NORTHCOR

KAKISA RIVER F-56

9211-N10-5-1

Mar. 1985 - P+A

D.A.# 1219

Canada Oil and Gas Lands Administration | Administration du pétrole et du gaz des terres du Canada

E.A.# 171

Nova Scotia	☐	West Coast	☐	Exploratory	☒
Newfoundland	☐	Northern	☒	Development	☐
Gulf of St. Lawrence	☐	Hudson Bay	☐	Delineation	☐
				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: Northcor et al Kakisa River F-56

Operator: Northcor Energy Ltd. | Drilling Program No.: N.A.

Contractor: Badger Drilling Ltd. | Permit or Lease No.: Exploration Agreement #171

Drilling Rig or Unit: #2 | Estimated Well Cost: $1,982,000

Location-Unit: F | Section: 56 | Grid Area: 60-10-117-45

Coordinates: Lat.: 60° 05' 26.625" N | Long.: 117° 55' 27.604" W

Area: Cameron Hills | Field/Pool: Kakisa Exploratory

Elevation ~~XX~~/KB: 800.56 m (ASL) | Ground ~~Seafloor~~: 796.56 m ASL ~~(BRT)~~

Approx. Spud Date: January 20, 1985 | Estimated Days on Location: 30 days

Anticipated Total Depth: 1,755 m | Target Horizon(s): Slave Point, Sulphur Point, Keg River.

UWI: 300F566010117450

EVALUATION PROGRAM

Ten-metre sample intervals: - - -

Five-metre sample intervals: Surface bedrock to Total Depth.

Canned sample intervals: Every ten metres, surface bedrock to Total Depth.

Conventional cores at: No cores planned at this time.

Logs and Tests: See Drilling Program

CASING AND CEMENTING PROGRAM

O.D.	Weight:	Grade:	Setting Depth ~~XXXXXXXXXX~~	Cementing Program (Volumes):
508 mm	Conductor Casing		75 m	Grout to Surface
244 mm	53.57 kg/m	J-55	565 m	Shoe to Surface (24.7 m³)
178 mm	34.22 kg/m	J-55	1,755 m	300 m above shoe (5.45 m³)

B.O.P. Equipment: Diverter system: 346 mm Grant Rotating head nippled up on conductor casing.

Other Information: BOP system: 203 mm - Annular Preventer - 21000 kPa
203 mm - Blind Ram - 21000 kPa
203 mm - Pipe Ram - 21000 kPa
as per sketch in Drilling Program

Signed: (David V. Sells) | Title: President

Date: October 18, 1984 | Company: NORTHCOR ENERGY LTD. (Operating Licence No. 507)

APPROVAL

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

Signed: Engineering Branch

Date: 85.02.14

File: 9211-N10-5-1

Department of Energy, Mines and Resources | Ministère de l'Énergie, des Mines et des Ressources

Department of Indian Affairs and Northern Development | Ministère des Affaires indiennes et du Nord Canadien

Canada

9211- N:0-5-1

PAJAK ENGINEERING LTD.
OILFIELD SUPERVISION &
PROJECT MANAGEMENT

Final Report

Northcor et al Kakisa River F-56
60° 05' 26.625" N
117° 55' 27.604" W

Unique Well Identifier
300 F566010117450

drilled by

Badger Drilling Rig #2

prepared by

Daniel R. Dexter
Drilling Engineer

Pajak Land & Offshore Ltd.
1660 Elveden House, Calgary, Alberta

Rev.

D.A.# 1219

Canada Oil and Gas Lands Administration | Administration du pétrole et du gaz des terres du Canada

E.A.# 171

Nova Scotia	☐	West Coast	☐	Exploratory	☒
Newfoundland	☐	Northern	☒	Development	☐
Gulf of St. Lawrence	☐	Hudson Bay	☐	Delineation	☐
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Signed: Engineering Branch

Date: 85.02.14

File: 9211-N10-5-1

Department of Energy, Mines and Resources / Ministère de l'Énergie, des Mines et des Ressources

Department of Indian Affairs and Northern Development / Ministère des Affaires indiennes et du Nord Canadien

Canada

Canada Oil and Gas Lands Administration | Administration du pétrole et du gaz des terres du Canada

D.A. 1219
E.A. 171

				Well Status	
Nova Scotia	☐	West Coast	☐	Suspended	☐
Newfoundland	☐	Northern	☒	Completed	☐
Gulf of St. Lawrence	☐	Hudson Bay	☐	Abandoned	☒

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: Northcor et al Kakisa River F-56 Area: Cameron Hills

Grid Area: 60-10-117-45 Field/Pool: Kakisa Exploratory

Permit or Lease No.: E.A. 171 Final Coordinates: Lat.: 60°05'26.625"N Long: 117°55'27.604"W

Drilling Unit: Badger Drilling Ltd. #2 Elevations: KB: ~~800.56m~~ 802.26 m GL: ~~796.56m~~ 797.36

Spud Date: 85-02-17 Rig Released: 85-03-21 Total Depth: 1710m

CASING AND CEMENTING

O.D.:	Weight:	Grade:	Depth Set:	Cement and Additives:
508mm	conductor casing		27m	Construction
244mm	53.57	J-55	527.4m	Class "G" +2% $CaCl_2$ to surface
178mm	34.22	J-55	1444m	Class "G" +1% Halad 322 1444-1151m
				Class "G" +1% Halad 322 496- 246m

PLUGGING PROGRAM

Approval of the following program was obtained by (person) Terence G. Dexter from (person) Kem Singh of the Canada Oil and Gas Lands Administration by means of telex & phone on March 20, 1985.

Type of Plug:	Interval:	Felt:	Cement and Additives:
Cement	10 - 0m	at 0m	Class "G" +1% Halad 322
Cement	1460 - 1430m	at 1435m	Class "G" +1% Halad 322
Cement	1711 - ~~1560~~ 1532	No feel	Class "G" +1% Halad 322

Lost Circulation/Overpressure Zones: Wabamun 590m lost complete circulation

Equipment left on Seafloor (Describe): NA

Provision for Re-entry (Describe and attach sketch): NA

Cores: Type: None Intervals:

Other Downhole Completion/Suspension Equipment: None

CERTIFICATION

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

Signed: Terence G. Dexter P. Eng. Title: Operations Manager

Name: Terence G. Dexter Date:

Acknowledged by: Engineering Branch

Date: 19 Sep 85

File: 9211-N10-5-1

Department of Energy, Mines and Resources | Ministère de l'Énergie, des Mines et des Ressources

Department of Indian Affairs and Northern Development | Ministère des Affaires indiennes et du Nord canadien

Canada

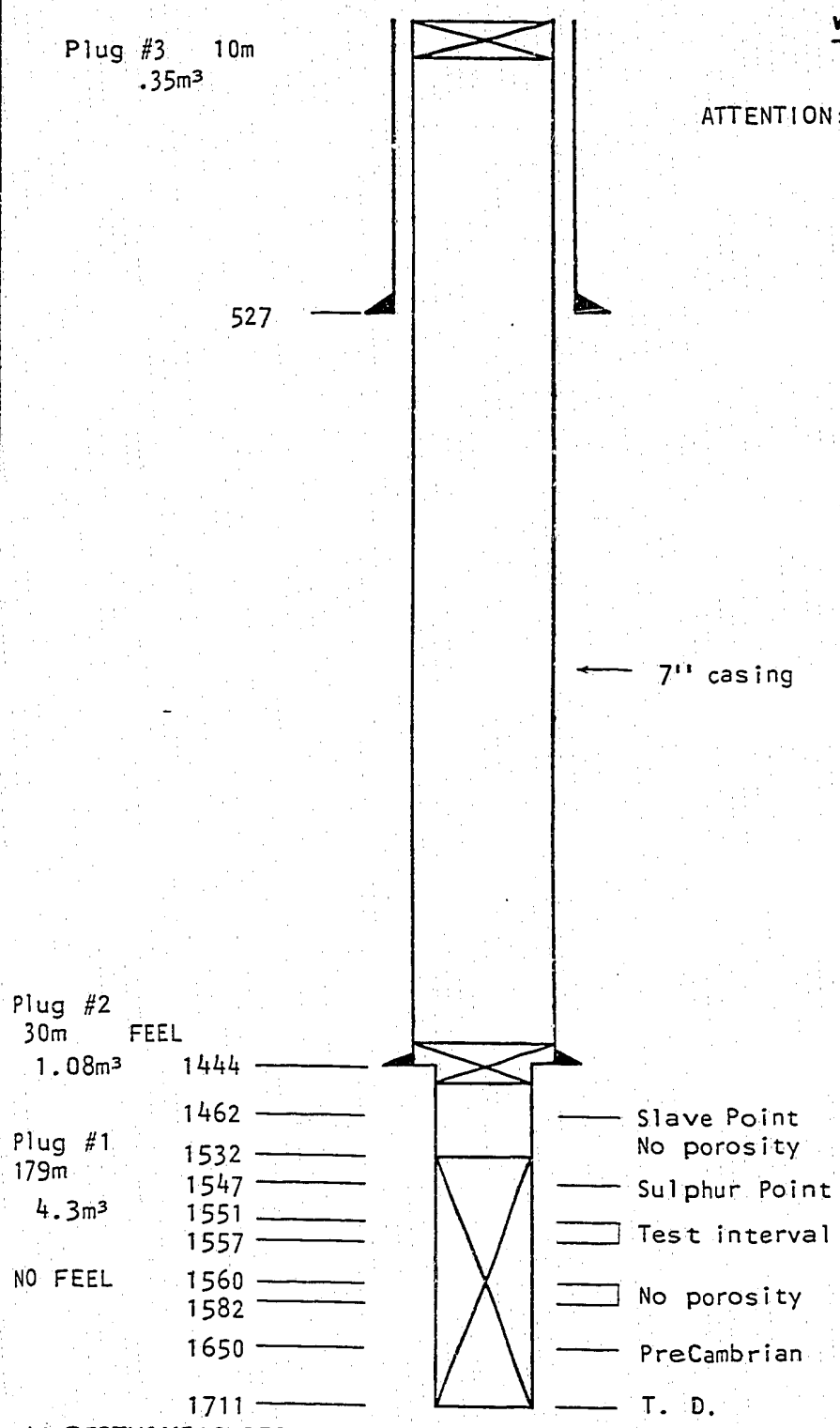
WELL NAME Northcor et al Kakisa River F-56

DRILLING AND PRODUCTION DIVISION

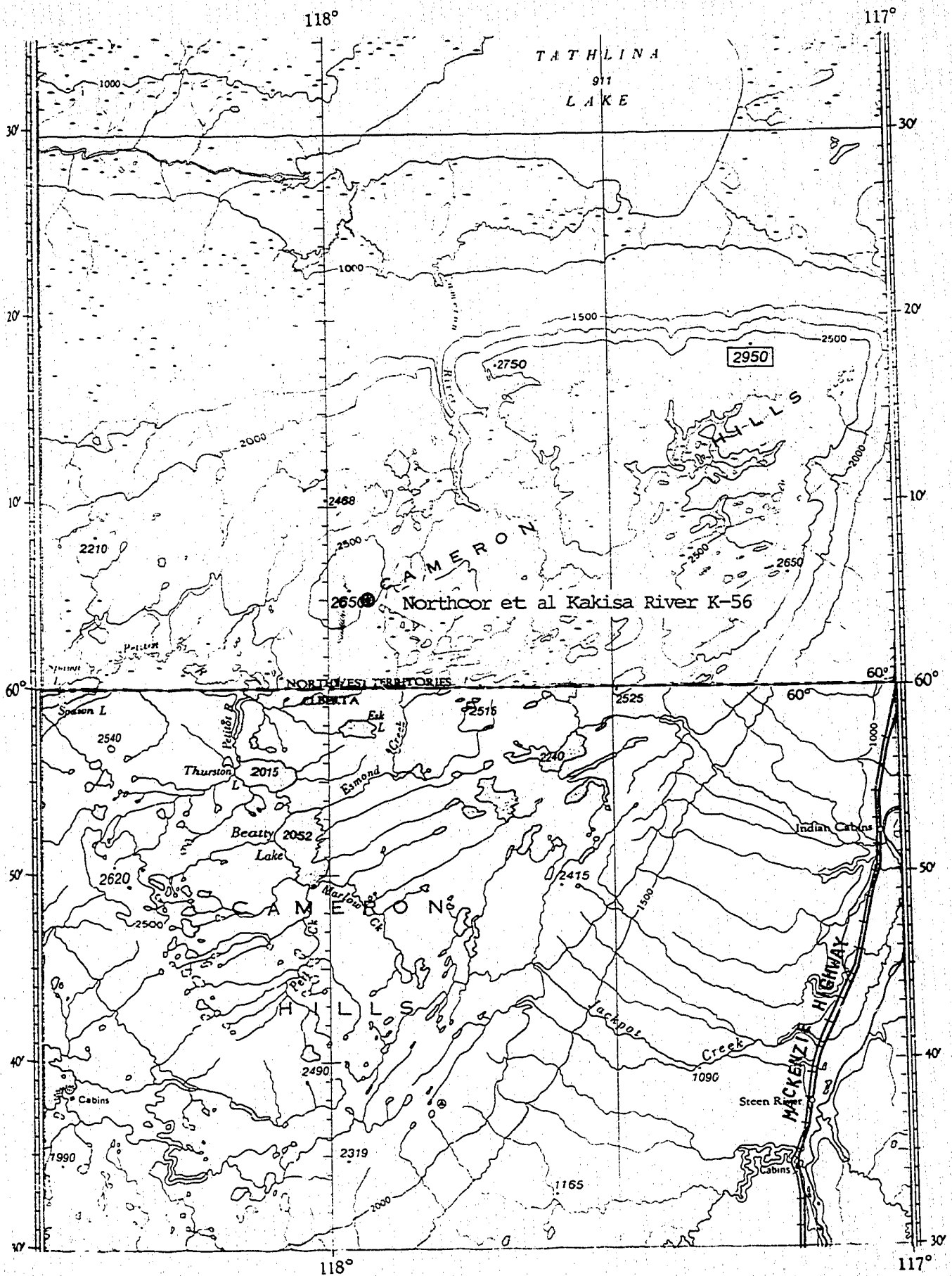
SCHEMATIC DIAGRAM OF DOWNHOLE EQUIPMENT

WELLHEAD DESCRIPTION

ATTENTION: Kem Singh

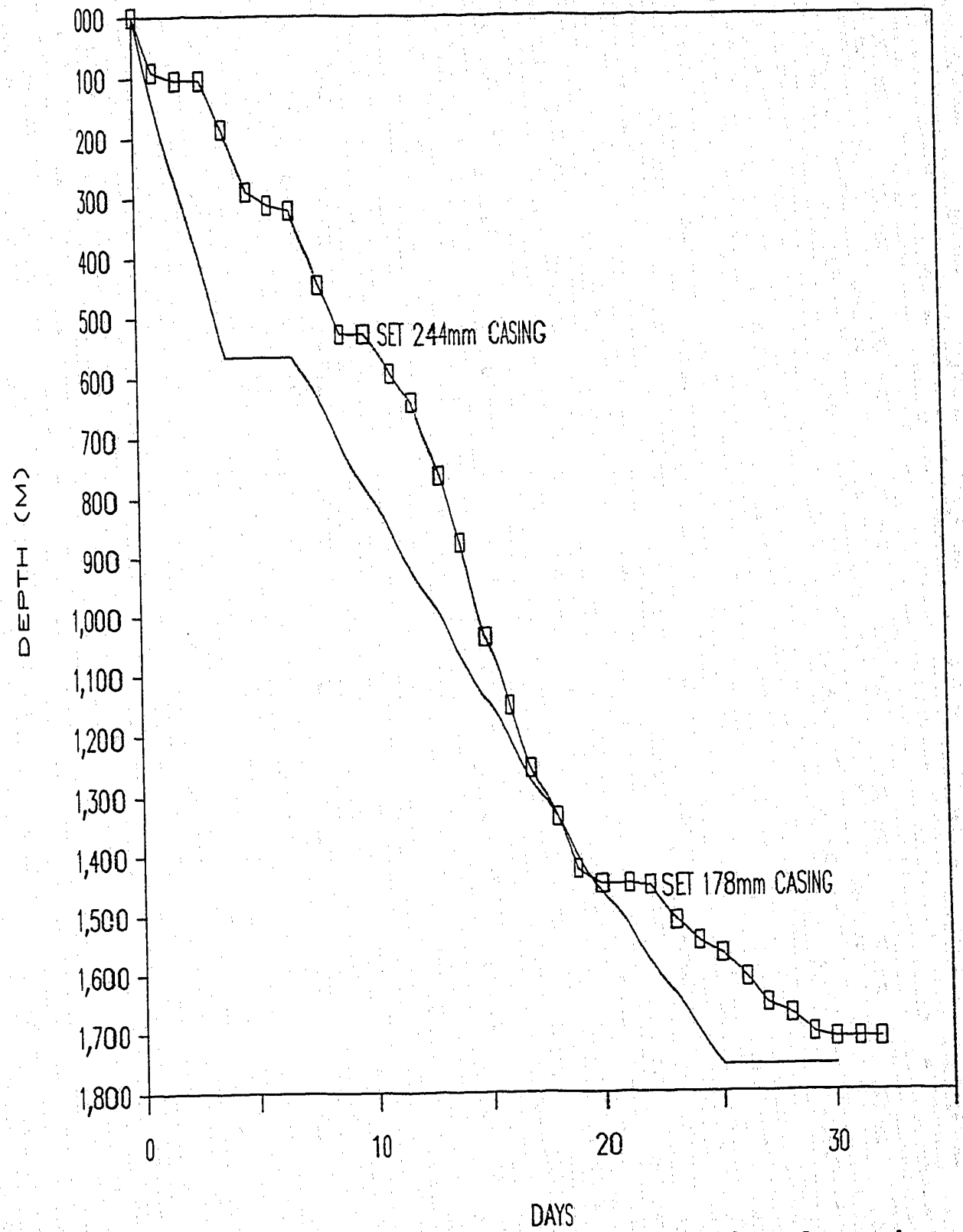


ALL DEPTHS MEASURED FROM KB


118°
117°
TATHLINA
911
LAKE
30'
20'
10'
60°
1000
1500
2500
2750
2950
2000
2468
2210
2650
HILLS
CAMERON
Northcor et al Kakisa River K-56
NORTHWEST TERRITORIES
ALBERTA
Sparon L
2540
Petitot R
Esk L
Creek
2515
2525
2240
Thurston L
2015
Esmond
Beatty Lake
2052
2620
Indian Cabins
2415
Marlow Ck
Jackpot Creek
1090
MACKENZIE HIGHWAY
Steen River
Cabins
2490
1990
2319
1165
2000
1500
1000

NORTHCOR ET AL KAKISA RIVER F-56

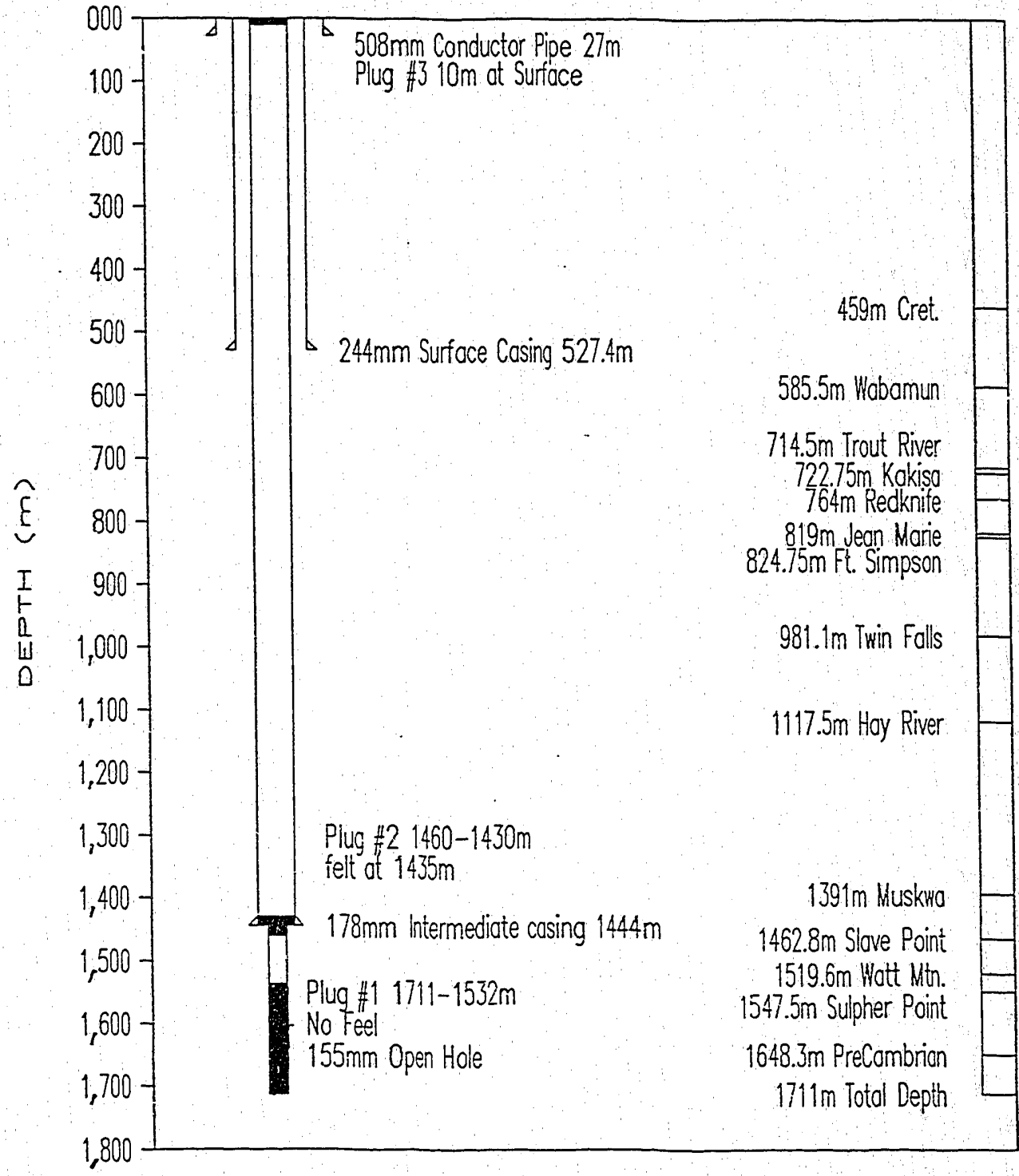
PENETRATION CURVE (SPUDDED 85-02-17)



PAJAK LAND & OFFSHORE LTD.

NORTHCOR ET AL KAKISA RIVER F-56

PLUGS CASING & FM TOPS 85-04-10



PAJAK LAND & OFFSHORE LTD.

Drilling
Summary

Introduction

Summary

Northcor Energy Ltd. engaged Badger Drilling Ltd.'s Rig #2 to drill the subject well known as Northcor et al Kakisa River F-56, 60° 5' 26.625" N, 117° 55' 27.604" W. Some 110 miles (180km) SW of Hay River in the Cameron Hills. The well was spudded 85-02-17 at 1830 hrs.

The surface hole of 12 1/4" (311mm) was drilled to 1729 ft. (527m) and 9 5/8" (244mm) casing was landed and cemented at 1730.26 ft. (527.39m) KB. Next a 8 3/4" (222mm) hole was drilled to 4751 ft. (1448m) and 7" (178mm) casing was landed and cemented at 4739.12 ft. (1444.50m). A 6 1/8" (155mm) hole completed drilling to a total depth of 5613 ft. (1711m). Total depth was reached 85-03-18.

The objective was to obtain oil or gas production from the Slave Point, Sulpher Point or Keg River formations. The Slave Point had little porosity and no shows to light yellow fluorescence was encountered. The Sulpher Point was not identifiable, and an erosional high completely displaced the Keg River.

No cores were cut and one Drill Stem Test was run after logging to T. D.

This well was plugged and abandoned 85-03-20.

The formations encountered were as follows:

Cretaceous Shale	342.6 m
Bluesky	585 m
Wabamun	585.5 m
Trout River	714.5 m
Kakisa	722.75m
Redknife	764 m
Jean Marie	819 m
Ft. Simpson	824.75m
Twin Falls	981.1 m
Hay River	1117.5 m
Muskwa	1391 m
Slave Point	1462.8 m
Watt Mountain	1519.6 m
PreCambrian	1648.3 m

General Data

Well Name:	Northcor et al Kakisa River F-56
Location:	60° 05′ 26.625" N 117° 55′ 27.604" W
Unique Well Identifier:	300 F56 6010117450
Operator:	Northcor Energy Ltd. #880, 555 - Fourth Avenue S. W. Calgary, Alberta, T2P 3E7
Project Management:	Pajak Land and Offshore Ltd. 1660 Elveden House 717 - 7th Avenue S. W. Calgary, Alberta, T2P 0Z3
Drilling Contractor:	Badger Drilling Ltd. #1180, 700 - Fourth Avenue S. W. Calgary, Alberta, T2P 3J4
Drilling Unit:	Badger Drilling Ltd. Rig #2
Position Keeping:	N/A
Support Craft:	N/A
Drilling Unit Performance:	N/A
Difficulties & Delays:	N/A

Summary of Drilling Operations

Elevation:	797.36m (Grd.) 802.26m (KB)
T. D.:	1711m
Logged Depth:	1710m
Spud Date:	85-02-17 - 1830 hrs.
Drilling Completed:	85-03-19 - 0345 hrs.
Rig Released:	85-03-21 - 1830 hrs.
Well Status:	Abandoned.
Hole Size:	311 mm to 527m 222 mm to 1448m 155 mm to 1711m
Surface Casing:	244mm, 53.57 kg/m, J-55, 8rd, ST&C, New Ipsco casing, 42 jts. landed at 527.39m K.B. 85-02-26. Cemented with 30.4m³ 0-1-0 Class "G" cement with 2% $CaCl_2$, good cement returns to surface. Centralizers installed on jts. 1, 2, 3, 4, and 5. Float collar above jt. #1. 254mm x 21000 kPa x 244mm Crown type CC-22 casing bowl was used.
Intermediate String:	178mm, 34.22 kg/m, J-55, 8rd, LT&C new Ipsco casing, 111 jts. landed at 1444.5m K. 85-03-09. Cement with first stage 5.6m³ 0-1-0 Class "G" with 1% Halad 322. Cemented from 1444 to 1151m. Second stage 3.87m³ 0-1-0 Class "G" with 1% Halad 322. External casing packer at 496m. Cemented between stage collar at 482.90m and 232.9m. Centralizers on jt. 1, 2, 3, 4, 5, 6, 7, and 8. 254mm x 21000 kPa x 244mm Crown type CC-22 casing bowl with automatic slips were used.

Rev.

Summary of Drilling Operations - cont'd

Drilling Fluid: Bentonite - Water system

12 1/4" hole (311mm)	wt(kg/m^3)	vis(s/l)	PV	YP
Max	1160	66	14	10
Min	1070	50	10	7.5

pH approximately 9

8 3/4" hole (222mm)	wt(kg/m^3)	vis(s/l)	PV	YP	WL
Max	1085	62	10	13	16.5
Min	1000	30	8	7	14.2

pH approximately 10

6 1/8" hole (155mm)	wt(kg/m^3)	vis(s/l)	PV	YP	WL
Max	1070	58	12	12	11
Min	1060	41	8	6	8

pH approximately 10.5

No Kicks were encountered.

FLOT: FLOT #1 depth 533 m, fluid density 1000 kg/m^3, applied pressure 5660 KPa, equivalent mud wt. 2083kg/m^3 casing depth 527 m.

FLOT #2 depth 1451 m, fluid density 1070 kg/m^3 applied pressure 11,090 KPa, equivalent mud wt. 1850kg/m^3 last casing depth 1444.5 m.

Summary of Drilling Operations - cont'd

Time Distribution:

	Hours		Hours
Rig up & down	109.50	WOC	15.50
Drilling	373.75	Nipple up	14.25
Reaming	2.75	Test BOP	10.75
Coring	0.00	DST	7.75
Conditioning hole	28.75	Clean to bottom	7.25
Trip	76.75	Lay Down & PU Pipe	19.00
Rig Service & BOP	16.25	Circ. sample	12.25
Repairs	34.00	WO Parts	65.75
Slip & Cut	1.00	Lost Circ.	14.00
Surveys	24.00	WOO	1.75
Logging	8.00		
Run Casing & Cement	30.75		

Abandonment Plugs:

Plug #1 — First stage 1711 - 1611m. Cement with 1.0m^3 H_2O ahead, 2.28m^3 (3 T) Class "G" + 1% Halad 322. Displaced with 5.3m^3 mud.
Second Stage 1611 - 1532m. Cement with 1.0m^3 H_2O ahead, 2.02m^3 (2.65 T) Class "G" + 1% Halad 322. Displace with 5 m^3 mud.

Plug #2 — 1460 - 1430m. Cement with 1.0m^3 H_2O ahead, 1.08m^3 (1.43 T) Class "G" + 1% Halad 322. Displaced with 4.4m^3 mud.

Plug #3 — 10 - 0m. Cement with 1.0m^3 ahead, .35m^3 (.46 T) Class "G" + 1% Halad 322. Displaced with .10m^3 mud.

Downhole Logs

85-03-18	Depth
DISFL	1709 - 1445 m casing shoe
BHCS GR CAL	1689 - 1445 m casing shoe
CNL FDC GR	1689 - 1445 m casing shoe
CNL LDT GR CAL	1710 - 4 m

Other Logs

- mud gas detector
- hot wire filament type
- H_2S Detector

Contact
List

CONTACT LIST

Operator	Contact
Northcor Energy Ltd. #880, 555 - Fourth Avenue S.W. Calgary, Alberta, T2P 3E7 269-5803	John Alston David Sells 249-0219 Gary Bustin 286-5194
Drilling Consultants	**Contact**
Pajak Land & Offshore Ltd. #1660 Elveden House 717 - Seventh Avenue S.W. Calgary, Alberta, T2P 0Z3 264-1197	Terry Dexter 266-4406 (residence) Dan Dexter 282-8390 (residence)
Working through	
Terqua Exploration Management Ltd. #800, 555 - Fourth Avenue S.W. Calgary, Alberta, T2P 3E7 264-8943	Hugh Mogensen 281-0160 Ken Gummo 283-5968
Geological Representatives	**Contact**
Terqua Exploration Management Ltd. #800, 555 - Fourth Avenue S.W. Calgary, Alberta, T2P 3E7 264-8943	Hugh Mogensen 281-0160 John Stuart-Smith 244-1560
Field Geological	**Contact**
Merlin Petroleum Consulting Ltd. 207, 239 - 12th Avenue S. W. Calgary, Alberta, T2R 0G9 234-9555	Chuck Stringer

Contact List - Cont'd

R. C. M. P.	Fort Liard	(403) 770-4221
	Fort Simpson	(403) 695-3111
	Fort Nelson	(604) 774-2777
	Hay River	(403) 874-6555
	High Level	(403) 926-3239
Hospitals	Fort Simpson	(403) 695-2291
	Fort Nelson	(604) 774-6916
	Hay River	(403) 874-6512
	Fort Vermilion	(403) 927-3761
Air Services		
Liard Air Ltd.	Fort Liard	(403) 770-4251
Totem Air	Fort Liard	(403) 770-3331
Simpson Air (1981) Ltd.	Fort Simpson	(403) 695-2505
Wolverine Air Ltd.	Fort Simpson	(403) 695-2263
Buffalo Airways Ltd.	Fort Simpson	(403) 695-2404
Villers	Fort Nelson	(604) 774-2072
Amoco	Fort Liard Gas Plant	JJ3-7282
	Edmonton Office	(403) 420-5511
Safety Boss	Calgary	(403) 261-5075
Boots & Coots	Houston	(713) 931-8884

COGLA - ENGINEERING - PERSONNEL
PHONE LIST

Yellowknife Office	Office Phone	Residence Phone
Switchboard	(403) 920-8175	
Regional Engineer M. D. Thomas	(403) 920-8178	(403) 873-4250
Secretary A. Hicks	(403) 920-8175	(403) 873-4977
Conservation Engineer Kem Singh	(403) 920-8183	(403) 920-2579
Drilling Inspector H. E. Flanders	(403) 920-8177	(403) 873-5675
Drilling Inspector W. F. Nesser	(403) 920-8183	(403) 873-5411
Senior Clerk I. Morris	(403) 920-8121	(403) 873-2547
Clerk P. Knutson	(403) 920-8121	(403) 873-6462
Clerk R. Pedersen	(403) 920-8179	(403) 873-2117
Inuvik Office		
Drilling Inspector B. Marsh	(403) 979-3361	

Mobiles - Yellowknife Channel - DIAL 0

G.M.C. Suburban - YJ3-6827

Mobiles - Inuvik Channel - DIAL 0

G.M.C Jimmy - YJ3-6767

Telex Number -034-45570

Telecopier No. - 873-8707 - 6 minutes
(Automatic 485) - 920-8179 - 4 or 6 minutes

INDIAN & NORTHERN AFFAIRS - 24 HOUR SPILL LINES
Telephone - (403) 920-8130
Telex - 034-45623

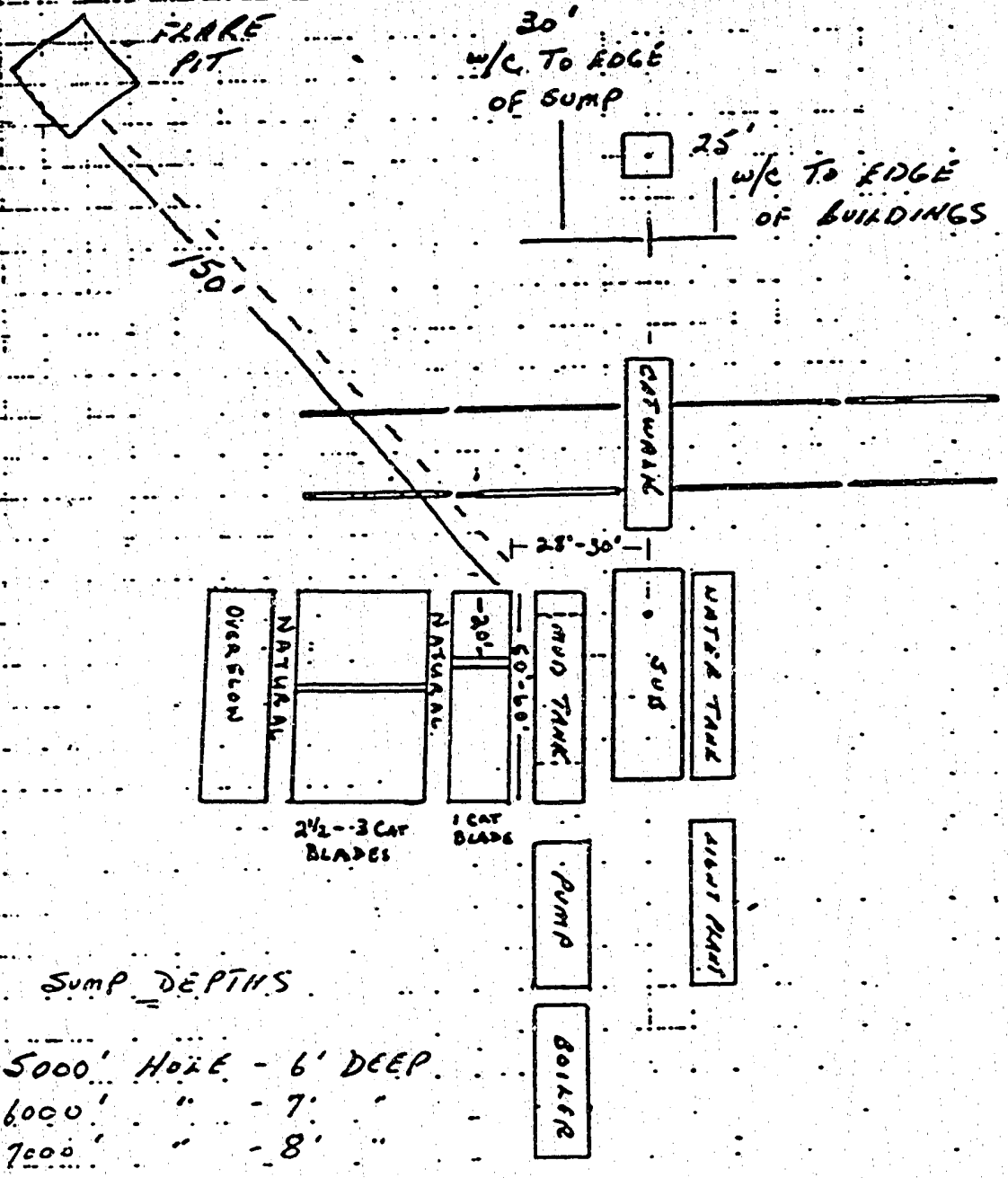
Services List

1.	Mud	Pinnacle Fluids	Calgary	403-233-2500
2.	Logging	Schlumberger	Grand Praire	403-539-5060
3.	Cementing	Halliburton	High Level	403-926-3718
4.	Casing	Dominion	Edmonton	403-437-0240
		Peace Trailer Industries	Peace River	403-624-3220
5.	Wellhead	Stream-Flo	Edmonton	403-468-6789
6.	Testing	Quinn	Calgary	403-290-1704
7.	Shock Sub	Lee Mason	Edmonton	403-467-9320
8.	First Aid Service	Royal	Ft. St. John	604-785-5855
9.	Air Service Crew Change -	North American	Edmonton	403-451-9100
10.	Wellsite Units	Sell-Can	Drayton Valley	403-542-4105
11.	Sample Boy	Petrocraft	Calgary	403-272-9590

Drilling Rig Inventory

BADGER DRILLING LTD. SUITE 1180 700-4TH AVENUE S.W.
CALGARY. ALBERTA T2P 3J4 269-8534

350' SQUARE LOCATION



Sump DEPTHS

5000' Hole - 6' DEEP
6000' " - 7' "
7000' " - 8' "

SCALE 1" = 10'

RIG #2
LOCATION LAYOUT

BADGER DRILLING LTD.

EQUIPMENT LIST - RIG # 2

Drawworks - National 370B powered by 2 Cats 3406's (600 HP continuous)
Air Compressors - Hydraulic Winch - 8,000' Survey Line -

Table - 17 1/2" National Rotary Table

Substructure - 14' wide x 44' long x 12' high with Walkway Wings extending floor width to 19'

Mast - 105' Jackknife Mast, 420,000# Gross Nominal
280,000# w/8 line
250,000# w/6 line

1 - Combination Building, 9'6" x 10.5' high x 45' to house:
Water tank - 480 Barrels
Fuel Tank - 3,100 Gallons
Small Toolhouse
Telescoping Dog House into Water Tank, 8'8" x 17'.

1 - Combination Building 9'6 x 45' x 8' to house:
Lite Plant - 125 KW A.C. Generator driven by Cat D-3306T
Change House with 14 lockers
Accumulator House - 60 Gallon, 4 Station remote control Northern Hydrauiic

1 - Mud Tank - 300 Barrel Capacity with Sand Trap and 3 compartments (10' x 48' x 6') with Link Belt NRM Shaker. End of Tank has Manifold House housing an Oct Manifold with Oct chokes - 3" center line and 2" wings. Other end of Tank houses Mixing Hopper and Suction Lines. and 1 - 10" Wemclone Desander plus 8 cone desilter.

1 - Mud Pump House (12' x 33" x 9'4") to house Emsco D375 (7" x 14") driven by Cat D353TA - 300 HP Continuous and 330 HP Intermittent.

4" FH Pipe - 7000'

20 - 6 1/4" x 2 1/4" x 31' Collars

1 - National 47 Swivel (200 Ton)

1 - Set - Web Wilson Type "B" Tongs

1 - Set - McKisick Block - 8 lines

1 - BJ Hook

1 - 1 - 4 1/4" x 41' Lone Star Kelly

1 - 5000' - 1 1/8 Drilling Line

1 - 8" Shaffer - 900 Series - 3,000 PSI Spherical

1 - 8" Shaffer LWP Blind Rams with 2 outlets on side

1 - 8" Shaffer LWP Pipe Rams with no outlets

1 - Spool with outlets to fit between Rams

2 - Pen Recorder

8° Totco Drift Indicator

Elevator

1 - 4" 18° drill pipe

1 - 5 3/4 Zip Lift

1 - 8 5/8 Csg. Elevator

Slip

4" varco SDU

5 1/2 x 7 BasshRoss

8 5/8 Varco CMS

Rams

1 - Set 4"

1 - Set CSO Blind Rams

1 - CAMP PLANT & PROPANE TANK 1000 GAL.

50 KW Driven by Cat D3304T

4 Unit side by side camp (Al Fab)

Well Data -
Summary Geolog

NORTHCOR ENERGY LTD.

NORTHCOR ET AL KAKISA RIVER F-56

CO-ORDINATES: 117° 55' 27.604"W
60° 05' 26.625"N

Geologist: Chuck Stringer

Merlin Petroleum Services Ltd.
#207, 239 - 12th Avenue S.W.
Calgary, Alberta T2R 0G9
(403) 234-9555

Reported to: Mr. John Stuart-Smith

NORTHCOR ET AL KAKISA RIVER F-56

WELL DATA SUMMARY

Company:	Northcor Energy Ltd.
Well Name:	Northcor et al Kakisa River F-56
Co-ordinates:	117° 55' 27.604"W 60° 05' 26.625"N
Elevations:	Ground : 797.36m Kelly Bushing: 802.26m
Contractor:	Badger Drilling, Rig #2
Spud Date:	(1830 hrs) February 17, 1985, Licence #171
Hole Size:	Surface : 311mm for 244mm casing, set at 527.39m K.B. Intermediate: 222mm for 178mm casing, set at 1445.38m K.B. Main : 156mm
Total Depth:	1711.0m (driller); (1200hrs) March 18, 1985 1710m (logger)
Cores:	None
Drill Stem Tests:	None on penetration (One DST after logging) DST NO. 1: 1551m - 1557m (Slave Point)
Open Hole Logs:	Schlumberger BHCS-GR-CAL - 1710m to Intermediate Casing DILL-SP - 1710m to Intermediate Casing CNL-LTD-GR-CAL - 1710m to Surface
Sampled Interval:	30m to 1711.60m (5 meter intervals) COGLA: 30m to 1711.60m (plastic bottles/ 10m samples) 30m to 1711.60m (plastic lined bags/ 5m samples)
Status:	Plugged and abandoned

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WELL SUMMARY

Northcor et al Kakisa River F-56 was drilled for the purpose to tenting a seismic reflected high in the Slave Point, Sulphur Point and Keg River formations. The relief was believed to be due to Keg River reef development. It was felt that the Slave Point high would be 25m above regional. Upon drilling it was determined that the relief did indeed exist with 19.5m of positive relief in the Slave Point formation. However, porosity development within the formation was not sufficient. The Sulphur Point formation came in below regional due to a very thick sequence of Muskeg claystone. Thus, porosity development within this formation was wet. A 97.7m erosional relief of Precambrian meta sediments was penetrated at 1648.6m. This erosional high completely displaced the Keg River formation. On March 20, 1985, Northcor et al Kakisa River F-56 was plugged and abandoned.

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GEOLOGICAL MARKERS

K.B. ELEVATION: 802.26m

Formation	Prognosis Depth	Prognosis Subsea	Sample Depth	Sample Subsea	Log Depth	Log Subsea
Cretaceous	208	+594	460	+342.3	459	+343.3
Bluesky	-	-	586	+216.3	585	+217.3
Wabamun	583	+219	586.5	+215.8	585.5	+216.8
Trout River	708	+94	711	+91.3	714.5	+87.8
Kakisa	716	+86	720	+82.3	722.75	+79.51
Redknife	757	+45	762	+40.3	764	+38.3
Jean Marie	811	-9	819	-16.7	819	-16.7
Fort Simpson	817	-15	825	-22.7	824.75	-22.49
Twin Falls	957	-155	983	-180.7	981.1	-178.8
Hay River	1097	-295	1122	-319.7	1117.5	-315.2
Muskwa	1377	-575	1386.5	-584.2	1391	-588.7
Slave Point	1457	-655	1465	-662.7	1462.8	-660.5
Watt Mountain	1513	-711	1518	-715.7	1519.6	-717.3
Sulphur Point	1515	-713	Not picked		1547.5	-745.2
Muskeg	1542	-740	Not picked		-	-
Keg River	1647	-845	Not picked		-	-
Precambrian	1745	-943	1650	-847.7	1648.3	-846.0
TOTAL DEPTH	1754	-952	1711	-908.7	1710	-907.7

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BIT RECORD

Bit No.	Make	Type	Size	Jets	Depth In	Depth Out	Total Hours	FOB (daN)	RPM	PP (kPa)	Condition T : B : G
1A	HW	X3A	311	Open	0	104	16	5,000-6,000	70-120	1800	6 : 3 : I
2A	HW	X1G	311	16x3	104	204	13 3/4	2,000-5,000	110-120	2200	5 : 3 : I
3A	HW	XDV	311	12.7x3	204	310	19 1/4	2,000-5,000	120	2600	4 : 2 : I
4A	HW	XDV	311	12.7x3	310	448	24	3,000-5,000	80-140	2600	3 : 3 : I
5A	HW	X3A	311	10.3,10.3, 11.9	448	527	9	2,000-3,000	80-120	4000	3 : 2 : I
1	HW	J3	222	Open	527	772	35 1/4	10,000	60-80	5800	4 : 4 : I
2	HW	J11	222	12.7x3	772	1331	93 3/4	12,000	70	2000	3 : 6 : I
3	HW	J22	222	11.1,11.9, 11.9	1331	1448	30 1/2	12,000	85	2900	2 : 3 : I
4	-	J4	156	11.1x3	1448	1451	2 1/4	4,000-5,000	55-60	6500	4 : 3 : I
5	-	F3	-	Open	1451	1542	32 1/2	9,000	60-80	5200	
6	-	F3	156	Open	1542						

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FORMATION SUMMARY

CRETACEOUS SHALES (342.6m)

The Cretaceous in this location is a medium to dark grey shale. The lower section of the formation becomes fossiliferous with abundant scales and fish remains. Near the base the shale becomes interbedded with light grey kaolinite.

BLUESKY (585m; .5m thick)

At the base of the kaolinite-shales lies one half meter of light grey glauconite rich sandstone that has light yellow fluorescence and weakly streaming cut.

WABAMUN (585.5 - 714.5m)

The Wabamun consists of white to light brown limestone unconformably lying beneath the Bluesky. Total loss of circulation occurred at 594 and 627m. Total circulation was not accomplished until surface casing was set in the Muskwa formation. The formation shows oil stain and cut throughout, however, there was little gas indicated by the hot wire Upon logging the formation was wet. The lower section became laminated to thin bedded with light grey calcareous shale.

TROUT RIVER (714.5 - 722.75m)

The Trout River formation consists of conformable, light yellow-grey limestones and light grey to light blue-grey bentonite. There is some poor porosity with weak oil shows.

KAKISA (722.75 - 764m)

The Kakisa consists of limestones that are occasionally interbedded with light grey to light brown dolomite and thin bedded to laminated light grey shale. There is very little porosity development with no shows to weak oil shows.

REDKNIFE (764 - 819m)

The formation top occurs when the limestones become silty. Occasionally the silt becomes prevalent enough to be classified as a siltstone. There is very little porosity development within the Redknife formation. There is no live oil shows within the formation.

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JEAN MARIE (819 - 824.75m)

The Jean Marie formation is made up of light yellow-grey limestone that is more open water than the Redknife as indicated by brachiopod fossils. The Jean Marie at Kakisa River has fair porosity with dead oil shows.

FORT SIMPSON (824.75 - 981.1m)

The Fort Simpson at this location is carbonate at the top becoming increasingly shaley with depth until medium grey-green, the green and occasionally light brown shales develop. Sandstones occur in the mid portion of the formation. There were no oil shows and only poor sandstone porosity developed within the formation.

TWIN FALLS (981.1 - 1117.5m)

The Twin Falls formation is primarily a light grey calcareous siltstone occasionally interbedded with silty light grey limestones in the upper portion 981.1 - 1035m. The lower section consists of light grey silty pyritic limestones, abundant in brachiopod, ostracod, crinoid and coral fossils. From 1073m to the base of the formation at 1117.5m commonly is interbedded to laminated with light to medium green shales. Porosity development within the formation is nonexistant except for a few thin zones within 27m of the base. There are no live shows within the formation.

HAY RIVER (1117.5 - 1391m)

The Hay River formation is a silty limestone that becomes so silty by 1133m that is is believed by the author to be a light grey siltstone. From 1243 to 1391m the formation changes to a light to medium grey shale with a green hue, is silty and calcareous, occasionally to interbedded with light grey siltstone. From 1302 to 1322m the shale changes from a light to medium grey to a light grey-brown to light grey-green.

MUSKWA (1391 - 1462.8m)

The Muskwa formation is primarily a shale formation with the occasional laminated to thin bedded siltstone. The shales are light to dark grey to medium brown. From 1445 to 1448m is a dark grey to black shale with the shales below being calcareous laminated with white to light grey limestone. The transition between the Muskwa and Slave Point is gradational.

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SLAVE POINT (1462.8 - 1519.6m)

The Slave Point at this location came as expected from siesmic data, high above regional. However, the limestones have little porosity development, typically less than 4%. The porosity has no shows to light yellow fluorescence and weakly streaming cut.

WATT MOUNTAIN (1519.6m)

The Watt Mountain formation top is a red-brown to light green claystone. Regionally the formation is only a few meters thick when it gives way to the carbonates of the Sulphur Point. But, at Northcor et al Kakisa River F-56 the claystone continues until 1555m. Below the Watt Mountain to Precambrian the well does not correlate with any offset well material. Tops were not correlatable.

PRECAMBRIAN (1648.3m to T.D.)

In surrounding wells the basement rock was reported to be pink granite. At this location however the basement rock is a sequence of meta sediment made up of green sandstone, green to red-brown claystones, white chert and traces of dolomite. The upper sandstones are extremely abundant in pyrite and show pyrite filled conjucate fractures. The dolomites have porosity but no live shows.

Sample
Description

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SAMPLE DESCRIPTIONS

30 - 240	Glacial drift: fine grained to boulders, primarily of igneous origin, but also sedimentary clasts, clay matrix in part, unconsolidated, nonsorted to occasional sized sands of a poorly sorted constituency, poorly indurated, no apparent porosity, no shows.
240 - 257	Clay interbedded with Glacial drift. Clay: medium grey, bentonitic, abundant nonfossilized roots, poorly indurated, presumablely developed between glacial occurances. Glacial drift: as above, 30 - 240m.
257 - 391	Glacial drift: as above, 30 - 240m.
391 - 460	Clay occasionally interbedded with conglomerate. Clay: medium grey, bentonitic, abundant nonfossilized roots, becoming sandy downwards, grading to shale, poorly indurated, pre-glacial. Conglomerate: pebbles to fine sand, dominantly of igneous origin, high percentage of shale fragments towards base; grading to clay.
460 - 514	Shale: medium grey to occasionally dark grey, platy to blocky, fissile in part, slightly silty, slightly to bentonitic, carbonaceous specks in part, very poorly indurated.
514 - 520	Shale and laminated siltstone. Shale: as above, 460 - 514m. Siltstone: laminated, dark grey, transluscent, subangular quartz grains, disseminated pyrite, argillaceous, slightly calcareous, moderately indurated.
520 - 527	Shale and laminated siltstone. Shale: medium grey to occasionally dark grey, platy, fissile, disseminated pyrite, slightly to silty, micromicaceous, trace pyrite laminae, noncalcareous, moderately indurated. Siltstone: as above, 514 - 520m.

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SAMPLE DESCRIPTIONS

527 - 534	Shale: light grey, blocky to platy, micro-micaceous, muscovite, carbonaceous specks, disseminated pyrite, slightly silty, poorly indurated, trace fish fossils.
534 - 543	Shale: dark grey to black, platy to blocky, fissile in part, carbonaceous specks, disseminated pyrite, slightly calcareous, slightly silty, moderately indurated, trace massive pyrite, carbonaceous fossil fragments.
543 - 561	Shale: medium to dark grey, platy to blocky, micromicaceous, muscovite, abundant fish scales and fossils, slightly to noncalcareous, silty to slightly silty, disseminated pyrite, moderately indurated.
561 - 572	Shale and laminated siltstone. Shale: medium grey, blocky to platy, trace micromicaceous, muscovite, abundant fish scales, occasional fish fossil, fissile in part, nonsilty to occasional silty laminae, poorly indurated. Siltstone: laminated, dark grey-brown, translucent frosted subangular quartz grains, argillaceous, slightly calcareous, disseminated pyrite, moderately indurated.
572 - 580.5	Shale and kaolinite. Shale: as above but has become fissile due to abundant fish scales. Kaolinite: light grey, calcareous, biotite, grey argillaceous material in part, poorly indurated.
580.5 - 584	Shale: dark grey-brown, platy to blocky, micro-micaceous, bright lustre, fissile in part, fish scales and reamins, white kaolin specks, moderately indurated, disseminated pyrite, silty in part.
584 - 585.5	Shale: as above, 580m, but with abundant glauconite and light grey occasionally.

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SAMPLE DESCRIPTIONS

585.5 - 586	Sandstone: light grey, coarse grained, occasionally pebbles, transparent lightly frosted quartz, rounded, glauconite abundantly occuring, trace black chert, unconsolidated to siliceous cement, massive pyrite, argillaceous in part, grading to shale, poorly to well indurated, no apparent to poor porosity, light yellow fluorescence, weakly streaming cut.
586 - 590	Limestone: white to light brown, cryptocrystalline, oolitic, crinoid, sparry calcite, with spar fossil fragments, vuggy, trace pyrobitumen on vugs, well indurated, no apparent to good vuggy porosity, trace spotty fluorescence with light yellow weakly streaming cut.
590 - 602	Samples missing due to lost circulation.
602 - 613	Limestone with occasional laminated to thin bedded dolomite. Limestone: white to light brown, cryptocrystalline, chalky lustre, sparry calcite, dolomite rhombs, occasionally grading to dolomite, trace vugs, no apparent to poor vuggy porosity, no shows. Dolomite: light to medium brown, very finely crystalline, calcareous, rhombic, poorly indurated, poor intercrystalline porosity, no shows.
613 - 619	Limestone and thin bedded bentonite. Limestone: as above, 602 - 613m. Bentonite: light grey-green, blocky, black, mineral specks, disseminated pyrite, noncalcareous, poorly indurated.
619 - 625	Limestone: white to cream, cryptocrystalline, dull chalky lustre, oolitic, massive pyrite to disseminated pyrite, occasional micrite oolite and fossil fragments, micritic clasts occasionally, occasional fossil pyritization, dolomite rhombs, vuggy, calcite crystal lined, moderately indurated, no apparent porosity to fair vuggy porosity, no shows.

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SAMPLE DESCRIPTIONS

625 - 665 Samples missing due to lost circulation.

665 - 674 Limestone and occasional laminated shale.

Limestone: light yellow-grey to medium brown, cryptocrystalline to very finely crystalline, spar occasional traces of micritic fossil fragments, dolomitic, occasionally grading to dolomite, occasionally algae structure is evident, argillaceous in part, anhydritic in part, disseminated pyrite in part, trace dark argillaceous specks, oil on acid surface when rock is dissolved in HCL, vuggy, crystal lined, brown stain on vugs, no apparent to poor intercrystalline and vuggy porosity, no shows to bright light yellow fluorescence and fair streaming cut.

Shale: medium grey, blocky, abundant pyrite, grading to limestone, moderately indurated.

674 - 696 Limestone and thin bedded dolomite.

Limestone: as above, 665 - 674m.

Dolomite: medium brown, very finely crystalline, calcareous, argillaceous in part, carbonaceous specks, poorly indurated, poor intercrystalline porosity, bright light yellow fluorescence, fair streaming cut.

695 - 711 Limestone and occasional thin bedded shale.

Limestone: light yellow-grey to medium grey, cryptocrystalline to microcrystalline, spar, disseminated pyrite, trace dark mineral specks, algae structure evident occasionally, slightly silty, poorly to moderately indurated, no apparent porosity, to poor vuggy and good intercrystalline porosity, light yellow fluorescence, weakly streaming cut.

Shale: light grey, blocky, micromicaceous, very calcareous grading to limestone, disseminated pyrite, poorly indurated.

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SAMPLE DESCRIPTIONS

711 - 724

Limestone and bentonite.

Limestone: light yellow-grey, cryptocrystalline to microcrystalline, slightly dolomitic, crinoid, oolie fossils, slightly silty, vuggy, with medium brown stain, moderately indurated, poor vuggy porosity to no apparent porosity, light yellow fluorescence, weakly streaming cut.

Bentonite: light grey to light blue-grey, disseminated pyrite, poorly indurated.

724 - 735

Limestone occasionally laminated with dolomite and bentonite.

Limestone: light yellow-grey, cryptocrystalline to microcrystalline, spar with occasional slightly micritic fossil fragments, oolites, dolomitic with very finely crystalline dolomite rhombs, grading to dolomite occasionally, oolite ghosts downwards, moderately indurated, spotted medium brown stain on vugs, no apparent to poor vuggy porosity, light yellow fluorescence, good streaming cut.

Dolomite: light grey, very fine to finely crystalline, calcareous, rhombic crystals, disseminated pyrite, moderately indurated, no apparent porosity, no shows.

Bentonite: as above, 711 - 724m.

735 - 752

Limestone with occasional dolomite.

Limestone: as above but, also white, cryptocrystalline, chalky lustre, trace sandy, trace coral fossils, silty, dolomitic, trace pyrobitumen, no apparent porosity to poor vuggy porosity, spotted stain, bright light yellow fluorescence, fair streaming cut.

Dolomite: light grey to light brown, very fine to fine crystalline, calcareous, rhombic crystals, disseminated pyrite, moderately indurated, poor intercrystalline porosity, no shows to light yellow fluorescence, fair streaming cut.

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SAMPLE DESCRIPTIONS

752 - 764

Limestone with thin bedded dolomite and shale occasionally.

Limestone: as above, but more dolomitic, occasional fecal pellets, no apparent porosity to poor vuggy porosity, questionable stain to spotted brown stain with light yellow fluorescence and weakly streaming cut.

Dolomite: as above, 735 - 752m.

Shale: light grey, blocky, carbonaceous specks, calcareous, silty, massive pyrite crystals, moderately indurated.

764 - 773

Limestone with trace shale.

Limestone: light yellow-grey, cryptocrystalline, bright creamy lustre, slightly to moderately silty, black chert, kaolin grains, micromicaceous, muscovite, vuggy, pyrobitumen and pyrite lined, well indurated, trace vuggy porosity, no fluorescence, no cut, questionable stain.

Shale: dark grey-green, platy, dull waxy lustre, disseminated pyrite, silty, non-calcareous, poorly indurated.

773 - 791

Limestone grading to siltstone.

Limestone: as above, 765m, but very silty, grading to siltstone occasionally, dark mineral specks, trace red chert.

Siltstone: light grey to white, transparent and transluscent quartz, calcareous, trace glauconite, trace black chert, well sorted, well indurated.

791 - 798

Limestone and siltstone.

Limestone: as above, but there are occasional beds of limestone that are white, chalky lustre, slightly silty, moderately indurated, spar, no apparent porosity, no shows, also limestone is sandy.

Siltstone: as above, 773 - 791m.

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SAMPLE DESCRIPTIONS

798 - 814

Limestone with laminated to thin bedded siltstone.

Limestone: as above, 775m, but green argillaceous laminae and stylolites.

Siltstone: as above, 773 - 791m.

814 - 819

Limestone with thin bedded shale.

Limestone: as above, 791 - 798m.

Shale: medium grey, blocky, noncalcareous, abundant pyrite (50%), well indurated.

819 - 825

Limestone with a trace of thin bedded shale.

Limestone: light yellow-grey, cryptocrystalline, moderately to silty, crinoid and brachiopod, oolids, pellet fossils, black chert, muscovite mica, red chert, disseminated pyrite, no apparent porosity, no shows to medium brown dead oil stain.

Shale: medium green, blocky, slightly calcareous, dull waxy lustre, disseminated pyrite, poorly indurated; grading to siltstone and limestone.

825 - 838

Limestone interbedded with siltstone, sandstone and shale.

Limestone: as above, 819 - 825m but no apparent porosity or shows.

Siltstone: light grey to light green, frosted transparent and transluscent quartz, black chert, muscovite mica, disseminated pyrite, moderately indurated, calcareous.

Sandstone: light grey, very fine grained, frosted transparent quartz, angular to subangular, black chert, disseminated pyrite, trace muscovite mica, trace kaolin grains, well sorted, calcareous cement, poor porosity, no shows.

Shale: as above, 819 - 825m.

838 - 853

Interbedded limestone, shale and laminated siltstone.

Limestone: as above, 825 - 838m.

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SAMPLE DESCRIPTIONS

838 - 853 (Cont'd)

Shale: medium grey-green, blocky, dull lustre, calcareous to moderately calcareous, nonsilty to silty, micromicaceous, muscovite, poorly indurated.

Siltstone: as above, 825 - 838m.

853 - 895

Interbedded limestone, siltstone and shale.

Limestone: light grey, cryptocrystalline, silty to occasionally sandy, trace dark chert, kaolin grains, disseminated pyrite, muscovite mica, slight white argillaceous matrix, moderately indurated, no apparent porosity to trace vuggy porosity, no shows to dead oil stain.

Siltstone: light grey, frosted transparent quartz, dark grey to black chert, white kaolin grains, micaceous, muscovite, calcareous, well sorted, moderately indurated.

Shale: medium grey-green to green, to light brown, platy, dull waxy lustre, carbonaceous specks, silty, calcareous to slightly calcareous, disseminated pyrite, micromicaceous, muscovite, poorly indurated.

895 - 915

Interbedded sandstone, shale and occasionally limestone.

Sandstone: light grey, very fine grained, subangular, frosted transparent quartz, kaolin grains, black chert, micaceous, muscovite, bimodal with silt, well sorted, trace argillaceous matrix, poor porosity, no shows.

Shale: as above, 853 - 895m.

Limestone: as above, 825 - 838m.

915 - 943

Shale interbedded with sandstone and trace limestone.

Shale: light to medium green, light to medium red-brown and grey-brown, platy to blocky, nonsilty to silty and sandy, disseminated pyrite, bentonitic in part, micaceous, muscovite, calcareous to slightly calcareous, poorly indurated.

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SAMPLE DESCRIPTIONS

915 - 943 (Cont'd)

Sandstone: light grey, very fine grained, subangular, frosted transparent quartz, kaolin grains, black chert, micaceous, muscovite and occasionally biotite, biodal with silt, well sorted, moderately indurated, no apparent porosity, no shows.

Limestone: light grey to light yellow-grey, cryptocrystalline, silty to nonsilty, (yellow-grey), trace dark chert, micaceous, muscovite, spar, fossiliferous, crinoids, moderately indurated, no apparent porosity, no shows.

943 - 962

Shale occasionally with interbedded siltstone.

Shale: light grey-green to light grey, platy, dull lustre, calcareous, disseminated pyrite, slightly silty, micromicaceous, muscovite, poorly indurated.

Siltstone: light grey, frosted transparent quartz, dark chert, white kaolin grains, calcareous, well sorted, moderately indurated.

962 - 972

Shale with occasional siltstone.

Shale: medium green to grey-brown to light grey, calcareous, bentonitic, disseminated pyrite, micromicaceous, muscovite, slightly silty, poorly indurated.

Siltstone: as above, 943 - 962m.

972 - 983.5

Shale with interbedded sandstone and shale.

Shale: as above, 962 - 972m.

Sandstone: light grey, very fine grained, subangular frosted quartz, trace dark chert, muscovite mica, trace glauconite, calcareous and siliceous cement, well sorted, moderately indurated, poor porosity, no shows.

Limestone: light yellow-grey, cryptocrystalline, silty in part, trace mineral specks, micromicaceous, biotite, moderately indurated, no apparent porosity, no shows.

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SAMPLE DESCRIPTIONS

983.5 - 987

Limestone and shale.

Limestone: as above, but also altered limonitic crinoid fossils.

Shale: as above, 962 - 972m.

987 - 1015

Siltstone occasionally interbedded with limestone and shale.

Siltstone: light grey, frosted transparent quartz, argillaceous in part, subrounded black chert, white kaolinite grains, muscovite mica, calcareous and siliceous cement, very well sorted, moderately indurated, poor porosity, no shows.

Limestone: as above, 983.5 - 987m.

Shale: as above, 962 - 972m.

1015 - 1027

Interbedded limestone, siltstone and shale.

Limestone: light grey, cryptocrystalline, silty, slightly argillaceous in part, massive pyrite in part, pyritized fossil fragments, moderately indurated, no apparent porosity, no shows.

Siltstone: as above, 987 - 1015m.

Shale: as above, 962 - 972m.

1027 - 1035

Interbedded siltstone, shale, sandstone, and limestone.

Siltstone: as above, 987 - 1015m.

Shale: as above, 962 - 972m.

Sandstone: as above, 972 - 983.5m.

Limestone: as above, but with shale clasts.

1035 - 1047

Limestone occasionally with shale and siltstone.

Limestone: light to medium grey, cryptocrystalline to microcrystalline, silty, disseminated pyrite, spar, fossiliferous, crinoid, brachiopods, micritic Ostracods, trace mineral specks, muscovite mica, moderately to well indurated, no apparent porosity, no shows.

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SAMPLE DESCRIPTIONS

1035 - 1047 (Cont'd)	Shale: as above, 962 - 972m.
	Siltstone: as above, 987 - 1015m.
1047 - 1055	Limestone: as above, pyrite laminae also.
1055 - 1067	Limestone interbedded with siltstone and shale.
	Limestone: light to medium grey, cryptocrystalline, spar, silty, dark mineral specks, disseminated pyrite in part, muscovite and clorite mica, Crinoid and Ostracod fossils, moderately indurated, no apparent porosity, no shows; occasionally grading to siltstone.
	Siltstone: as above, 987 - 1015m.
	Shale: as above, 962 - 972m.
1067 - 1070	Limestone: white to light grey, cryptocrystalline, chalky to occasional waxy lustre argillaceous in part, silty, disseminated pyrite, muscovite mica, fossiliferous, Ostracod, Crinoid, Brachiopod, Coral, occasional pyrite laminae, moderately indurated, no apparent porosity, no shows.
1070 - 1080	Limestone: medium grey, cryptocrystalline, slightly to moderately silty, argillaceous in part, micaceous, muscovite, abundant Crinoid and Gastrapod fossils, abundant massive pyrite, moderately indurated, no apparent porosity, no shows.
1080 - 1088	Shale and interbedded limestone.
	Shale: light to medium green to light grey, calcareous, bentonitic in part, disseminated pyrite, micromicaceous, muscovite, slightly silty, poorly indurated.
	Limestone: as above, 1070 - 1080m.
1088 - 1097	Limestone with laminated shale.
	Limestone: light yellow-grey to light grey, cryptocrystalline, dark mineral specks, slightly silty, pyrite laminae, muscovite mica, argillaceous, shale laminae, Crinoid and Ostracod fossils, finely disseminated pyrite, moderately indurated, no apparent porosity to occasional vuggy porosity, no shows.

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SAMPLE DESCRIPTIONS

1088 - 1097 (Cont'd)	Shale: as above, 1080 - 1088m.
1097 - 1105	Limestone occasionally laminated with shale.
	Limestone: as above, 1088m, but no shale laminae, fossils include Brachiopods and Coral.
	Shale: as above, 1080 - 1088m.
1105 - 1110	Interbedded limestone, shale and siltstone.
	Limestone: as above, 1088m, but trace dead oil in vuggy porosity.
	Shale: as above, 1080 - 1088m.
	Siltstone: as above, 987 - 1015m.
1110 - 1116	Limestone interbedded by shale.
	Limestone: light grey, cryptocrystalline, silty, occasionally sandy, dark microcrystalline mineral specks, slightly argillaceous, finely disseminated pyrite, muscovite mica, moderately indurated, Crinoid and Brachiopod fossils in part, no apparent porosity, no shows.
	Shale: light green to light grey, platy, moderately to calcareous, waxy lustre, micromicaceous, muscovite, moderately silty, poorly indurated.
1116 - 1133	Limestone and laminated siltstone.
	Limestone: light yellow-grey to light grey, cryptocrystalline to microcrystalline, fossiliferous, Brachiopod, Crinoid and Ostracod occasionally, micaceous, muscovite, slightly argillaceous, moderately silty, moderately indurated, no apparent porosity, no shows.
	Siltstone: as above, 987 - 1015m.
1133 - 1149	Siltstone occasionally laminated with limestone and shale.
	Siltstone: light grey, transluscent frosted quartz, kaolin grains, muscovite mica, minor dark chert, fossil fragments, Crinoid, Ostracod, moderately indurated, calcareous, well sorted.

NORTHCOR ET AL KAKISA RIVER F-56

SAMPLE DESCRIPTIONS

1133 - 1149 (Cont'd)

Limestone: light yellow-grey, cryptocrystalline, silty to slightly silty, moderately indurated, laminated to thin bedded, grading to siltstone, no apparent porosity, no shows.

Shale: as above, 1110 - 1116m.

1149 - 1159

Siltstone laminated with shale and limestone.

Siltstone: as above, 1133 - 1149m.

Shale: grey-green to light grey to light brown, waxy lustre, laminated, slightly silty, calcareous, poorly indurated.

Limestone: as above, 1133 - 1149m.

1159 - 1170

Siltstone, laminated shale and limestone.

Siltstone: light grey, frosted transparent quartz, subangular, black chert, occasional pyrite, micaceous, muscovite, calcareous, argillaceous in part, grading to shale, poorly indurated.

Shale: light grey, blocky, waxy lustre, silty grading to siltstone, micromicaceous, muscovite, calcareous, poorly indurated.

Limestone: as above, 1133 - 1149m.

1170 - 1180

Siltstone occasionally laminated with limestone and shale.

Siltstone: as above, 1160m, but increasingly argillaceous, increase in shale thin bedded and laminated.

Limestone: light grey, cryptocrystalline, moderately silty, thin bedded, trace black chert, muscovite mica, spar, disseminated pyrite, slightly argillaceous, moderately indurated, no apparent porosity, no shows.

Shale: as above, 1159 - 1170m.

NORTHCOR ET AL KAKISA RIVER F-56

SAMPLE DESCRIPTIONS

1180 - 1200 — Siltstone with occasional limestone.

Siltstone: as above, but also light yellow-brown, grading to medium yellow-brown shale, transparent frosted quartz, trace black chert, muscovite mica, calcareous, argillaceous, poorly to moderately indurated.

Limestone: light yellow-brown, cryptocrystalline, argillaceous, slightly silty, slightly micaceous, muscovite, trace white kaolin grains, moderately indurated, no apparent porosity, no shows.

1200 - 1205 — Siltstone with thin bedded limestone.

Siltstone: as above, 1180 - 1200m.

Limestone: white to light grey with green hue, frosted transparent quartz, subangular to subrounded, trace black chert, trace white kaolinite grains, abundant muscovite mica, argillaceous in part, grading to shale, calcareous, well sorted, moderately indurated.

1205 - 1243 — Siltstone laminated by limestone and shale.

Siltstone: as above, 1180 - 1200m.

Limestone: light yellow-brown, cryptocrystalline, white argillaceous matrix, slightly silty, micaceous, muscovite, trace vuggy, clear calcite crystal lined, moderately indurated, no apparent to poor vuggy porosity, no shows.

Shale: light grey, green hue, blocky to platy, moderately calcareous, micaceous, muscovite, trace dark specks, poorly indurated.

1243 - 1267 — Interbedded by shale and siltstone.

Shale: light to medium grey, green hue, blocky, calcareous, silty, micaceous, muscovite, poorly indurated.

Siltstone: as above, 1180 - 1200m.

NORTHCOR ET AL KAKISA RIVER F-56

SAMPLE DESCRIPTIONS

1267 - 1271 — Siltstone and laminated limestone.

Siltstone: as above, 1180 - 1200m.

Limestone: light yellow-grey, cryptocrystalline spar, trace Oolites, trace muscovite, trace silty, laminated to thin bedded, moderately indurated, no apparent porosity, no shows.

1271 - 1284 — Interbedded shale and siltstone.

Shale: as above, 1243 - 1267m.

Siltstone: as above, 1267 - 1271m.

1284 - 1285 — Sandstone: light grey, very fine grained, subangular, frosted transparent quartz, dark brown to black chert, disseminated pyrite, abundant muscovite mica, argillaceous, calcareous, moderately sorted, poor porosity, no shows.

1285 - 1302 — Shale laminated by siltstone.

Shale: light to medium grey, blocky to platy, moderately silty, very calcareous, micromicaceous, muscovite, poorly indurated.

Siltstone: as above, 1267 - 1271m.

1302 - 1314 — Shale: light grey-green to light grey-brown, platy to occasional blocky, bentonitic in part, moderately to very calcareous, fissile in part, dull waxy lustre to bright lustre, Crinoid fossils, abundant muscovite microscopic mica, dark argillaceous laminae, poorly indurated.

1314 - 1324 — Interbedded shale and siltstone.

Shale: light grey-brown to light grey-green, very calcareous to calcareous, platy to blocky, subfissile, argillaceous laminae, disseminated pyrite, muscovite mica, dull waxy lustre to bright lustre (abundant muscovite), swells in water, silty, poorly indurated.

NORTHCOR ET AL KAKISA RIVER F-56

SAMPLE DESCRIPTIONS

1314 - 1324 (Cont'd)

Siltstone: light grey, frosted transparent quartz, trace dark chert, calcareous cement, kaolin grains, well sorted, moderately indurated.

1324 - 1341

Shale with occasional siltstone.

Shale: light grey, occasionally grading to light grey-green, blocky, moderately calcareous, slightly silty, bright lustre, dark argillaceous streaks, abundant micromicaceous muscovite, trace dark carbonaceous specks, poorly indurated.

Siltstone: as above, 1313 - 1324m.

1341 - 1352

Siltstone: light grey, frosted transparent quartz, trace dark chert, kaolin grains, sandy, micaceous, muscovite, occasionally argillaceous, disseminated pyrite, well sorted, calcareous, moderately indurated.

1352 - 1367

Siltstone and occasional shale.

Siltstone: as above, 1341m, but becoming increasingly argillaceous.

Shale: as above, 1324 - 1341m.

1367 - 1378

Shale with minor laminated siltstone.

Shale: light to medium grey, blocky, moderately calcareous, silty to slightly silty, micaceous, muscovite, dark brown argillaceous laminae, bright lustre, traces dark carbonaceous specks, poorly indurated.

Siltstone: as above, 1352 - 1367m.

1378 - 1384

Shale: medium to dark grey, brown hue in part, platy to blocky, bright to dull waxy lustre, abundant micromicaceous, muscovite, disseminated pyrite, dark grey-brown argillaceous laminae, moderately calcareous, poorly indurated.

NORTHCOR ET AL KAKISA RIVER F-56

SAMPLE DESCRIPTIONS

1384 - 1400	Shale with occasional siltstone. Shale: dark grey-brown, blocky to platy, dull lustre, slightly calcareous, moderately to silty, micromicaceous, muscovite, disseminated pyrite, poorly indurated. Siltstone: light grey, frosted transparent quartz, dark chert, muscovite mica, disseminated pyrite, calcareous, argillaceous in part, moderately to well sorted, moderately indurated.
1400 - 1409	Shale with interbedded and laminated siltstone. Shale: dark grey-brown, moderately silty, muscovite and biotite mica, blocky, slightly calcareous, disseminated pyrite, poorly indurated. Siltstone: light grey, frosted transparent quartz, dark chert, abundant muscovite mica, trace glauconite, trace brown argillaceous matrix, very calcareous, moderately indurated.
1409 - 1420	Shale and siltstone interbedded. Shale: medium grey-brown to light grey-green, platy, calcareous, micromicaceous, muscovite, slightly to silty, dull lustre, disseminated pyrite in part, poorly indurated. Siltstone: as above, 1400 - 1409m.
1420 - 1426	Shale: light grey, platy, slightly calcareous, dull lustre, slightly silty, micromicaceous, muscovite, poorly indurated.
1426 - 1435	Shale: medium to dark grey, green hue in part, platy to blocky, disseminated pyrite, dark laminae, slightly dolomitic, dull lustre, muscovite mica, slightly silty, poorly indurated.
1435 - 1445	Interbedded shales: as above 1426 - 1435m and medium brown to dark grey-brown, blocky to occasional platy, dolomitic, silty, micromicaceous, muscovite, trace disseminated pyrite, poorly indurated.

NORTHCOR ET AL KAKISA RIVER F-56

SAMPLE DESCRIPTIONS

1445 - 1448 — Shale: dark grey to black, dolomitic, blocky, slightly silty, trace micromicaceous muscovite, well indurated.

1448 - 1464 — Shale and laminated limestone.

Shale: light grey, platy, very calcareous, no structure on dissolving in acid, nonsilty, trace disseminated pyrite, waxy transluscent lustre, moderately indurated.

Limestone: white to light grey, cryptocrystalline to microcrystalline, argillaceous in part, grading to shale, trace pyrobitumen, disseminated pyrite, micritic, slightly silty, moderately indurated, no apparent porosity to trace intercrystalline porosity, no shows to trace dead oil stain.

1464 - 1465 — Shale: as above, 1448m, also Ostracod fossils, trace light yellow fluorescence, weak cut.

1465 - 1474 — Limestone: light to medium brown to light grey, cryptocrystalline, spar, slightly argillaceous, moderately silty, moderate amount disseminated pyrite, occasional as crystals, anhydritic, moderately indurated, no apparent to trace vuggy and stylolitic porosity, pyrobitumen, light yellow fluorescence, very weakly streaming cut.

1474 - 1482 — Limestone with minor thin bedded shale.

Limestone: light to occasional medium brown, cryptocrystalline to microcrystalline, slightly silty, trace .2mm oolite ghosts, trace stylolites, trace disseminated pyrite, abundant pyrobitumen lining vugs, spar, pyrite crystals lining vugs, moderately indurated, poor vuggy, intercrystalline and stylolitic porosity, to no apparent porosity, no shows to good streaming cut.

Shale: dark grey-brown, platy, laminated to thin bedded, disseminated pyrite, slightly calcareous, poorly indurated.

NORTHCOR ET AL KAKISA RIVER F-56

SAMPLE DESCRIPTIONS

1482 - 1486	Limestone: as above, 1474m, but no oolite ghosts, and medium brown even stain, medium yellow fluorescence, weakly streaming cut.
1486 - 1497	Limestone: light brown, cryptocrystalline, spar, trace argillaceous, trace silty, trace disseminated pyrite, pyrobitumen lined vugs, moderately indurated, poor vuggy to no apparent porosity, light yellow fluorescence, weakly streaming cut to no shows.
1497 - 1498	Shale: as above, 1474 - 1482m.
1498 - 1504	Limestone: light to medium brown, cryptocrystalline, spar, trace silty, slightly to dolomitic fragmental, disseminated pyrite, vuggy dolomite crystals and pyrobitumen lined, moderately indurated, no apparent to poor vuggy porosity, no fluorescence, dull yellow nonstreaming cut.
1504 - 1512	Interbedded limestone and shale. Limestone: as above, 1499m, but slightly more argillaceous, trace oolites, dolomitic, dead oil stain, no fluorescence, no cut. Shale: light grey-green, platy, dull lustre, disseminated pyrite, calcareous, slightly silty, poorly indurated.
1512 - 1518	Limestone occasionally with laminated shale. Limestone: as above, 1504 - 1512m. Shale: medium grey-green, platy to splintery, dull lustre, slightly silty, disseminated pyrite, poorly indurated.
1518 - 1525	Claystone occasionally interbedded with dolomite. Claystone: red-brown to light green, blocky, white specks in red-brown, dull waxy lustre, slightly silty disseminated pyrite, swells in water, noncalcareous, poorly indurated. Dolomite: light grey, cryptocrystalline, calcareous, moderately indurated, no apparent porosity, no shows, no fluorescence, no cut.

NORTHCOR ET AL KAKISA RIVER F-56

SAMPLE DESCRIPTIONS

1525 - 1535 — Claystone with interbedded limestone.

Claystone: white to light green to red with white specks, blocky, dull lustre, non-calcareous, slightly anhydritic to anhydrite rossettes, water swelling, slightly to moderately silty, poorly indurated.

Limestone: medium brown, cryptocrystalline, dolomitic in part, spar, slightly silty, moderately indurated, no apparent porosity, no shows.

1535 - 1540 — Claystone: bright blue-green, massive swells in water, no red or white mixed in, noncalcareous, slightly silty, abundant cubic pyrite crystals in part, poorly indurated.

1540 - 1554 — Claystone with interbedded dolomite.

Claystone: light blue-green to olive green, noncalcareous, blocky, pyrite crystals, poorly indurated, clasts of blue-green within olive green.

Dolomite: light brown, microcrystalline to occasionally crystalline, calcareous, disseminated pyrite, slightly silty, moderately indurated, no apparent to poor intercrystalline porosity, light to medium brown spotted stain, light yellow fluorescence, weakly streaming cut.

1554 - 1555 — Limestone: light yellow-grey, cryptocrystalline, dolomitic in part, grading to dolomite, anhydritic, spar, moderately indurated, no apparent porosity, no shows, to light yellow fluorescence, weakly streaming cut in dolomite.

1555 - 1562 — Interbedded dolomite and claystone.

Dolomite: light to medium brown, very finely crystalline, calcareous in part, grading from blue-green claystone, disseminated pyrite, abundant pyrobitumen, moderately indurated, poor to fair vuggy and intercrystalline porosity, medium brown stain, no fluorescence, weak streaming cut.

Claystone: as above, 1540 - 1554m.

NORTHCOR ET AL KAKISA RIVER F-56

SAMPLE DESCRIPTIONS

1562 - 1565	Claystone: black, platy to blocky, grading from blue-green claystone, disseminated pyrite, noncalcareous, slightly swells in water, poorly indurated.
1565 - 1570	Dolomite: as above, 1555 - 1562m.
1570 - 1575	Interbedded claystone and dolomite. Claystone: as above, 1540 - 1554m. Dolomite: as above, 1556m, but trace selenite crystals, no fluorescence, no cut, questionable stain.
1575 - 1585	Interbedded limestone and claystone. Limestone: light yellow-brown, cryptocrystalline, oolitic ghosts, dolomitic in part, trace clear chert, spar, slightly anhydritic, trace vuggy, massive, moderately indurated, no apparent to trace vuggy porosity (calcite crystal lined), no shows to very faint cut, no fluorescence. Claystone: as above, 1540 - 1554m.
1585 - 1592	Dolomite with minor claystone. Dolomite: light grey to light brown, cryptocrystalline to very finely crystalline, nonargillaceous to occasional green argillaceous specks, occasional disseminated pyrite, occasional pyrobitumen, vuggy, crystal lined, light brown spotted stain, moderately indurated, poor vuggy porosity, medium yellow fluorescence, weakly streaming cut. Claystone: as above, 1540 - 1554m.
1592 - 1600	Dolomite with occasional shale. Dolomite: as above, 1585m, but very finely to finely crystalline, poor to fair intercrystalline, pinpoint and vuggy porosity, light yellow fluorescence, fair streaming cut. Shale: dark grey to black, blocky, bright lustre, slightly calcareous, trace microcarbonaceous specks, disseminated pyrite, poorly indurated.

NORTHCOR ET AL KAKISA RIVER F-56

SAMPLE DESCRIPTIONS

1600 - 1605 — Interbedded dolomite and claystone.

Dolomite: as above, 1585m, but occasional stylolites, abundant pyrotbitumen, very finely to finely crystalline, trace coarse crystalline, poor to fair intercrystalline and vuggy porosity, even medium brown stain, no fluorescence, faint nonstreaming cut.

Shale: as above, 1592 - 1600m.

Claystone: as above, 1540 - 1554m.

1605 - 1620 — Dolomite and occasional claystone.

Dolomite: light to medium brown, occasionally cryptocrystalline to very finely and finely crystalline, rhombic crystal makeup, slightly argillaceous, trace dark specks, disseminated pyrite, pyrobitumen, moderately indurated, no apparent to poor and occasional fair intercrystalline and vuggy porosity, spotted to even light brown stain, spotted to even fluorescence, weakly streaming cut.

Claystone: light blue-green to light grey to medium red-brown and white, blocky, abundant pyrite crystals in blue-green, red-brown is anhydritic, swells in water, noncalcareous, poorly indurated, occasional pink anhydrite rossettes.

1620 - 1635 — Interbedded dolomite and claystone.

Dolomite: as above, 1605m, but occasional selenite crystals, no fluorescence but faint nonstreaming cut.

Claystone: as above, 1605 - 1620m.

1635 - 1640.5 — Claystone and dolomite interbedded.

Claystone: as above, 1605 - 1620m.

Dolomite: light grey to light brown, cryptocrystalline to very finely crystalline, calcareous, argillaceous in part, grading to shale, disseminated pyrite, trace pyrobitumen, white transluscent chert, moderately to well indurated, no apparent to poor intercrystalline porosity, no shows to questionable and no fluorescence but faint nonstreaming cut.

NORTHCOR ET AL KAKISA RIVER F-56

SAMPLE DESCRIPTIONS

1640.5 - 1641.5 — Dolomite: light brown, fine to coarsely crystalline, clear dolomite rhombs, vuggy, trace pyrobitumen, poorly indurated, good intercrystalline and vuggy porosity, light yellow fluorescence, even light brown stain, weakly streaming cut.

1641.5 - 1650 — Chert occasionally with dolomite and claystone.

Chert: white, translucent, very well indurated.

Dolomite: as above, 1635 - 1640.5m.

Claystone: as above, 1605 - 1620m.

1650 - 1661 — Sandstone occasionally interbedded with claystone.

Sandstone: light grey-green hue, medium to finely grained, quartz grains, indistinguishable tan angular argillite grains, silica cement, so well cemented that grains break across, abundant pyrite, conjugate fractures, pyrite filled 85°, poorly sorted, no apparent porosity, no shows.

Claystone: as above, 1605 - 1620m.

1661 - 1666.5 — Interbedded chert, dolomite and claystone.

Chert: white, transluscent, well indurated.

Dolomite: medium brown, finely crystalline, disseminated pyrite, siliceous, vuggy light brown to medium brown to medium brown stain, moderately indurated, poor to fair vuggy porosity, no fluorescence, very weakly streaming cut.

Claystone: as above, 1605 - 1620m.

1666.5 - 1689 — Sandstone interbedded with claystone and chert.

Sandstone: medium green, angular transparent quartz, angular fragments of dolomite, red-brown claystone, clorite mica, pyrite in part, silica cement, well indurated, no apparent porosity, no shows.

NORTHCOR ET AL KAKISA RIVER F-56

SAMPLE DESCRIPTIONS

1666.5 - 1689 (Cont'd)

Claystone: light blue-green to medium red-brown, disseminated pyrite, blocky, in part anhydritic, poorly indurated.

Chert: as above, 1661 - 1666.5m.

1689 - 1711

Interbedded sandstone, claystone, chert, and occasional laminated dolomite.

Sandstone: as above, 1666.5 - 1689m.

Claystone: as above, 1666.5 - 1689m.

Chert: white, transluscent, well indurated.

Dolomite: light brown, very finely crystalline, rhombic crystals, slightly silty, calcareous in part, poorly indurated, fair pinpoint porosity, no fluorescence, no cut.

TOTAL DEPTH: 1711m

9211 - N10 - 5 - I

CALGARY, ALBERTA

CHEMEX LABS (ALBERTA) LTD.

GRANDE PRAIRIE, ALBERTA

EDMONTON, ALBERTA

GAS ANALYSIS

CONTAINER IDENTITY: TOOL #1548

LABORATORY NUMBER: 84-2769-1

LICENCE NO:

OPERATOR NAME AND ADDRESS: NORTHCOR ENERGY LTD.

CPA NUMBER:

WELL NAME: NORTHCOR ETAL KAKISA RIVER K56

ELEVATIONS METERS: KB 802.26 GRD 797.3

FIELD OF AREA: KAKISA RIVER

POOL OR ZONE: PRECAMBRIAN SHIELD

NAME OF SAMPLER:

COMPANY: QUINN TESTERS

TEST TYPE: DST NO: 1

MULTIPLE RECOVERY:

TEST INTERVAL FROM: 1551 m TO: 1557 m

PERFORATIONS FROM: m TO: m

TEST RECOVERY: 40 M SOUR GASIFIED INHIBITOR & WATER AND DRILLING MUD

SAMPLING POINT: DOWNHOLE SAMPLER

AMT & TYPE OF CUSHION:

MUD RESISTIVITY: @25°C

TYPE OF PRODUCTION: PUMPING FLOWING GAS LIFT SWAB

PRODUCTION RATES: WATER m³/d OIL m³/d GAS 10³m³/d

GAUGE PRESSURE - KPa: SEPARATOR TREATER AS RECEIVED: 575

TEMPERATURES °C: SEPARATOR TREATER AS RECEIVED: 23

DATE SAMPLED (Y M D H M): 85-03-20

DATE RECEIVED (Y M D): 85-03-25

DATE REPORTED (Y M D): 85-03-26

ANALYST: R.A.

COMP	MOL FRACTION AIR FREE AS REC'D	MOL FRACTION AIR FREE ACID GAS FREE	LIQUID VOLUME ml/m³ AIR FREE AS REC'D
H_2	0.0075	0.0077	
He	0.0007	0.0007	
N_2	0.0222	0.0228	
CO_2	0.0247	0.0000	
H_2S	0.0008	0.0000	
C_1	0.9106	0.9345	
C_2	0.0174	0.0179	
C_3	0.0081	0.0083	29.63
iC_4	0.0016	0.0016	6.95
nC_4	0.0031	0.0032	12.99
iC_5	0.0011	0.0011	5.35
nC_5	0.0011	0.0011	5.30
C_6	0.0007	0.0007	3.76
C_{7+}	0.0004	0.0004	2.40
C_7			
C_8			
C_{9+}			
TOTAL	1.0000	1.0000	66.08

GROSS HEATING VALUE

MJ/m³ at 15 °C AND 101.325 KPa

(MOISTURE AND ACID GAS FREE)

MEASURED: CALCULATED: 38.521 DEW POINT: VAPOUR PRESS PENTANES PLUS: 90.46

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED: MEASURED CALCULATED: 0.614

MOISTURE AND ACID GAS FREE: MEASURED CALCULATED: 0.590

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED: pPc 4648.7 pTc 196.7

ACID GAS FREE: pPc 4576.0 pTc 193.8

REMARKS

TOOL HAD AN OPENING PRESSURE OF 575 KPA.
TOOL CONTAINED 12,115 CC OF GAS AND 1500 CC OF MUD

CALGARY, ALBERTA

CHEMEX LABS (ALBERTA) LTD.

EDMONTON, ALBERTA

GRANDE PRAIRIE, ALBERTA

WATER ANALYSIS

CONTAINER IDENTITY: *

LABORATORY NUMBER: 84-2769-2

LICENCE NO.:

OPERATOR NAME AND ADDRESS: NORTHCOR ENERGY LTD.

CPA NUMBER:

WELL NAME: NORTHCOR ETAL KAKISA RIVER K-56

ELEVATIONS METERS: KB 802.26, GRD 797.3

FIELD OR AREA: KAKISA RIVER

POOL OR ZONE: **

NAME OF SAMPLER:

COMPANY: QUINN TESTERS

TEST RECOVERY: 40 M SOUR GASIFIED INHIBITOR & WATER & DRILLING MUD MIX

TEST TYPE: DST NO. 1

MULTIPLE RECOVERY:

TEST INTERVAL FROM: 1551 m TO 1557 m

PERFORATIONS FROM: m TO: m

SAMPLING POINT: DOWNHOLE

AMT & TYPE OF CUSHION:

MUD RESISTIVITY: @25°C

TYPE OF PRODUCTION: PUMPING FLOWING GAS LIFT SWAB

PRODUCTION RATES: WATER m³/d OIL m³/d GAS 10³m³/d

GAUGE PRESSURE - KPa: SEPARATOR TREATER AS RECEIVED

TEMPERATURES °C: SEPARATOR TREATER AS RECEIVED

DATE SAMPLED (Y M D H:M): 85-03-20

DATE RECEIVED (Y M D): 85-03-21

DATE REPORTED (Y M D): 85-03-21

ANALYST: G.A.

ION	C g. m⁻³	MASS FRACTION	C mol m⁻³
Na	2870		124.8
K	103		2.6
Ca	420		10.5
Mg	121		5.0
Ba			
Sr			
Fe	0.7		<1

ION	C g. m⁻³	MASS FRACTION	C mol. m⁻³
Cl	4400		123.9
Br			
I			
HCO_3	1005		16.5
SO_4	1200		12.5
CO_3	<1		<1
OH	M1		<1
H_2S	PRESENT		

TOTAL SOLIDS C/g m⁻³

BY EVAPORATION @ 110°C:

BY EVAPORATION @ 180°C:

AT IGNITION:

CALCULATED: 9609

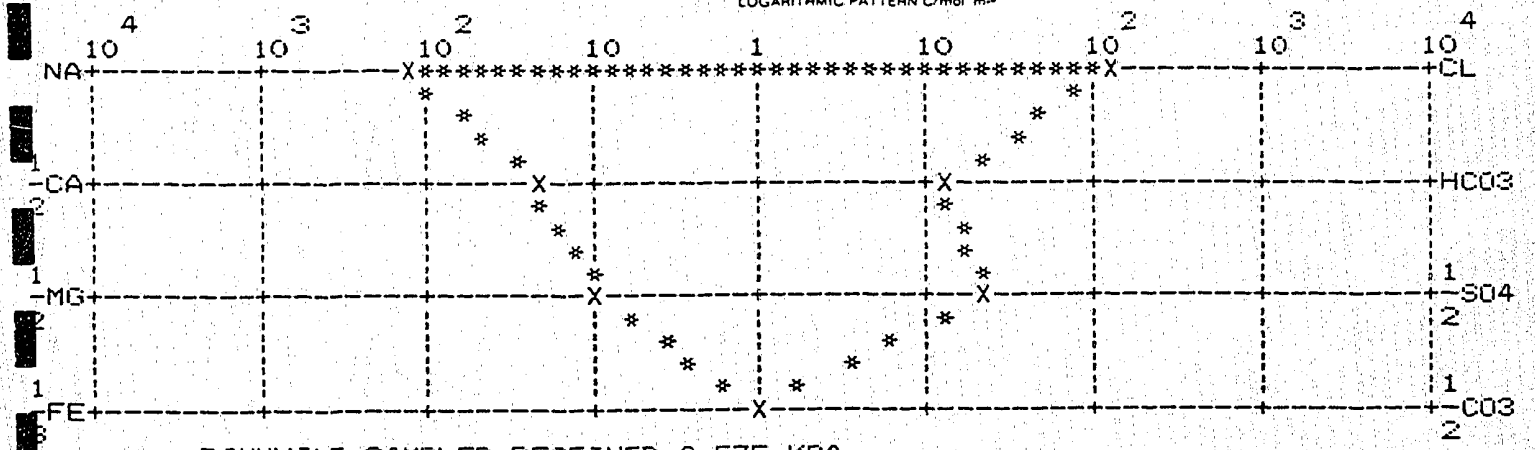
RELATIVE DENSITY: 1.007 @ 21°C

REFRACTIVE INDEX: 1.334 @ 25°C

OBSERVED PH: 8.0 @ 21°C

RESISTIVITY Ω m: 0.599 @ 25°C

LOGARITHMIC PATTERN C/mol m⁻³



REMARKS

DOWNHOLE SAMPLER RECEIVED @ 575 KPA
CONTAINED 12,115 CC GAS, 1500 CC MUD
* QUINN TOOL # 1548
** PRE-CAMBRIAN/DETRITAL

CALGARY, ALBERTA

CHEMEX LABS (ALBERTA) LTD.

EDMONTON, ALBERTA

GRANDE PRAIRIE, ALBERTA

WATER ANALYSIS

CONTAINER IDENTITY: PLASTIC

LABORATORY NUMBER: 84-2769-3

LICENCE NO:

OPERATOR NAME AND ADDRESS: NORTHCOR ENERGY LTD.

CPA NUMBER:

WELL NAME: NORTHCOR ETAL KAKISA RIVER K-56

ELEVATIONS METERS: KB 802.26 GRD 797.3

FIELD OR AREA: KAKISA RIVER

POOL OR ZONE: *

NAME OF SAMPLER:

COMPANY: QUINN TESTERS

TEST TYPE: DST NO: 1

MULTIPLE RECOVERY:

TEST INTERVAL FROM: 1551 m TO: 1557 m

PERFORATIONS FROM: m TO: m

TEST RECOVERY: 40 M SOUR GASIFIED INHIBITOR, WATER, DRILLING MUD MIX

SAMPLING POINT: BOTTOM OF FLUID

AMT & TYPE OF CUSHION:

MUD RESISTIVITY: @25°C

TYPE OF PRODUCTION: PUMPING FLOWING GAS LIFT SWAB

PRODUCTION RATES: WATER m³/d OIL m³/d GAS 10³m³/d

GAUGE PRESSURE - KPa: SEPARATOR TREATER AS RECEIVED

TEMPERATURES °C: SEPARATOR TREATER AS RECEIVED

DATE SAMPLED (Y M D H:M): 85-03-20

DATE RECEIVED (Y M D): 85-03-21

DATE REPORTED (Y M D): 85-03-21

ANALYST: G.A.

ION	C g.m⁻³	MASS FRACTION	C mol.m⁻³
Na	1590		69.1
K	36		<1
Ca	250		6.3
Mg	32		1.3
Ba			
Sr			
Fe	1.1		<1

ION	C g.m⁻³	MASS FRACTION	C mol.m⁻³
Cl	1200		33.8
Br			
I			
HCO_3	1610		26.4
SO_4	975		10.2
CO_3	168		2.7
OH	<1		<1
H_2S	PRESENT		

TOTAL SOLIDS C/g.m⁻³

BY EVAPORATION @ 110°C:

BY EVAPORATION @ 180°C:

AT IGNITION:

CALCULATED: 5039

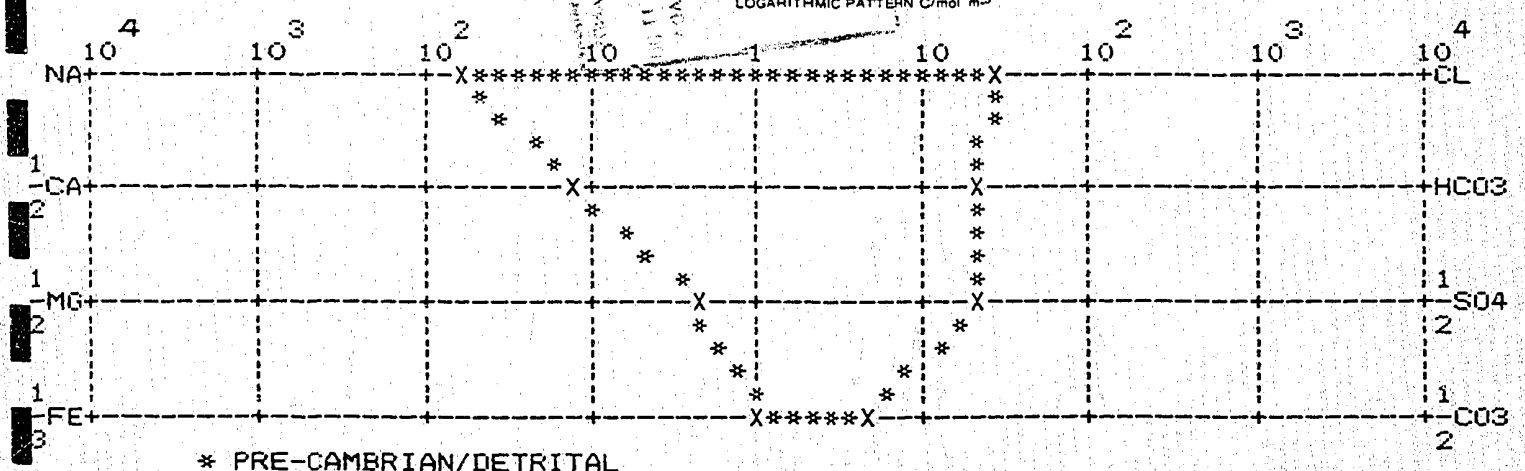
RELATIVE DENSITY: 1.004 @ 21°C

REFRACTIVE INDEX: 1.334 @ 25°C

OBSERVED PH: 8.9 @ 21°C

RESISTIVITY Ω m: 1.11 @ 25°C

LOGARITHMIC PATTERN C/mol m⁻³



* PRE-CAMBRIAN/DETRITAL

REMARKS

QUINN TESTERS LTD.

CALGARY, ALBERTA — **TEST DATA** — PHONE 290-1704

CUSTOMER NORTHCOR ENERGY LTD. DATE 85-03-20 TEST NO. 1

LOCATION NORTHCOR ET AL KAKISA RIVER F-56 FORMATION PRECAMBRIAN/DETRITAL

TEST INTERVAL 1551 TO 1557 T.D. 1711 TEST TYPE DSBP

CUSTOMER REP. Mr. A. DUPERRON TESTER BOB MCEWAN

TEMP	IN	OUT	OUT	OUT
Rec./No. 21749	Rec./No. 14028	Rec./No. 15365	Rec./No. 3146	Rec./No. 19793
24 Hr. 0 - 147°C	24 Hr. 22063	24 Hr. 35853	12 Hr. 42053	24 Hr. 51705
1537.648 Metres	1545.193 Metres	1553.193 Metres	1554.718 Metres	1564.260 Metres

PERCENTAGE OF POROSITY _____ METRES OF NET PAY _____ No. of Reports Required 10

D.P. Size, mm 89 Wght. kg/m 23.07 D.C.I.D. mm 54 D.C. Above Tool, m 186.66

Main Hole, mm 156 Rat Hole, mm _____ Rat Hole Depth, m _____

Mud Wght. kg/m³ 1070 Viscosity, s/L 60 Water Loss cm³ 8.00

Bottom Choke, mm 12.7 Rubber Size, mm 140 Anchor Size, mm 89 & 127

Amount and Type of Cushion 96 LITRES OF INHIBITOR AND WATER

Preflow 10 Mins. 1st Shut-In 60 Mins.

1st Flow 90 Mins. 2nd Shut-In 150 Mins.

2nd Flow _____ Mins. 3rd Shut-In _____ Mins.

Bottom Hole Temperature °C 46

K.B. 802.26 Gr. 797.30

Started in @ 0130 Out of Hole @ 1315

Field Readings

Recorder No. 14028 F F 557 kPa

I H 16267 kPa 2nd S I 8632 kPa

I P F 334 kPa I F _____ kPa

F P F _____ kPa F F _____ kPa

1st S I 9949 kPa 3rd S I _____ kPa

I F 278 kPa F H 16267 kPa

GAS RECOVERY: Measured with FLOOR MANIFOLD

Gas Samples: # 6521 ; # 326 To SEE REMARKS

Mins	kPa	Temp	Orifice	m³/day	Mins	kPa	Temp	Orifice	m³/day
10	45	4	3.175	208	65	265	1	3.175	505
15	85	4	3.175	300	70	270	1	3.175	512
20	120	3	3.175	374	75	275	0	3.175	520
25	145	3	3.175	427	80	280	0	3.175	527
30	170	2	3.175	370	85	285	0	3.175	534
35	185	2	3.175	391	90	290	0	3.175	541
40	200	1	3.175	413					
45	220	1	3.175	441	FLOW RATES FROM BOTH THE				
50	240	1	3.175	470	ORIFICE WELL TESTER AND				
55	250	1	3.175	484	FLOOR MANIFOLD TABLES				
60	260	1	3.175	498					

TOTAL FLUID RECOVERY: 40 Metres Sampler # 1548: # _____ TOTAL MUD LOSS _____ M

Sampled @ .305 m : 19 m : 38 m : _____ Above Tool

40 Metres of SOUR, GASIFIED, INHIBITOR, WATER, AND DRILLING MUD MIX

_____ Metres of _____

_____ Metres of _____

_____ Metres of _____

P.O. Sub	.305
D.P./Blank	.305
Temp Rec.	1.830
Shut-In	1.630
Sampler	1.000
Sampler	
Hydraulic	1.665
Jars	1.420
Recorder	1.830
Recorder	
Temp Rec.	
By-Pass	.305
Safety Jt.	.590
Packer	2.000
Packer	1.450 1551.063
Packer	.300
Perfs	1.525
By-Pass	.305
Recorder	1.220
Recorder	1.525
X Over	
D.P./D.C.	
X Over	
Packer	1.000 1556.938
Packer	1.000
Packer	1.750
Perfs	4.267
Recorder	1.525
X Over	.305
D.P./DXX	144.300
X Over	.305
Perfs	
Bullnose	.610 1711.000

Total Interval 5.875 m.

Total Tail Pipe 154.062 m.

Tool Makeup Time 1.750 Hr.

REMARKS: Misrun _____ : Ok X : Tool Opened @ 0505 Hrs.

PREFLOW: STRONG AIR BLOW DECREASING TO GOOD AT END OF FLOW.

VALVE OPEN: STRONG AIR BLOW, GAS TO SURFACE IN 30 SECONDS.

SAMPLER #1548, GAS BOMB #326, AND 3 FLUID SAMPLES SENT TO CHEMEX LABS, HIGH LEVEL.

GAS BOMB #6521 AND 3 FLUID SAMPLES SENT TO AMOCO CANADA, CALGARY.

Form 1801 A Rev. 10/83

QUINN TESTERS LTD.

WELL NAME	- NORTHCOR ET AL KAKISA RIVER	DST NO. -	1
WELL LOCATION	- F-56	REC NO. -	15365
FORMATION TESTED	- PRECAM/DETRITAL	INTERVAL -	1551.0
TYPE OF TEST	- DUAL STRADDLE BY-PASS	TO -	1557.0

CALCULATION RESULTS BASED ON GAS RECOVERY AND SECOND SHUT-IN EXTRAPOLATION.

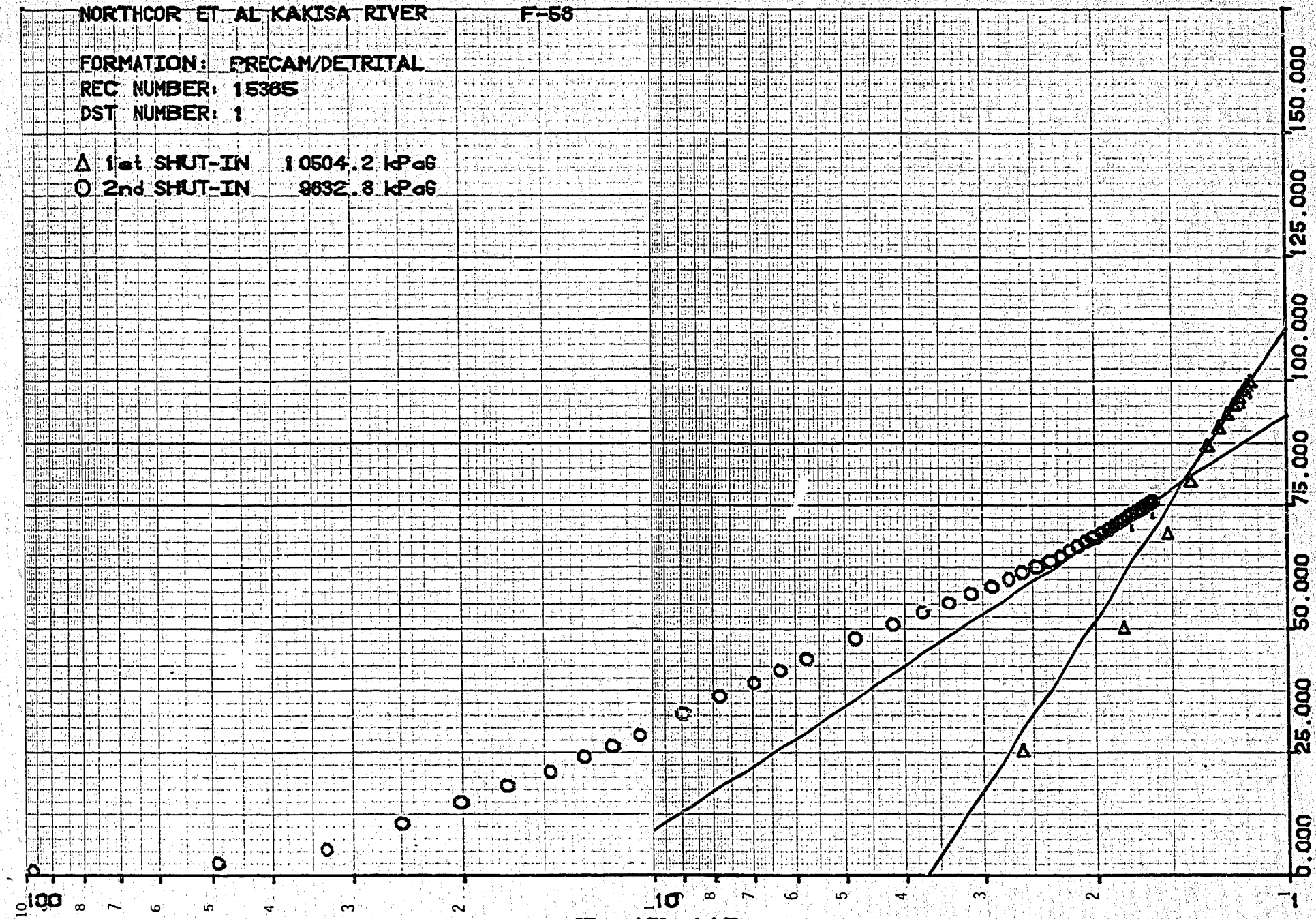
CALCULATION RESULTS (METRIC UNITS)

FIRST SHUT-IN EXTRAPOLATION

EXTRAPOLATED RESERVOIR PRESSURE.....	10603.5	kPa-ABS.
EXTRAPOLATED RESERVOIR PRESSURE.....	10504.2	kPa-GAUGE
SLOPE OF EXTRAPOLATED LINE.....	194580700.0	kPa^2/CYCLE
DEVIATION OF EXTRAPOLATED LINE.....	2694.3	kPa^2
NUMBER OF POINTS ENTERED.....	13	
NUMBER OF POINTS USED IN EXTRAPOLATION.....	3	

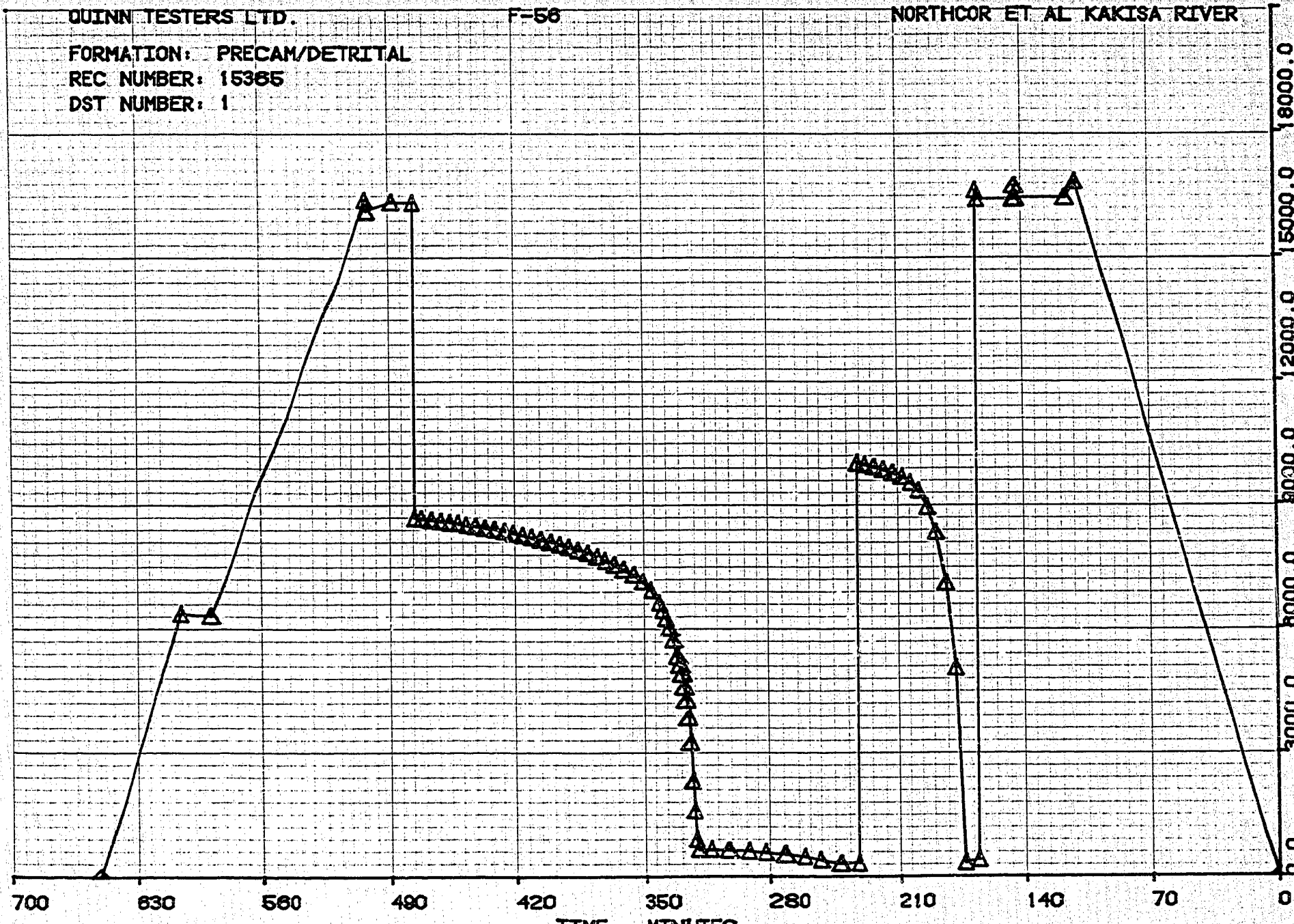
SECOND SHUT-IN EXTRAPOLATION

EXTRAPOLATED RESERVOIR PRESSURE.....	9732.1	kPa-ABS.
EXTRAPOLATED RESERVOIR PRESSURE.....	9632.8	kPa-GAUGE
SLOPE OF EXTRAPOLATED LINE.....	83715170.0	kPa^2/CYCLE
DEVIATION OF EXTRAPOLATED LINE.....	81094.3	kPa^2
NUMBER OF POINTS ENTERED.....	43	
NUMBER OF POINTS USED IN EXTRAPOLATION.....	6	
PRESSURE DIFFERENCE (SI#2 - SI#1).....	-871.3	kPa-ABS.


QUINN TESTERS LTD.
NORTHCOR ET AL KAKISA RIVER F-56
FORMATION: PRECAM/DETRITAL
REC NUMBER: 15365
DST NUMBER: 1
Δ 1st SHUT-IN 10504.2 kPaG
O 2nd SHUT-IN 9632.8 kPaG
PRESSURE² (kPaG) GAS X 10⁶
150.000
125.000
100.000
75.000
50.000
25.000
0.000
(T + ΔT) / ΔT
100
10
1
KEUFFEL & ESSER CO. MADE IN U.S.A. SEMI-LOGARITHMIC • 2 CYCLES X 70 DIVISIONS
46 4970

QUINN TESTERS LTD. F-56 NORTHCOR ET AL KAKISA RIVER

FORMATION: PRECAM/DETRITAL
REC NUMBER: 15365
DST NUMBER: 1



QUINN TESTERS LTD.

WELL NAME - NORTHCOR ET AL KAKISA RIVER
WELL LOCATION - F-56
FORMATION TESTED - PRECAM/DETRITAL
TYPE OF TEST - DUAL STRADDLE BY-PASS

DST NO. - 1
REC NO. - 15365
INTERVAL - 1551.0
TO - 1557.0

PRESSURE LISTING

COMMENTS	TIME MIN.	PRESSURE PSIG	PRESSURE kPaG	T+DELTA T/ DELTA T
RUNNING IN HOLE	0.0	0.0	0.0	
	111.0	2435.5	16792.5	
	116.0	2378.7	16400.3	
INITIAL HYDROSTATIC PRESSURE	143.0	2376.1	16382.5	
	143.5	2420.0	16685.6	
	144.0	2373.5	16364.7	
	164.0	2373.5	16364.7	
	165.0	2403.2	16569.7	
FIRST FLOW - INITIAL PRESSURE	0.0	56.4	389.1	
FINAL FLOW PRESSURE	8.0	45.9	316.7	
FIRST SHUT-IN PERIOD	0.0	45.9	316.7	
	5.0	729.7	5030.8	2.60
	10.0	1026.3	7075.8	1.80
	15.0	1205.6	8312.1	1.53
	20.0	1294.6	8925.8	1.40
	25.0	1351.3	9317.1	1.32
	30.0	1379.7	9512.8	1.27
	35.0	1400.4	9655.1	1.23
	40.0	1414.5	9752.9	1.20
	45.0	1426.2	9833.0	1.18
	50.0	1435.2	9895.2	1.16
	55.0	1442.9	9948.6	1.15
FIRST SHUT-IN PRESSURE	60.0	1449.4	9993.1	1.13
SECOND FLOW - INITIAL PRESSURE	0.0	44.6	307.6	
	10.0	43.3	298.6	
	20.0	56.4	389.1	
	30.0	68.2	470.5	
	40.0	76.1	524.8	
	50.0	82.7	570.0	
	60.0	87.9	606.2	
	70.0	90.6	624.3	
	80.0	93.2	642.4	
FINAL FLOW PRESSURE	88.0	94.5	651.5	
SECOND SHUT-IN PERIOD	0.0	94.5	651.5	
	1.0	128.6	886.7	97.00
	2.0	229.7	1583.4	49.00
	3.0	333.3	2298.3	33.00

QUINN TESTERS LTD.

WELL NAME - NORTHCOR ET AL KAKISA RIVER
WELL LOCATION - F-56
FORMATION TESTED - PRECAM/DETRITAL
TYPE OF TEST - DUAL STRADDLE BY-PASS

DST NO. - 1
REC NO. - 15365
INTERVAL - 1551.0
TO - 1557.0

PRESSURE LISTING

COMMENTS	TIME MIN.	PRESSURE PSIG	PRESSURE kPaG	T+DELTA T/ DELTA T
	4.0	469.8	3239.3	25.00
	5.0	557.7	3845.5	20.20
	6.0	618.1	4261.7	17.00
	7.0	664.0	4578.4	14.71
	8.0	710.0	4895.1	13.00
	9.0	741.5	5112.3	11.67
	10.0	771.7	5320.4	10.60
	12.0	828.9	5715.0	9.00
	14.0	872.8	6017.4	7.86
	16.0	905.0	6239.8	7.00
	18.0	933.4	6435.5	6.33
	20.0	959.2	6613.3	5.80
	25.0	1003.0	6915.7	4.84
	30.0	1032.7	7120.3	4.20
	35.0	1057.2	7289.3	3.74
	40.0	1075.3	7413.8	3.40
	45.0	1093.3	7538.3	3.13
	50.0	1107.5	7636.2	2.92
	55.0	1121.7	7734.0	2.75
	60.0	1134.6	7822.9	2.60
	65.0	1144.9	7894.1	2.48
	70.0	1155.3	7965.2	2.37
	75.0	1164.3	8027.5	2.28
	80.0	1174.6	8098.6	2.20
	85.0	1182.3	8152.0	2.13
	90.0	1190.1	8205.4	2.07
	95.0	1197.8	8258.7	2.01
	100.0	1205.6	8312.1	1.96
	105.0	1212.0	8356.6	1.91
	110.0	1218.5	8401.0	1.87
	115.0	1223.6	8436.6	1.83
	120.0	1228.8	8472.2	1.80
	125.0	1233.9	8507.8	1.77
	130.0	1239.1	8543.3	1.74
	135.0	1243.0	8570.0	1.71
	140.0	1246.8	8596.7	1.69
	145.0	1252.0	8632.3	1.66
	150.0	1255.9	8659.0	1.64
SECOND SHUT-IN PRESSURE	154.0	1259.7	8685.6	1.62
PULLED LOOSE	0.0	1259.7	8685.6	
	0.5	2365.7	16311.2	
FINAL HYDROSTATIC PRESSURE	13.0	2368.3	16329.0	
	26.0	2337.3	16115.1	
	27.0	2376.1	16382.5	
	113.0	916.6	6319.8	

QUINN TESTERS LTD.

WELL NAME - NORTHCOR ET AL KAKISA RIVER
WELL LOCATION - F-56
FORMATION TESTED - PRECAM/DETRITAL
TYPE OF TEST - DUAL STRADDLE BY-PASS

DST NO. - 1
REC NO. - 15365
INTERVAL - 1551.0
TO - 1557.0

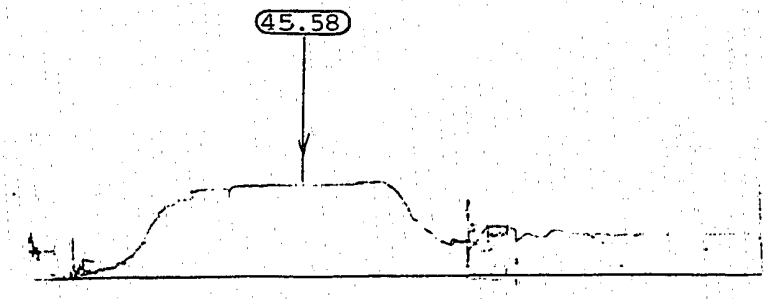
PRESSURE LISTING

COMMENTS	TIME MIN.	PRESSURE PSIG	PRESSURE kPaG	T+DELTA T/ DELTA T
	130.0	924.4	6373.2	
OUT OF HOLE	176.0	0.0	0.0	

QUINN TESTERS LTD.

CALGARY, ALBERTA — TEST CHARTS — PHONE 290-1704

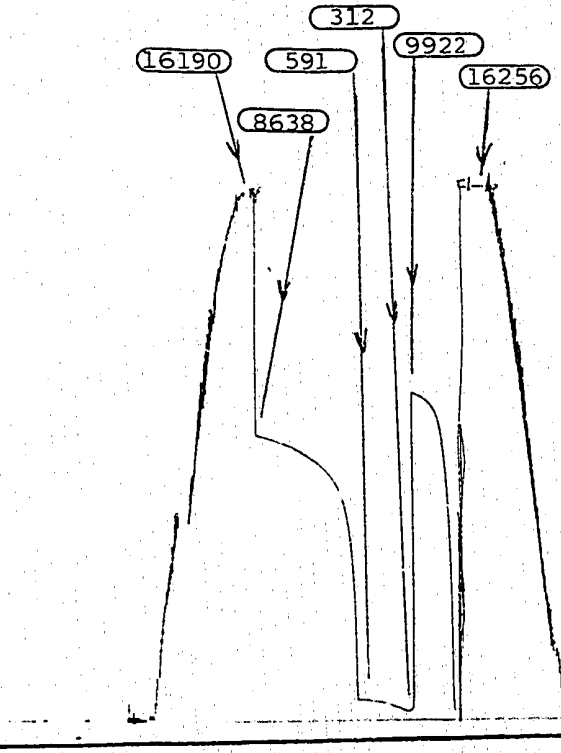
TEMPERATURE RECORDER #21749



INITIAL HYDR. _____
IN. PREFLOW _____
F. PREFLOW _____
1st SHUT-IN _____
1st IN. FLOW _____
1st F. FLOW _____
2nd SHUT-IN _____
2nd IN. FLOW _____
2nd F. FLOW _____
3rd SHUT-IN _____
3rd IN. FLOW _____
3rd F. FLOW _____
4th SHUT-IN _____
FINAL HYDR. _____

NORTHCOR ET AL KAKISA RIVER F-56 DST #1

INSIDE RECORDER #14028

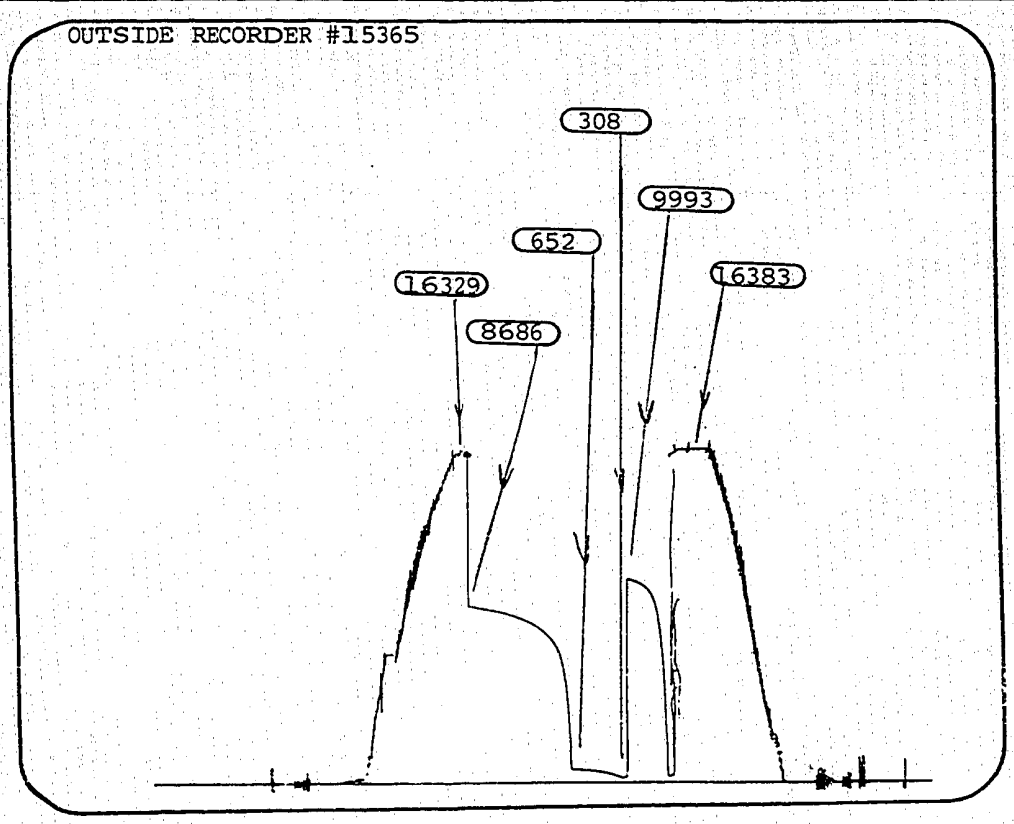


INITIAL HYDR. 16 256
IN. PREFLOW 335
F. PREFLOW 256
1st SHUT-IN 9 922
1st IN. FLOW 312
1st F. FLOW 591
2nd SHUT-IN 8 638
2nd IN. FLOW _____
2nd F. FLOW _____
3rd SHUT-IN _____
3rd IN. FLOW _____
3rd F. FLOW _____
4th SHUT-IN _____
FINAL HYDR. 16 190

QUINN TESTERS LTD.

CALGARY, ALBERTA — TEST CHARTS — PHONE 290-1704

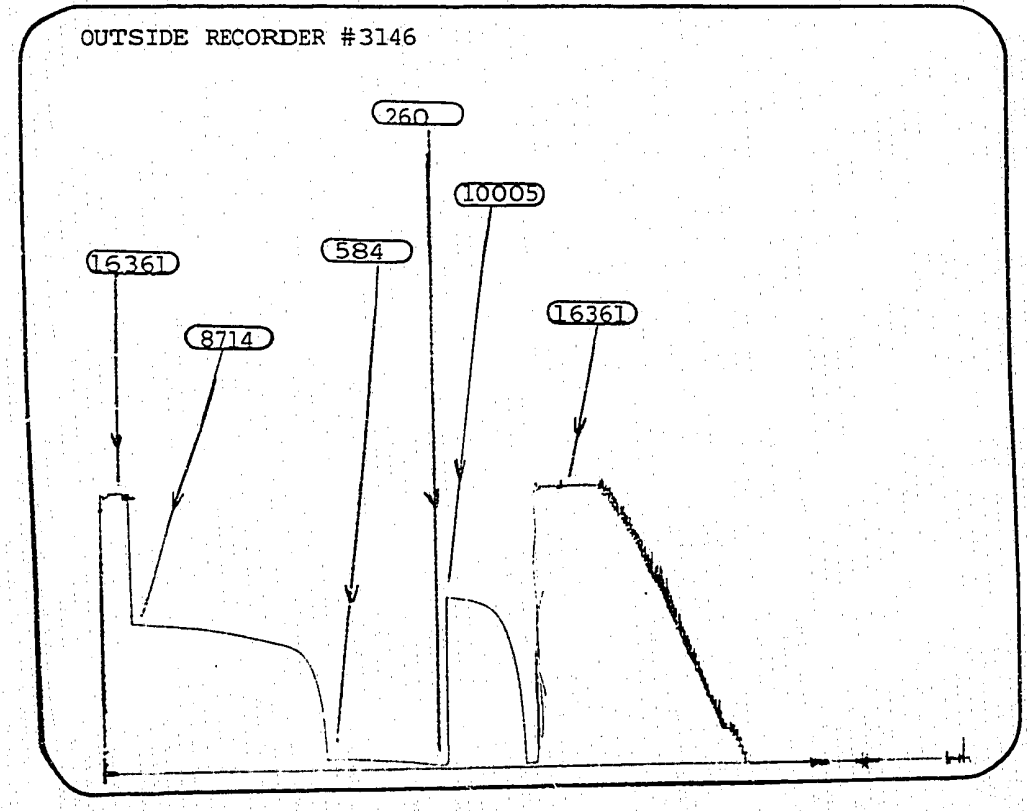
OUTSIDE RECORDER #15365



INITIAL HYDR.	16 383
IN. PREFLOW	389
F. PREFLOW	317
1st SHUT-IN	9 993
1st IN. FLOW	308
1st F. FLOW	652
2nd SHUT-IN	8 686
2nd IN. FLOW	
2nd F. FLOW	
3rd SHUT-IN	
3rd IN. FLOW	
3rd F. FLOW	
4th SHUT-IN	
FINAL HYDR.	16 329

NORTHCOR ET AL KAKISA RIVER F-56 DST #1

OUTSIDE RECORDER #3146

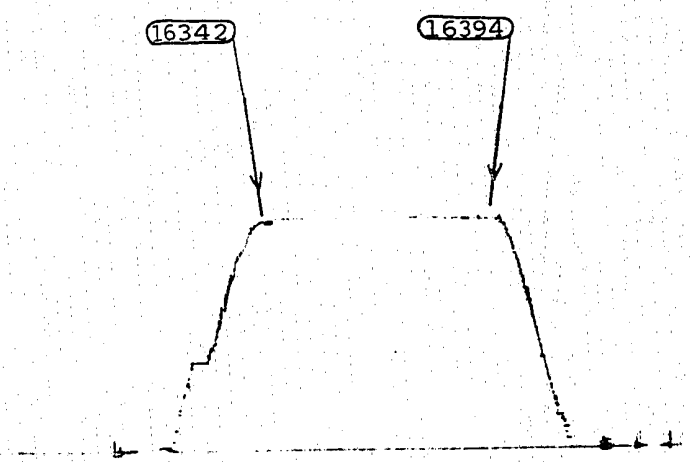


INITIAL HYDR.	16 361
IN. PREFLOW	346
F. PREFLOW	216
1st SHUT-IN	10 005
1st IN. FLOW	260
1st F. FLOW	584
2nd SHUT-IN	8 714
2nd IN. FLOW	
2nd F. FLOW	
3rd SHUT-IN	
3rd IN. FLOW	
3rd F. FLOW	
4th SHUT-IN	
FINAL HYDR.	16 361

QUINN TESTERS LTD.

CALGARY, ALBERTA — TEST CHARTS — PHONE 290-1704

OUTSIDE RECORDER #19793



INITIAL HYDR.	16 394
IN. PREFLOW	
F. PREFLOW	
1st SHUT-IN	
1st IN. FLOW	
1st F. FLOW	
2nd SHUT-IN	
2nd IN. FLOW	
2nd F. FLOW	
3rd SHUT-IN	
3rd IN. FLOW	
3rd F. FLOW	
4th SHUT-IN	
FINAL HYDR.	16 342

NORTHCOR ET AL KAKISA RIVER F-56 DST #1

INITIAL HYDR.	
IN. PREFLOW	
F. PREFLOW	
1st SHUT-IN	
1st IN. FLOW	
1st F. FLOW	
2nd SHUT-IN	
2nd IN. FLOW	
2nd F. FLOW	
3rd SHUT-IN	
3rd IN. FLOW	
3rd F. FLOW	
4th SHUT-IN	
FINAL HYDR.	