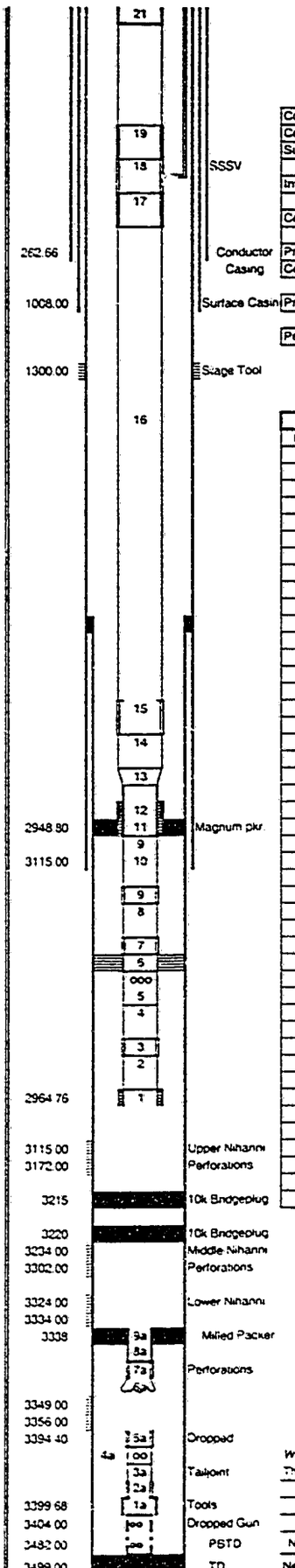
Date June 28/01

File 9211-R36-1-2

UWI 300P666040123304 WID 1823

Canada

EXISTING DOWNHOLE WELL PROFILE



Location: Ranger Fort Liard P-66A — Date: 10-Jan-00

KB (m): 459.89 — GL (m): 449.49 — KB to CF: 10.35 — KB to THF: 8.50

	No. Joints	Size OD mm	Weight kg/m	Thread Collar	Grade	Landed @ mKB	Top @ mKB
Conductor Casing:	22	508.00	139.67	BT & C	K-55	262.66	Surface
Cement: Stage 1	80t 0:1:0 'G' + CaCl2 w/Lost circulation on displacement.						
Surface Casing:	79	339.70	101.20	BT & C	K-55	1008.00	Surface
Stage 1	92t 0:1:0 'G' + .2% D-13 + 5% D-53						
Intermediate Casing	51	244.50	79.62	BT & C	L-80	3115.00	2452.00
	180	244.50	69.94	BT & C	L-80	2452.00	Surface
Cement: Stage 1	17t 0:1:0 'G' + .35% D66 + 1.25% D160 + .5% D65 + 5% D29						
Stage 2	6st 0:1:0 'G' + .3% B71 + 5% D65 w/continuous returns. Est. Cement top @ 800m.						
Production Liner:	42	177.80	38.70	LT & C	L80	3499.00	2909.00
Cement: Stage 1	14.7t 0:1:0 'G' + 35% Silica + 5% D65 + 3% D28 + 2% D121 + 100l D135 + 1960l D600						
	+ 76l D47 displaced @ .6m3/min w/continuous returns throughout						
Production Tubing:	215	88.90	13.84	NS-CT	L-80	3071.00	Surface

Perforations:			
Upper Nihanni (gross interval)	3115.00	to	3172.00
Middle Nihanni (gross interval Abandon)	3234.00	to	3302.00
Lower Nihanni (w/TTG, net interval)	3324.00	to	3334.00
Lower Nihanni (w/TTG, net interval)	3349.00	to	3356.00

Item	FINAL TUBING STRING (Bottom Up) Description	Length (m)	TVD mKB	Top mKB
1	1 - 120.65 x 88.9mm wireline re-entry guide w/EUE thread.	0.15		2964.61
2	2 - 88.9mm x 1.89 & 3.10m L-80 EUE pup jts @ 13.69kg/m	4.99		2959.62
3	1 - 88.9mmx.45m Otis 'XN' EUE nipple w/69.85mm profile & 66.93mm No-Go	0.43		2959.19
4	1 - 88.9mm x 3.08m L-80 EUE pup jt @ 13.69kg/m	3.08		2956.11
5	1 - 88.9mm x 1.22m L-80 EUE perforated nipple @ 13.69kg/m	1.22		2954.89
6	1 - 150.8x88.9mm L-80 NSCT casing centralizer	0.28		2954.61
7	1 - 88.9mm x .31m Otis 'X' nipple w/69.85mm profile w/EUE pin x NSCT box	0.34		2954.27
8	1 - 88.9mm x 2.95m L-80 NS-CT pup jt @ 13.69kg/m	2.95		2951.32
9	1 - 88.9mm x .34m INCOLOY 925 NSCT Otis 'X' nipple w/69.85mm profile.	0.34		2950.98
10	1 - 88.9mm x 1.25m INCOLOY 925 NSCT pup jt @ 13.69kg/m down.	1.24		2949.74
11	1 - 88.9mmx177.8mm INCOLOY 925 Guiberson Magnum perm packer (HTE)	0.94		2948.80
12	1 - 88.9mm premium latch assembly w/extra seal (High Temp Elastomer)	0.47		2948.33
13	1 - 88.9mmx114.3mm L-80 NSCT swedge	0.77		2947.56
14	1 - 114.3mm x 3.00m L-80 NSCT tubing pup jt @ 18.75kg/m	2.96		2944.60
15	1 - 114.3mm Otis 'X' nipple w/96.85mm profile & NSCT thread	0.31		2944.29
16	296 - 114.3mm L-80 NSCT tubing jts @ 18.75kg/m	2794.41		149.88
17	1 - 114.3mm NSCT L-80 Baker Flow Coupleing	1.41		148.47
18	1 - 114.3mm Baker Model TE-5 Inconel SSSV w/96.82mm Otis 'X' Nipple	1.58		146.89
19	1 - 114.3mm NSCT L-80 Baker Flow Coupleing	1.42		145.47
20	15 - 114.3mm L-80 NSCT tbg jts @ 18.75kg/m	136.62		8.85
21	1 - 114.3mm Tubing Hanger	0.25		8.60

Note: .0625mm stainless control line run from SSSV to surface.

Note (19) March 2001, installed wireline set lock open mandrel in Otis 96.82mm X profile. ID of lock mandrel 66.54mm

	Dropped tools - Top Down			Top @
9a	1 - 73mm x 177.8mm x 1.65 m INCOLOY 925 Halliburton 'BWB' perm packer	1.65		3338.00
8a	1 - 73mm x 1.06m INCOLOY 925 NSCT pup jt @ 9.67kg/m down.	1.06		3339.65
7a	1 - 73mm x .30m INCOLOY 925 NS-CT Otis 'X' nipple w/58.75mm profile.	0.30		3340.71
6a	1 - 73mm x 2.99m L-80 NS-CT pup jt @ 9.67kg/m	2.99		3341.01
5a	1 - 73mm x .31m Otis 'R' nipple w/55.58mm profile EUE pin x NSCT box	0.31	2915.25	3394.40
4a	1 - 73mm x 1.24m L-80 EUE perforated nipple @ 9.67kg/m	1.24	2915.51	3394.71
3a	1 - 73mm x 3.04m L-80 EUE pup jt @ 9.67kg/m	3.04	2916.52	3395.95
2a	1 - 73mm x .49m Otis 'RN' EUE nipple w/55.58 profile & 51.05mm No-Go	0.59	2918.99	3398.99
1a	1 - 73mm x .10m Otis wireline re-entry guide w/EUE thread.	0.10	2919.47	3399.58

Total String Length (m) (Item 6 to 22)	2956.15
KB to Tubing Hanger Flange	8.60
Tubing Landed Depth (mKB)	2964.75

Tubing Weight:	40120	daN	Wt. on Packer	9000	daN	Wt. on Hanger	31120	daN

Wellhead	Make:	Rector	W.P.	35MPa	Type:	Flanged
Dual Master Valve	Make:	Rector	W.P.	35MPa	Type:	Flanged
	Size:	103.19mm	Trim	L. HH.		
Casing Valves	Make:	Rector	W.P.	35MPa	Type:	Flanged
	Size:	103.19mm	Trim	L. HH.		
Choke	Make:	N/A				
Surf. Casing Status:						

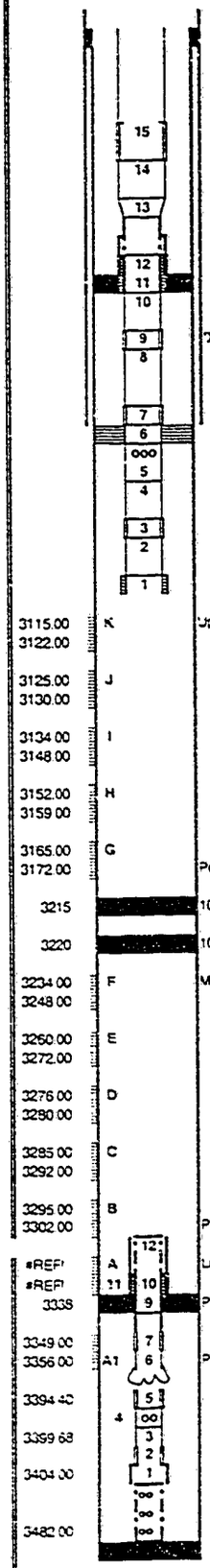
Well Status: Well SSSV is closed & wellhead chained and locked.
The tubing is void of any fluid. The 114.3/244.5/177.8mm annulus is filled w/diesel and pressure tested to 28MPa

NOTE: *Dropped tools were pushed w/mill tools and do not represent a logged depth.*

Net Perforations: 3115-3122; 3125-3130; 3134-3148; 3152-3159; 3165-3172; 3234-3248; 3260-3272; 3276-3280; 3285-3292; 3295-3302; 3324-3334 and 3349-3356mKB

EXPANDED DOWNHOLE WELL PERFORATION PROFILE

Date: 10-Jan-00



Perforation Interval (top down)				
Designation	Top		Bottom	Length
K	3115.00		3122.00	7.00
J	3125.00		3130.00	5.00
I	3134.00		3148.00	14.00
H	3152.00		3159.00	7.00
G	3165.00		3172.00	7.00
F	3234.00		3248.00	14.00
E	3260.00		3272.00	12.00
D	3276.00		3280.00	4.00
C	3285.00		3292.00	7.00
B	3295.00		3302.00	7.00
A	3324.00		3334.00	10.00
A1	3349.00		3356.00	7.00

FINAL TUBING STRING (Bottom Up)		Length		Top
Item	Description	m	TVD	mKB
1	1 - 120.65 x 88.9mm wireline re-entry guide w/EUE thread.	0.15		2964.61
2	2 - 88.9mm x 1.89 & 3.10m L-80 EUE pup jts @ 13.69kg/m	4.99		2959.62
3	1 - 88.9mmx.49m Otis 'XN' EUE nipple w/69.85mm profile & 66.93mm No-Go.	0.43		2959.19
4	1 - 88.9mm x 3.08m L-80 EUE pup jt @ 13.69kg/m	3.08		2956.11
5	1 - 88.9mm x 1.22m L-80 EUE perforated nipple @ 13.69kg/m	1.22		2954.89
6	1 - 150.8x88.9mm L-80 NSCT casing centralizer	0.29		2954.61
7	1 - 88.9mm x .31m Otis 'X' nipple w/69.85mm profile w/EUE pin x NSCT box	0.34		2954.27
8	1 - 88.9mm x 2.95m L-80 NS-CT pup jt @ 13.69kg/m	2.95		2951.32
9	1 - 88.9mm x .34m INCOLOY 925 NSCT Otis 'X' nipple w/69.85mm profile.	0.34		2950.98
10	1 - 88.9mm x 1.25m INCOLOY 925 NSCT pup jt @ 13.69kg/m down.	1.24		2949.74
11	1 - 88.9mmx177.8mm INCOLOY 925 Guiberson Magnum perm packer (HTE)	0.94		2948.80
12	1 - 88.9mm premium latch assembly w/extra seal (High Temp. Elastomer)	0.47		2948.33
13	1 - 88.9mmx114.3mm L-80 NSCT swedge	0.77		2947.56
14	1 - 114.3mm x 3.00m L-80 NSCT tubing pup jt @ 18.75kg/m	2.96		2944.60
15	1 - 114.3mm Otis 'X' nipple w/96.85mm profile & NSCT thread.	0.31		149.88
16	296 - 114.3mm L-80 NSCT tubing jts @ 18.75kg/m	2794.41		150.19
17	1 - 114.3mm NSCT L-80 Baker Flow Coupleing	1.41		148.47
18	1 - 114.3mm Baker Model TE-5 Inconel SSSV w/96.82mm Otis 'X' Nipple	1.58		145.47
19	1 - 114.3mm NSCT L-80 Baker Flow Coupleing	1.42		147.05
20	15 - 114.3mm L-80 NSCT tbg jts @ 18.75kg/m	136.62		8.85
21	1 - 114.3mm Tubing Hanger	0.25		8.60
	Note: .0625mm stainlesscontrol line run from SSSV to surface.			
	Total String Length (m) (Item 6 to 22)	2955.16		
	KB to Tubing Hanger Flange	8.60		
	Tubing Landed Depth (mKB)	2964.76		
	Dropped tools - Top Down			Top @
9a	1 - 73mm x 177.8mm x 1.65 m INCOLOY 925 Halliburton 'BWB' perm packer	1.65		3338.00
8a	1 - 73mm x 1.06m INCOLOY 925 NSCT pup jt @ 9.67kg/m down.	1.06		3339.65
7a	1 - 73mm x .30m INCOLOY 925 NSCT Otis 'X' nipple w/58.75mm profile	0.30		3340.71
6a	1 - 73mm x 2.99m L-80 NS-CT pup jt @ 9.67kg/m	2.99		3341.01
5a	1 - 73mm x .31m Otis 'R' nipple w/55.58mm profile EUE pin x NSCT box	0.31	2915.25	3394.40
4a	1 - 73mm x 1.24m L-80 EUE perforated nipple @ 9.67kg/m	1.24	2915.51	3394.71
3a	1 - 73mm x 3.04m L-80 EUE pup jt @ 9.67kg/m	3.04	2916.52	3395.95
2a	1 - 73mm x .49m Otis 'RN' EUE nipple w/55.58 profile & 51.05mm No-Go	0.59	2918.99	3398.99
1a	1 - 73mm x .10m Otis wireline re-entry guide w/EUE thread	0.10	2919.47	3399.58

Tubing Weight	40120 daN	Wt. on Packer	9000 daN	Wt. on Hanger	31120 daN

Wellhead	Make:	Rector	W.P.	35MPa	Type:	Flanged
Dual Master Valve	Make:	Rector	W.P.	35MPa	Type:	Flanged
	Size:	79.375mm	Trim	AA87		
Casing Valves	Make:	Rector	W.P.	35MPa	Type:	Flanged
	Size:	79.375mm	Trim	AA87		
Choke	Make:	N/A				
Surf. Casing Status:						

Well Status: Temporary well suspension effective Aug. 30, 1999
The tubing is suspended wan Otis 'PX' plug landed in the 'X' nipple @ 2950.98mKB. The tbg is filled w/inhibited water, topped w/Diesel & pressure tested to 28MPa, installed a backpressure valve in the tbghut. Secured
The 88.9x244.5 177.8mm annulus is filled w/inhibited water, topped w/diesel and pressure tested to 21MPa
Water, topped w/methanol & pressure tested to 21MPa, installed a backpressure valve in the tbghut. Secured
NOTE: *Dropped tools were pushed w/mill tools and do not represent a logged depth.*
Net Perforations: 3115-3122, 3125-3130, 3134-3148, 3152-3159, 3165-3172, 3234-3248, 3260-3272, 3276-3280, 3285-3292, 3295-3302, 3324-3334 and 3349-3356mKB