Canada Oil and Gas Lands Administration

Administration du pétrole et du gaz des terres du Canada

D.A. 1417

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: Chevron Ramparts River F-46

Operator: Chevron Canada Resources — Drilling Program No.: 9211-C4-1

Contractor: Shehtah Drilling — Permit or Lease No.: N.90.A.418

Drilling Rig or Unit: One (1) — Estimated Well Cost: $5.1 MM

Location-Unit: F — Section: 46 — Grid Area: 65-50-130-00

Coordinates: Lat.: 65° 45' 18.60" N — Long.: 130° 08' 51.44" W

Area: Northern (NWT) — Field/Pool: Exploratory - Wildcat

Elevation-RT/KB: 215.0 (ASL) — Seafloor: -- (BRT)

Approx. Spud Date: 1991-02-09 — Estimated Days on Location: 41

Anticipated Total Depth: 3010m — Target Horizon(s): Trevor Sandstone, Gilmore Lake, Proterozoic Sands

UWI: 300F466550130000

EVALUATION PROGRAM

Ten-metre sample intervals: below 339.7mm surface casing

Five-metre sample intervals: below 339.7mm surface casing

Canned sample intervals: N/A

Conventional cores at: as per ADW submission

Logs and Tests: as per ADW submission

CASING AND CEMENTING PROGRAM

O.D.	Weight:	Grade:	Setting Depth RKB ~~XXXXXXXXXX~~:	Cementing Program (Volumes):
508mm	197.9 kg/m	K-55	40m	*Alaskan Permafrost
339.7mm	90.8 kg/m	K-55	450m	*Alaskan Permafrost
244.5mm	59.53 kg/m	K-55	1250m	**Class "G" + additives
	64.79 kg/m	MN-80	1800m	
177.8mm	38.69 kg/m	MN-80	3010m	***Class "G" + additives

* Cement to surface ** Caliper + 25% excess *** Caliper + 100% excess

B.O.P. Equipment: 346.1 mm, 21 000 kPa WP

1 - Hydril "GK" Annular

1 - Shafco "NRS" (Double) Ram

1 - Shafco "NRS" (Single) Ram

Other Information:

1 - Troy Series 600 Single Drum Drawworks

2 - Continental Emsco Model DB-550 7" x 16" Duplex Mud Pump

Signed: W. H. Garman — Title: Drilling Manager

Date: 1990-10-12 — Company: Chevron Canada Resources

APPROVAL

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

Signed:

Engineering Branch

Date: 90-12-13

File: 9211-C4-1-6

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

FINAL WELL REPORT

OTTAWA COPY

FINAL WELL REPORT

CHEVRON RAMPARTS RIVER F-46

65° 45' 18.60" N

130° 08' 51.44" W

Grid Area 65° 50', 130° 00'

1991-05-15

TABLE OF CONTENTS

INTRODUCTION

FINAL WELL REPORT

INTRODUCTION

1) Summary

The stratigraphy and pertinent details of the depositional sequence in the Fort Good Hope region are as follows:

The Cambrian sequence, deposited unconformably on the Proterozoic basement, consists of basal marine/non-marine sandstones (Mount Clark Formation) with shallow marine shales of the overlying Mount Cap Formation. Salts and shales of the Saline River Formation complete the Cambrian stratigraphy. This formation acts as a decollement zone for many of the structures in then southern part of the landblock.

Conformably overlying the Cambrian clastics are light colored dolomites of the Ordovician Franklin Mountains and Silurian Mount Kindle formations (Ronning Group) which are separated by a disconformity. These formations exhibit fair to good intercrystalline and vuggy porosity.

The Devonian sequence unconformably overlies the Ronning Group. The basal section consists of shallow marine dolomites (Arnica), limestones (Landry) and evaporites (Fort Norman). The Arnica Formation contains good intercrystalline porosity and has excellent reservoir potential. Both the Landry and Fort Norman formations are tight, but would form excellent seals.

Following Early Devonian sedimentation, open marine transgressive limestones and shales of the Headless and Nahanni formations were deposited. Isolated Nahanni reefs, such as at the Manitou Lake L-61 well, developed on the Nahanni platform. Laterally equivalent to, and overlying these reefs are shales and siltstones of the Hare Indian Formation, deposited in prograding clastic lobes. The lower Bluefish Member is composed of black, organic-rich shales which have excellent source potential. Argillaceous limestones characterize the upper Hare Indian. Black shales of the Canol Formation overlie the Hare Indian and are in turn overlain by siltstones, shales and sandstones of the Imperial Formation.

Basal Cretaceous fluvial/valley-fill sandstones, coals and shales of the Gilmore Lake Member probably infilled lows on the pre-Cretaceous unconformity surface. Continued transgression resulted in the deposition of widespread shallow marine sands of the Arctic Red Formation (sandstone member) which are porous locally. Marine shales and siltstones of the Arctic Red Formation (shale member) overlie these sandstones.

Upper Cretaceous sedimentation resulted in the deposition of marine shales, silts and sandstones of the Trevor Formation.

ii) Operator, Contractor, and Drilling Unit Used

See General Data

iii) Wellsite Operations

(Refer to Appendix 1)

iv) Formations Penetrated

(Refer to Appendices 2, 3 and 4)

v) Testing Results

(Refer to Appendix 5)

vi) Locality Map

(Refer to Append : 6)

GENERAL

DATA

GENERAL DATA

i) Well Name: Chevron Ramparts River F-46
Exploration Agreement Number: 9211-C4-1
Federal Designation: N 65° 45' 18.60"/W 130° 08' 51.44"
Unit F, Section 46
Grid Area 65° 50', 130° 00'

ii) Well Location:

Wellsite Location

The well was staked at 4.7m N.E. and 25.9m N.W. of shot point (flag) 5974 line 56XA.

Legal Survey Requirements

The well location was surveyed using found stations B-30-2 and A-41-3 from the survey of Chevron Well sites B-30 and A-41 using Global Positioning Survey methods. The survey was done in September 1990. Access road survey was conducted between 11th and 13th of March 1991 by Global Positioning Survey kinematic methods.

Computations

All coordinates are UTM grid on NAD27 datum and were computed assuming the coordinates of stations B-30-2 and A-41-3.

iii) Unique Well Identifier

Drilling Program No.: 9211-C4-1
Land Use Permit No.: N90A418

iv) Operator and Drilling Contractor

(OPERATOR)

Chevron Canada Resources
500 5 Avenue S.W.
CALGARY, Alberta
T2P 0L7
Phone 234-5000

(CONTRACTOR)

Shehtah Drilling Limited
P.O. Box 1467
YELLOWKNIFE, N.W.T.
X1A 2P1

General Manager: Mr. R. F. (Dick) Gajek
Telephone: (403) 873-4225

v) Drilling Unit

Name:	Shehtah 1E
Type:	2 800 m capacity, Troy Series 600 (600 hp)
Registry:	N/A
Year Built:	1982
Shipyard:	N/A

vi) Position Keeping - N/A

vii) Aircraft Support

a) Company

The Chevron Aircraft which supported the drilling operations consisted of a Hawker Siddeley HS-748, a Cessna Citation C-2 and a Twin Otter.

The Hawker Siddeley and Citation were based in Calgary while the Twin Otter remained at Norman Wells.

b) Charter

Charter Aircraft consisted of North-Wright's Twin Otter and Okanagan's Bell 206B Helicopter. These services supplemented our Company aircraft and were contracted as required.

c) Commercial

Canadian Airlines had daily flights from Calgary to Norman Wells return, which were used periodically to transport supplies, groceries, and equipment.

viii) Drilling Unit Performance - N/A

ix) Difficulties and Delays

No difficulties or delays were encountered.

SUMMARY OF DRILLING OPERATIONS

SUMMARY OF DRILLING OPERATIONS

i) Elevations

Ground:	209.50 m
Fill:	.60 m
KB to Ground:	5.46 m
KB Elevation:	215.56 m

ii) Total Depth

Drilled:	1 510 m
Logged:	1 510 m
Plugged Back:	368 m

iii) Date Spudded

1991-02-24-23:30 hours.
Notified COGLA Yellowknife of spud.

iv) Date Drilling Completed

Drilling was completed 1991-03-13

v) Date of Rig Release

Shehtah Rig 1E was released at 08:00 hrs 1991-03-18

vi) Well Status

Abandoned.

vii) Hole Size and Depth

Hole	Size	Depth
a) Conductor	660.4 mm (26")	45 m (148 ft)
b) Surface	444.5 mm (17 1/2")	448 m (1470 ft)
c) Main	311.2 mm (12 1/4")	1510 m (4954 ft)

vii i) Casing and Cementing Record

HOLE	SIZE	WEIGHT	GRADE	MAKE	NO. OF JOINTS	THREAD TYPE	DATE SET	DEPTH SET(m)	CEMENT TYPE & VOLUME
CONDUCTOR	508.0 mm	197.9 kg/m	K-55		3	Buttress	91-02-26	42.5	2.5 m3 SAPP water, pre-flush followed by 22.7 m3 (28.0t) Alaskan Class "G" permafrost cement c/w 6% Gilsonite + 15% permafrost retarder mixed to 1760 kg/m3 slurry density.
SURFACE	339.7 mm	90.8 kg/m	K-55	Sumitomo	38	ST&C	91-03-03	445.7	4m3 SAPP water, pre-flush followed by 65.6m3 (81.0t) Alaskan Class "G" permafrost cement c/w 6% Gilsonite + 0.15% permafrost retarder mixed to 1760 kg/m3 slurry density.

ix) Side Tracked Hole - N/A

x) Drilling Fluid
(Refer to Appendix 7)

HOLE	SIZE mm (in)	TYPE	PROPERTIES									
			Den-sity	Vis-cosity	W.L.	pH	PV	YP	Gel in/10min	Solids	Oil	Cl
Conduc-tor	660.4 (26)	Gel-Chemical	1130	70	25.0	8.5	23	9.5	2/8	5%	Nil	150
Surface	444.5 (17 1/2)	Gel-Chemical	1115	68	7.5	7.5	25	19	8/11	8%	Nil	150
Main	215.9 (8 1/2)	Gel-Chemical	1120	87	7.0	10	41	20	7.5/10	8%	Nil	150

xi) Fishing Operations N/A

xii) Well Kicks - N/A

xiii) Formation Leak-Off Tests (FLOT)

CASING SIZE mm (in)	SHOE DEPTH	FLUID DENSITY (kg/m3)	MAXIMUM SURFACE PRESSURE (kPa)	EQUIVALENT GRADIENT (kPa/m)	EQUIVALENT MUD DENSITY (kg/m3)	DATE FLOT CONDUCTED
508.0 (20)	42.5 m				N/A	N/A
339.7 (13 3/8)	445.7 m	1120	2 800	17.2	1750	91-03-05

xiv) Time Distribution

	HOURS	DAYS
DRILLING OPERATIONS		
1. Drilling	179	7.5
2. Tripping	12 1/2	0.5
3. Coring	-	-
4. Deviation Surveys	9 1/4	0.4
5. Rig Service and Tests	17 3/4	0.7
DEAD TIME		
1. Drillstem Testing	19 3/4	0.8
2. Logging	71 1/2	3.0
3. Circulating Samples	4	0.2
4. Casing, Cementing and WOC	121 3/4	5.1
5. Hole Conditioning	70 1/2	2.9
6. Rig Move, Up, Down	219 1/2	9.1
7. Completing	-	-
LOST TIME		
1. Fishing	-	-
2. Lost Circulation	3 3/4	0.2
3. Repairs	2 3/4	0.1
4. Waiting	-	-
5. Miscellaneous	-	-
TOTAL:	732	30.5

xv) Deviation Surveys
(Refer to Appendix 8)

xvi) Abandonment Plugs

PLUG NUMBER	INTERVAL	LENGTH (m)	FLUID BETWEEN PLUGS	FORMATION ISOLATED
1	1510m - 1410m	100 m	Gel-Chemical	Bottom hole
2	1010m - 910m	100 m	Gel-Chemical	Arctic Red S.S.
EZSV	398m			
3	398m - 368m	30 m	Gel-Chemical	In 339.7 mm surf. casing
4	17m - 7m	10 m	Gel-Chemical	In 339.7 mm surf. casing
WELD ON CAP ON 339.7 mm SURFACE CASING 1m BELOW GROUND				

xvii) Composite Well Record

(Refer to Appendix 2)

GEOLOGY

SUMMARY REPORT

WELL NAME	Chevron Ramparts River F-46
LOCATION	Unit F, Section 46
COORDINATES	Latitude 65° 45' 18.6" North Longitude 130° 08' 51.44" West
GROUND ELEVATION	209.5 m Fill 0.6 m
KB TO GROUND LEVEL	5.46 m
KB ELEVATION	215.56 m
TOTAL DEPTH	1510 m
STATUS	Abandoned
SPUDDED	1991-02-24 @ 23:30 Hrs.
RIG RELEASE	1991-03-18 @ 08:00 Hrs.
GEOLOGIST	Dave Hendry
ENGINEERS	B. Meyer, I. Lundberg, B. Marsh, L. Carefoot
CONTRACTOR	Shehtah # 1E
MUD LOGGER	Datalog
HOLE SIZE	660 mm Surface to 42.26 m 444 mm 42.26 m to 448 m 311 mm 448 mm to 453 m 216 mm 453 m to 1510 m
CONDUCTOR CASING	JOINTS: 3 (36.18 m)
	Size: 508 mm, 197.9 kg/m
	Type: K55
	Landed at: 42.46 m
	CEMENT: 28 tonne (22.7 m^3) Permafrost Blend + 6% Gilsonite + 0.15% PF mixed at 1760 kg/m^3
	C.I.P. 1991-02-26 @ 11:40 Hrs.

SURFACE CASING	JOINTS:	38 (440.1 m)
	Size:	339.7 mm, 90.8 kg/m
	Type:	K55, ST&C
	Landed at:	445.69 m
	CEMENT:	81 tonne (65.3 m^3) Alaskan Permafrost + 6% Gilsnonite + 0.15% PF mixed at 1760 kg/m^3
	C.I.P.	1991-03-03 @ 23:00 Hrs.

ABANDONMENT PLUGS

Plug #1	1510 - 1410 m
Plug #2	1010 - 910 m
Plug #3	398 - 368 m

DITCH SAMPLES

5 m intervals

CHEVRON: 1 set 4" x 6" bags washed, 1 set 5" x 7" bags unwashed and 2 sets of washed vials at 10 m intervals from 45 m to Sfc Csg & 5 m intervals to FTD.
COGLA: 1 set 500 ml plastic jugs at 10 m intervals from 45 m to FTD. 2 sets of washed vials at 10 m intervals from 45 m to Sfc Csg and 5 m intervals to FTD.

SAMPLE DESCRIPTION

45 - 1510 m

WELL SITE ROCK LOG DESCRIPTION

45 - 1510 m

CORED INTERVALS

None

LOST CIRCULATION

None

FORMATION TESTS	DST # 1	960 - 973m Gilmore Lake
	Times:	10, 90, 60, 180 minutes
	Preflow:	Surface pressure increased from 0.3 to 1.3 kPa in 10 minutes.

Valve Open:	Surface pressure increased from 1.1 to 3.75 kPa in 60 minutes.				
Recovery:	17 m drilling mud				
Pressure: (kPa)	IHP 11191	IPF ---	IFP 393		
	FHP 11191	FPF ---	FFP 393		
		ISI 747	FSI 719		
	Recorder at 962 @ 59°C				

LOGGING

	Computalog			
Run # 1	LS-SONIC	445.2 - 42.3 m,	1:240,	1,600
Run # 2	DIL	1507.5 - 445.7 m,	1:240,	1,600
	MEL	1501.4 - 926.9 m,	1:240,	1,600
	BCS	1504 - 445.7 m,	1:240,	1,600
	SLD-CNL	1505.2 - 445.7 m,	1:240,	--
	SSL	1270.5 - 900 m,	1:240,	--

GEOLOGICAL MARKERS
Chevron Ramparts River F-46
KB Elevation 215 m (Actual KB 215.56 m)

Formation	Samples Depth - m	Log Depth - m	Log Elevation- m
Arctic Red Sandstone	938	938	– 722.4
Gilmore Lake	955	948	– 732.4
Imperial	974	972	– 756.4
Canol	1247	1245.5	– 1029.9
Hare Indian	1264	1263	– 1047.4
Bluefish	1434	1428	– 1212.4
Nahanni	1454	1454	– 1238.4
Total Depth	1510	1510	– 1294.4

WELL

EVALUATION

i) Logging - Computalog

RUN #1	LS-SONIC	445.2 - 42.3m
RUN #2	DIL	1507.5 - 445.7m
	MEL	1501.4 - 926.9m
	BCS	1504 - 445.7m
	SLD-CNL	1505.2 - 445.7m
	SSL	1270.5 - 900m

ii) Formation Stimulation - N/A

iii) Formation & Production Test Results - N/A

ENVIRONMENTAL

WELL

REPORT

Environmental Well Report: N/A

APPENDICES

APPENDIX 1

WELLSITE OPERATIONS SUMMARY

CHEVRON RAMPARTS RIVER F-46

DAILY PROGRESS SUMMARY

DATE: 91-02-24 DAY: 0.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GND: 209.54m
OPERATIONS SUMMARY (2400): Spud in and drill ahead in 660mm hole.

MIDNIGHT DEPTH: 5m OPERATIONS: Drilling PROGRESS: 5m

SURVEYS:

MUD DEPTH: WT: VIS: WL: pH:

CASING:

DATE: 91-02-25 DAY: 1.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GND: 209.54m
OPERATIONS SUMMARY (2400): Drill to 45m with surveys. Lost circ. at 16m. Rig to run csg.

MIDNIGHT DEPTH: 45m OPERATIONS: Rig for csg. PROGRESS: 40m

SURVEYS: 24m - 1/2°

MUD DEPTH: 43m WT: 1130 VIS: 70 WL: - pH: 8.5

CASING:

DATE: 91-02-26 DAY: 2.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GND: 209.54m
OPERATIONS SUMMARY (2400): Run 508.0 mm csg., landed at 42.46m. Cement csg. and nipple up diverter. Rig out false floor and csg. equipment. Pressure test diverter.

MIDNIGHT DEPTH: 45m OPERATIONS: Press. testing PROGRESS: 0m

SURVEYS:

MUD DEPTH: WT: VIS: WL: pH:

CASING: 508mm, 197.9 kg/m, K-55, set at 42.46 m.

R

CHEVRON RAMPARTS RIVER F-46

DAILY PROGRESS SUMMARY

DATE: 91-02-27 DAY: 3.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): Nipple up diverter, install rotary table and bluey line, drill mouse hole, RIH, pressure test diverter, drill cement, float and shoe, drill ahead with surveys every 30m.

MIDNIGHT DEPTH: 115m OPERATIONS: Drill 20m/hr.

SURVEYS: -

MUD DEPTH: 100m WT: 1060 VIS: 46 WL: 25 pH: 10.5

CASING: 508mm, 197.9kg/m, K-55, set at 42.26m

DATE: 91-02-28 DAY: 4.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): Drill ahead with surveys every 2-3 singles, wiper trip tight hole at 209m (POOH to 36m), drill ahead with surveys, wiper trip tight hole at 274m (POOH to 122m) drill ahead.

MIDNIGHT DEPTH: 303m OPERATIONS: Drilling

SURVEYS: 117m 1/8, 145m 1/8, 172m 1/2, 196m 1, 224m 1, 262m 2.

MUD DEPTH: 260m WT: 1090 VIS: 59 WL: 8.5 pH: 8.0

CASING: 508mm, 197.9kg/m, K-55, set at 42.26m

DATE: 91-03-01 DAY: 5.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): Drill ahead with surveys, circ, survey at 331m out to 4, POOH, change bit, pick up jars, RIH, ream 234-331m, drill, work tight hole, survey, drill.

MIDNIGHT DEPTH: 366m OPERATIONS: Drilling 6m/hr PROGRESS: 63m

SURVEYS: 292m 2&3/4, 321m 4, 355m 3.

MUD DEPTH: 350m WT: 1100 VIS: 68 WL: 7.5 pH: 7.5

CASING: 508mm, 197.9kg/m, K-55, set at 42.26m

DATE: 91-03-02 DAY: 6.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): Drill ahead to 392m, circ, survey, wiper trip 5 stands, ream from 318m to 392m, drill to 440m, wiper trip to 80m, RIH, ream 390-440m, drill to casing point at 448m, circ, dummy trip.

MIDNIGHT DEPTH: 448m OPERATIONS: Dummy trip at Csg point PROGRESS: 82m

SURVEYS: 383m 2, 417m 2.

MUD DEPTH: 440m WT: 1135 VIS: 63 WL: 7.4 pH: 7.0

CASING: 339.7mm, 90.8kg/m, K-55, set at 445.69m

DATE: 91-03-03 DAY: 7.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): Finish wiper trip, 6m fill, circ, wiper trip 4 stands, circ, POOH to log, rig up loggers and log, rig out loggers, rig up and run casing, circ casing, cement, CIP: 91-03-03 at 23:00, WOC.

MIDNIGHT DEPTH: 448m OPERATIONS: WOC PROGRESS: 0

SURVEYS: -

MUD DEPTH: - WT: - VIS: - WL: - pH: -

CASING: 339.7mm, 90.8kg/m, K-55, set at 445.69m

DATE: 91-03-04 DAY: 8.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): WOC, back off casing, tear out diverter, cut conductor, screw on bowl, pick up & nipple up BOP's, install lines and flare line, pressure test.

MIDNIGHT DEPTH: 448m OPERATIONS: Pressure testing PROGRESS: 0

SURVEYS: -

MUD DEPTH: - WT: - VIS: - WL: - pH: -

CASING: 339.7mm, 90.8kg/m, K-55, set at 445.69m

DATE: 91-03-05 DAY: 9.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): Pressure test, nipple up flow line, lay down 9" collars, pick up 6&3/4" collars and make up BHA, run BHA in hole, pressure test, POOH, pick up 311mm bit SVH, RIH, drill float collar and cement, pressure test, drill cement and shoe, drill 311mm hole, circ, run leak off test.

MIDNIGHT DEPTH: 453m OPERATIONS: Leak off test PROGRESS: 0m

SURVEYS: -

MUD DEPTH: 453m WT: 1115 VIS: 49 WL: 7.2 pH: 8.0

CASING: 508mm, 197.9kg/m, K-55, set at 42.26m

DATE: 91-03-06 DAY: 10.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): POOH, change out 311mm bit for 216mm bit, RIH, drill ahead, control WOB below 815m looking for core point (10000daN ROP 3-7min/m)

MIDNIGHT DEPTH: 825m OPERATIONS: Drilling 8-15m/hr PROGRESS: 372m

SURVEYS: 525m 1.5, 679m 1.

MUD DEPTH: 755m WT: 1110 VIS: 53 WL: 9.6 pH: 9.5

CASING: 508mm, 197.9kg/m, K-55, set at 42.26m

DATE: 91-03-07 DAY: 11.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): Drill ahead with 10000daN and 140RPM looking for core point, drilling slowed in sands above Arctic Red SS and stopped in hard sands of Arctic Red SS, circ, POOH, very slow tight trip all the way out.

MIDNIGHT DEPTH: 943m OPERATIONS: RIH w/Bit #2 F2 PROGRESS: 118m

SURVEYS: 829m 1 N47E

MUD DEPTH: 907m WT: 1115 VIS: 49 WL: 9.0 pH: 10

CASING: 508mm, 197.9kg/m, K-55, set at 42.26m

DATE: 91-03-08 DAY: 12.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): RIH, slip & cut line, RIH, ream tight hole at 462m, ream tight hole to 800m, RIH, clean 2 singles to bottom, drill ahead as of 21:30 with 12000daN and 60RPM.

MIDNIGHT DEPTH: 949m OPERATIONS: Drilling 3m/hr PROGRESS: 6m

SURVEYS: -

MUD DEPTH: 943m WT: 1135 VIS: 76 WL: 7.4 pH: 10

CASING: 339.7mm, 90.8kg/m, K-55, set at 445.69m

DATE: 91-03-09 DAY: 13.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): Drill ahead, circ sample at 958m in top of Gilmore Lake, drill, circ sample at 964m, drill, circ sample at 986m, drill ahead, survey, drill.

MIDNIGHT DEPTH: 1070m OPERATIONS: Drilling 7-8m/hr PROGRESS: 121m

SURVEYS: 1020m 3/4 N56E

MUD DEPTH: 1039m WT: 1095 VIS: 73 WL: 7.5 pH: 9.5

CASING: 339.7mm, 90.8kg/m, K-55, set at 445.69m

DATE: 91-03-10 DAY: 14.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): Drill ahead with surveys.

MIDNIGHT DEPTH: 1234m OPERATIONS: Drilling PROGRESS: 164m

SURVEYS: 1149m 3/4 S75E

MUD DEPTH: 1215m WT: 1120 VIS: 79 WL: 8.2 pH: 10.3

CASING: 339.7mm, 90.8kg/m, K-55, set at 445.69m

DATE: 91-03-11 DAY: 15.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): Drill, circ, work tight hole, survey, POOH, tight trip coming out, change bit, RIH, ream 726-842m

MIDNIGHT DEPTH: 1300m OPERATIONS: Reaming at 842m PROGRESS: 66m

SURVEYS: 1277m 1.75 N65W-

MUD DEPTH: 1300m WT: 1130 VIS: 76 WL: 8.0 pH: 10

CASING: 339.7mm, 90.8kg/m, K-55, set at 445.69m

DATE: 91-03-12 DAY: 16.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): Ream 842-973m, RIH 973-1178m, ream 1178-1200m, RIH and clean 16m fill on bottom, drill ahead.

MIDNIGHT DEPTH: 1390m OPERATIONS: Drilling 6-7m/hr PROGRESS: 90m

SURVEYS: -

MUD DEPTH: 1354m WT: 1120 VIS: 82 WL: 7.0 pH: 10.5

CASING: 339.7mm, 90.8kg/m, K-55, set at 445.69m

DATE: 91-03-13 DAY: 17.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GRD: 209.50m
OPERATIONS SUMMARY (24:00): Drill ahead, survey, drill to T.D. at 1510m, circ, survey, wiper trip, tight on trip, circ.

MIDNIGHT DEPTH: 1510m OPERATIONS: - PROGRESS: 1390m

SURVEYS: 1420m 3.5 N20E, 1486m 4 N15E

MUD DEPTH: - WT: - VIS: - WL: - pH: -

CASING: 339.7mm, 90.8kg/m, K-55, set at 445.69m

DATE: 91-03-14 DAY: 18.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GND: 209.54m
OPERATIONS SUMMARY (2400): Circ., trip out, run open hole logs, encountered bridge at 735m, make wiper trip and continue logging.

MIDNIGHT DEPTH: 1510m OPERATIONS: Logging PROGRESS: 0m

SURVEYS:

MUD DEPTH: 1510m WT: 1130 VIS: 86 WL: 6.5 pH: 10.0

CASING: 339.7 mm, 90.8 kg/m, K-55, set at 445.69 m.

DATE: 91-03-15 DAY: 19.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GND: 209.54m
OPERATIONS SUMMARY (2400): Continue running open hole logs.

MIDNIGHT DEPTH: 1510m OPERATIONS: Logging PROGRESS: 0m

SURVEYS:

MUD DEPTH: 1510m WT: 1130 VIS: 86 WL: 6.5 pH: 10.0

CASING: 339.7 mm, 90.8 kg/m, K-55, set at 445.69 m.

DATE: 91-03-16 DAY: 20.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GND: 209.54m
OPERATIONS SUMMARY (2400): Finish Logging, run DST #1, trip in hole.

MIDNIGHT DEPTH: 1510m OPERATIONS: R.I.H. PROGRESS: 0m

SURVEYS:

MUD DEPTH: 1510m WT: 1130 VIS: 86 WL: 6.5 pH: 10.0

CASING: 339.7 mm, 90.8 kg/m, K-55, set at 445.69 m.

DATE: 91-03-17 DAY: 21.1 RIG: SHEHTAH RIG 1
K.B.: 215.56m GND: 209.54m
OPERATIONS SUMMARY (2400): R.I.H, run abandonment plugs.

MIDNIGHT DEPTH: 1510m OPERATIONS: PROGRESS: 0m

SURVEYS:

MUD DEPTH: WT: VIS: WL: pH:

CASING: 339.7 mm, 90.8 kg/m, K-55, set at 445.69 m.

DATE: 91-03-18 DAY: 21.4 RIG: SHEHTAH RIG 1
K.B.: 215.56m GND: 209.54m
OPERATIONS SUMMARY (2400): Nipple down BOPs, release rig. Tear out.

MIDNIGHT DEPTH: 1510m OPERATIONS: PROGRESS: 0m

SURVEYS:

MUD DEPTH: WT: VIS: WL: pH:

CASING: 339.7 mm, 90.8 kg/m, K-55, set at 445.69 m.

APPENDIX 2

COMPOSITE WELL RECORD

APPENDIX 3

SAMPLE DESCRIPTION

44-50 SHALE: medium grey, slightly silty throughout, trace siltstone laminae, disseminated pyrite, few laminae very pyritic, trace carbonaceous specks, subplaty to subblocky.

50-60 SHALE: medium grey, silty, disseminated pyrite, non-calcareous, trace carbonaceous specks, some very silty laminae, blocky, subblocky, subplaty.

60-70 SHALE: predominantly slightly silty, part becoming very silty and trace sandy, disseminated pyrite, part slightly brownish and dolomitic.
SANDSTONE: 15%, grey, very fine grained, very silty, very argillaceous, quartz, trace glauconite, disseminated pyrite, trace carbonaceous specks, trace mica, tight, no stain or cut.

70-80 SHALE: medium grey, part only trace silty, part silty to very silty beds, sandy in part, disseminated pyrite.
SANDSTONE; 10%, medium grey, slightly brownish in part, barely very fine grained, very silty, grading to sandy siltstone, argillaceous, trace glauconite, tight, no stain or cut.

80-90 SHALE: part silty to very silty, part sandy, trace coarse pyrite blebs.
SANDSTONE: 10%, light to medium grey, speckled, quartz, very silty, argillaceous, trace glauconite, trace carbonaceous specks, trace pyrite, very slightly dolomitic, tight, no stain or cut.

90-100 SHALE: part slightly silty, part silty to very silty and sandy, slightly dolomitic, 5% brown sideritic/dolomitic laminae or nodules, silty.
SANDSTONE: 20%, very fine grained, argillaceous, silty, grading to sandy siltstone, locally pyritic, slightly dolomitic, trace carbonaceous flakes, tight, no stain or cut.

100-110 SHALE: generally as above, silty to very silty beds, sandy in part, grading to sandy siltstone, part brownish and slightly sideritic/dolomitic.
SILTSTONE: 10-15%, grey, brownish, argillaceous, sandy, locally pyritic, tight, grading to very silty shale.
SANDSTONE: thin beds, 5%, very fine grained, silty, argillaceous, tight, no stain or cut.

110-120 SHALE: medium grey, slightly silty, part slightly sandy, locally pyritic.
SANDSTONE: less than 5%, laminae and very thin beds, barely very fine grained, very argillaceous, silty, part pyritic, tight, grading to siltstone.

120-130 SHALE: slightly silty throughout, decreasing very silty and sandy beds to 15%, trace carbonaceous specks, part brownish and slightly dolomitic, pyritic laminae and trace coarse pyrite blebs.
SANDSTONE: and sandy siltstone, trace laminae.

130-140 SHALE: medium grey, slightly silty, few very silty and sandy beds, grading to siltstone, trace micromicaceous, trace carbonaceous, locally pyritic.
SILTSTONE: 5%, brownish grey, sandy, argillaceous, very slightly dolomitic, tight. Trace grading to argillaceous and silty sandstone laminae.

140-150 SHALE: predominantly slightly silty, with very silty and sandy beds, pyritic laminae.
SILTSTONE: 5%, very argillaceous, slightly dolomitic, sandy, trace grading to silty sandstone.

150-160 SHALE: as above.
SILTSTONE: 10%, light to medium grey, slightly brownish, argillaceous, sandy, micromicaceous, trace carbonaceous specks, locally pyritic, very slightly dolomitic, tight. Trace silty sandstone laminae.

160-170 SHALE: slightly silty, locally disseminated pyrite, trace carbonaceous specks, subplaty.
SILTSTONE: minor amounts, thin beds, sandy, argillaceous.
SANDSTONE: 2%, laminae, speckled grey, very fine grained, silty, argillaceous, quartz, trace micromicaceous, trace pyritic, very slightly dolomitic, firm, subangular, moderate sorting, tight, no stain or cut.

170-180 SHALE: medium grey, predominantly only trace silty, trace carbonaceous specks, part very slightly dolomitic, few laminae disseminated pyrite, subblocky.
SILTSTONE: trace laminae, argillaceous, few very fine grains.

180-190 SHALE: trace silty, silty beds, slight disseminated pyrite, locally trace carbonaceous specks.
SANDSTONE: less than 5%, barely very fine grained, very silty, grading to sandy siltstone, argillaceous, quartz, trace mica, trace carbonaceous, very slightly dolomitic, moderate sorting, tight.

190-200 SHALE: medium grey, trace to slightly silty.
SILTSTONE: laminae, argillaceous, trace micromicaceous, very slightly calcareous and dolomitic.

200-210 SHALE: increasing silty and sandy beds, 10%, increasing disseminated pyrite, trace carbonaceous specks.
SANDSTONE: and siltstone, 5%, barely very fine grained, argillaceous, pyritic, micromicaceous, very slightly calcareous and dolomitic, tight, firm.

210-220 SHALE: trace to slightly silty, less than 5% silty beds, increasing disseminated pyrite, pyritic microscopic spines, subblocky.

220-230 SHALE: trace silty, with 10% silty and trace sandy beds, disseminated pyrite.
SANDSTONE: trace laminae, barely very fine grained, locally pyritic, very slightly dolomitic, tight.

230-240 SHALE: medium grey, trace silty, micromicaceous, trace carbonaceous specks, disseminated pyrite, with 10% silty and very slightly sandy beds, subblocky.

240-250 SHALE: as above, with 5% very silty and sandy beds, grading to siltstone.

250-260 SHALE: trace silty, disseminated pyrite, carbonaceous and micromicaceous specks, minor silty laminae, grading to siltstone.

260-270 SHALE: Increasing silty.
SANDSTONE: and sandy siltstone, minor amounts, barely very fine grained, silty, argillaceous, micaceous, pyritic, trace carbonaceous specks, very slightly dolomitic, subangular and subrounded, moderate sorting, tight.

270-280 SHALE: medium grey, part dark grey, micromicaceous, disseminated pyrite, trace silty, few silty beds, trace barely sandy.

280-290 SHALE: medium grey, decreasing silty, trace to slightly silty, micromicaceous, trace carbonaceous specks, subblocky and subplaty, no sandy beds.

290-300 SHALE: medium grey, slightly micromicaceous, decreasing to only trace silty, trace disseminated pyrite, subblocky, firm.

300-310 SHALE: medium grey, very slightly micromicaceous, trace silty, disseminated pyrite, pyrite microlaminations, trace brownish dolomitic nodules, very argillaceous and trace silty.

310-320 SHALE: medium grey, increasing pyritic, pyrite blebs and laminae, trace silty, trace micromicaceous, firm, subblocky, barely visible slow cut, very slightly bituminous.

320-330 SHALE: as above, very pyritic, pyritic laminae and blebs throughout, trace carbonaceous specks, barely visible slow cut.

330-340 SHALE: medium to dark grey, micromicaceous, trace silty, part with carbonaceous flakes, very pyritic as above, very slightly dolomitic, blocky and subblocky.

340-350 SHALE: increasing dark grey, micromicaceous, very pyritic laminae and blebs, very slightly dolomitic, begin trace laminae with glauconite grains, blocky, subblocky, firm.

350-360 SHALE: as above, very pyritic, micromicaceous, trace silty, very slightly dolomitic.

360-370 SHALE: medium grey, micromicaceous, decreasing pyritic, disseminated pyrite and blebs, subblocky to blocky, few brown dolomitic nodules.

370-380 SHALE: disseminated pyrite and blebs, micromicaceous, brown microcrystalline

380-390 SHALE: as above, micromicaceous, trace Inoceramus.

390-400 SHALE: disseminated pyrite, blebs, laminae, blocky, very slightly dolomitic.

400-410 SHALE: medium grey, decreasing pyrite laminae, generally disseminated pyrite, increasing to very slightly silty throughout, few very silty laminae, increasing carbonaceous specks, very slightly dolomitic.

410-420 SHALE: disseminated pyrite, micromicaceous, trace silty, part with carbonaceous specks.

420-430 SHALE: pyritic, micromicaceous, carbonaceous specks, very slightly silty, trace silty beds.

430-440 SHALE: pyritic as above, carbonaceous specks.
SILTSTONE: 2%, laminae, argillaceous, trace dolomitic, trace sandy siltstone.

440-448 Poor Sample after Dummy Trip
SHALE: medium grey, pyrite blebs, disseminated pyrite, micromicaceous, trace dolomitic, trace silty.

448-450 SHALE: medium to dark grey, micromicaceous, trace silty.
Cement cavings.

450-455 SHALE: medium grey, micromicaceous, generally trace silty, with few silty laminae, slight disseminated pyrite, subblocky to subplaty.

455-460 SHALE: as above, 5% very silty laminae, pyritic, grading to siltstone, trace brown dolomitic/sideritic nodules.

460-465 SHALE: medium grey, slightly silty, micromicaceous, with 5% lighter grey, very silty laminae, part pyritic, slightly dolomitic, grading to siltstone.

465-470 SHALE: medium grey, micromicaceous, trace silty, disseminated pyrite, very slightly dolomitic, trace very silty laminae grading to siltstone, with light to medium brown, hard, dolomitic, trace sideritic nodules.

470-475 SHALE: as above, slight disseminated pyrite, with 5% medium brown, hard, dolomitic/sideritic nodules.

475-480 SHALE: as above, very slightly silty, with 10% light-medium-dark brown, hard, dolomitic, trace sideritic, nodules or laminae, trace silty, trace pyrite blebs.

480-485 SHALE: slightly silty, trace dolomitic, with 10% brown, dolomitic, trace sideritic nodules or laminae.

485-490 SHALE: as above, with 10% brown, dolomitic/sideritic nodules or laminae.

490-495 SHALE: slightly silty, slight disseminated pyrite, micromicaceous, trace carbonaceous specks, slight decrease brown nodules.

495-500 SHALE: medium grey, subblocky to subplaty, firm, only few dolomitic/sideritic nodules.

500-505 SHALE: as above, 5% dolomitic/sideritic nodules.

505-510 SHALE: medium grey, micromicaceous, very slightly silty, only few nodules.

510-515 SHALE: as above, very slightly silty, very slightly dolomitic, slight disseminated pyrite.

515-520 SHALE: as above, few brown dolomitic/sideritic nodules.

520-525 SHALE: medium grey, slightly silty, slightly micromicaceous, disseminated pyrite, only trace dolomitic, subblocky, firm, few nodules.

525-530 SHALE: as above.

530-535 SHALE: disseminated pyrite, trace pyritic tubes, very slightly silty.

535-540 SHALE: as above, few brown dolomitic/sideritic nodules or laminae.

540-545 SHALE: slightly silty, disseminated pyrite, trace nodules.

545-550 SHALE: as above, trace dolomitic, trace brown dolomitic/sideritic nodules or laminae.

550-555 SHALE: medium grey, trace to slightly silty, subblocky, subplaty, minor platy beds.

555-560 SHALE: disseminated pyrite, trace silty laminae, trace pelecypod fragments, increase hard brown dolomitic/sideritic nodules or laminae.

560-565 SHALE: medium grey, very slightly silty, trace lighter grey laminae with slight greenish tint, trace calcite fragments probably from fossils.

565-570 SHALE: medium grey, trace silty, disseminated pyrite, trace brown dolomitic/sideritic nodules.

570-575 SHALE: as above, pyritic tubes and disseminated.

575-580 SHALE: as above.

580-585 SHALE: trace very silty laminae, trace carbonaceous specks.

585-590 SHALE: as above.

590-595 SHALE: trace pyritic fossil tubes, pyritic and carbonaceous plant? fragments, few brown, hard, dolomitic/sideritic nodules.

595-600 SHALE: micromicaceous, slight disseminated pyrite, trace silty, few nodules.

600-605 SHALE: predominantly subblocky.

605-610 SHALE: slight disseminated pyrite and small blebs, trace silty, trace calcite fossil fragments?

610-615 SHALE: as above.

615-620 SHALE: trace silty, trace disseminated pyrite, rare glauconite grains, trace brown dolomitic/sideritic nodules.

620-625 SHALE: as above, rare glauconite grains.

625-630 SHALE: trace silty, rare glauconite, trace pelecypod.

630-635 SHALE: only trace silty.

635-640 SHALE: few brown dolomitic/sideritic nodules.

640-645 SHALE: as above.

645-650 SHALE: as above.

650-655 SHALE: medium grey, slightly micromicaceous, slightly pyritic, only trace silty, rare glauconite grains, subplaty to subblocky.

655-660 SHALE: trace pyritic, trace silty.

660-665 SHALE: medium grey, slightly micromicaceous, part increasing silty beds, slight disseminated pyrite, few brown dolomitic/sideritic nodules, silty, hard, tight.

665-670 SHALE: increasing silty, silty beds and laminae, trace glauconite, slightly micromicaceous, slightly pyritic, few brown dolomitic/sideritic nodules.

670-675 SHALE: slightly silty, silty beds, trace siltstone, micromicaceous, trace glauconitic, locally pyritic, subblocky.

675-680 SHALE: silty beds, firm, subblocky.

680-685 SHALE: slightly silty, silty beds, micromicaceous.

685-690 SHALE: as above.

690-695 SHALE: silty beds, micromicaceous, trace pyritic.

695-700 SHALE: silty, some very silty beds grading to siltstone.

700-705 SHALE: silty to very silty, grading to siltstone, micromicaceous, trace glauconite, locally pyrite blebs, subblocky.

705-710 SHALE: generally as above, disseminated and blebs pyrite, pyritic tubes, few brown dolomitic/sideritic nodules.

710-715 SHALE: silty to very silty, part grading to very argillaceous siltstone, micromicaceous, pyrite, trace glauconitic shale laminae.

715-720 SHALE: silty, with very silty beds, grading to argillaceous siltstone, trace glauconite.

720-725 SHALE: slightly silty to very silty, few dolomitic/sideritic nodules, trace fossil fragments.

725-730 SHALE: decreasing silty beds, micromicaceous, trace glauconite, 5% brown dolomitic/sideritic nodules or laminae.

730-735 SHALE: slightly silty to very silty, with argillaceous siltstone laminae.

735-740 SHALE: micromicaceous, slightly silty to silty, trace siltstone, coarse pyrite blebs, trace brown nodules.

740-745 SHALE: increasing silty, begin slightly sandy, very silty beds, micromicaceous, trace glauconite, slight pyrite blebs and disseminated, trace pelecypod, grading to sandy siltstone, 5% brown nodules.
SANDSTONE: 5%, very silty, very argillaceous, barely very fine grained, grading to sandy siltstone, tight.

645-650 SHALE: as above.

650-655 SHALE: medium grey, slightly micromicaceous, slightly pyritic, only trace silty, rare glauconite grains, subplaty to subblocky.

655-660 SHALE: trace pyritic, trace silty.

660-665 SHALE: medium grey, slightly micromicaceous, part increasing silty beds, slight disseminated pyrite, few brown dolomitic/sideritic nodules, silty, hard, tight.

665-670 SHALE: increasing silty, silty beds and laminae, trace glauconite, slightly micromicaceous, slightly pyritic, few brown dolomitic/sideritic nodules.

670-675 SHALE: slightly silty, silty beds, trace siltstone, micromicaceous, trace glauconitic, locally pyritic, subblocky.

675-680 SHALE: silty beds, firm, subblocky.

680-685 SHALE: slightly silty, silty beds, micromicaceous.

685-690 SHALE: as above.

690-695 SHALE: silty beds, micromicaceous, trace pyritic.

695-700 SHALE: silty, some very silty beds grading to siltstone.

700-705 SHALE: silty to very silty, grading to siltstone, micromicaceous, trace glauconite, locally pyrite blebs, subblocky.

705-710 SHALE: generally as above, disseminated and blebs pyrite, pyritic tubes, few brown dolomitic/sideritic nodules.

710-715 SHALE: silty to very silty, part grading to very argillaceous siltstone, micromicaceous, pyrite, trace glauconitic shale laminae.

715-720 SHALE: silty, with very silty beds, grading to argillaceous siltstone, trace glauconite.

720-725 SHALE: slightly silty to very silty, few dolomitic/sideritic nodules, trace fossil fragments.

725-730 SHALE: decreasing silty beds, micromicaceous, trace glauconite, 5% brown dolomitic/sideritic nodules or laminae.

730-735 SHALE: slightly silty to very silty, with argillaceous siltstone laminae.

735-740 SHALE: micromicaceous, slightly silty to silty, trace siltstone, coarse pyrite blebs, trace brown nodules.

740-745 SHALE: increasing silty, begin slightly sandy, very silty beds, micromicaceous, trace glauconite, slight pyrite blebs and disseminated, trace pelecypod, grading to sandy siltstone, 5% brown nodules.
SANDSTONE: 5%, very silty, very argillaceous, barely very fine grained, grading to sandy siltstone, tight.

745-750 SHALE: silty to very silty, grading to siltstone, part sandy siltstone laminae.

750-755 SHALE: very silty beds, sandy laminae, trace glauconitic, trace nodules.
SILTSTONE: 30%, very argillaceous, sandy, grading to very silty sandstone, micromicaceous, trace carbonaceous specks, slightly pyritic.

755-760 SHALE: silty to very silty.
SILTSTONE: 20%, very argillaceous, micromicaceous, sandy in part.

760-765 SHALE: silty, 20% very silty beds.
SILTSTONE: 10%, very argillaceous, slightly sandy, trace lighter grey, cleaner siltstone, trace barely very fine grains.

765-770 SHALE: 25% very silty beds, grading to siltstone.
SILTSTONE: 15-20%, very argillaceous, trace barely very fine grained sandstone, very silty and argillaceous, trace part pyritic and glauconitic.

770-775 SHALE: silty beds, pyrite, trace brown nodules.
SILTSTONE: 20%, very argillaceous, slightly sandy, trace carbonaceous specks.

775-780 SHALE: as above, brown dolomitic/sideritic nodules or laminae, pyrite blebs and tubes, decreasing very silty beds.
SILTSTONE: very thin beds only, slightly sandy.

780-785 SHALE: 10% silty beds.
SILTSTONE: thin beds, very argillaceous, slightly sandy.
SANDSTONE: trace laminae, barely very fine grained, very argillaceous and silty.

785-790 SHALE: slightly silty, micromicaceous, platy, subplaty, subblocky, minor silty beds, trace siltstone laminae.

790-795 SHALE: very slightly silty, pyrite blebs, trace coarse pyrite, minor silty beds, 5% brown, dolomitic/sideritic nodules.
SILTSTONE: 5%, laminae, very argillaceous, trace sandy, dark brownish grey, slightly dolomitic.

795-800 SHALE: minor silty beds, trace siltstone laminae, trace carbonaceous.
Dolomitic/sideritic nodules and laminae, 15%, brown, cryptocrystalline, microcrystalline, argillaceous, part silty, pyrite.

800-805 SHALE: 5% silty beds and trace siltstone laminae.
Dolomitic/sideritic nodules, 15%.

805-810 SHALE: slightly silty, pyrite blebs, coarse pyrite, minor silty beds, trace siltstone, decreasing dolomitic/sideritic nodules, slightly calcareous.
SANDSTONE: trace laminae, light grey, barely fine grained, silty, mica, tight.

810-815 SHALE: as above, minor silty beds, few nodules.

815-820 SHALE: platy, few very thin silty beds or laminae, trace calcite filled microfractures.

820-825 SHALE: as above, platy, subplaty, trace pyrite blebs, trace gastropods, few nodules.

825-830 SHALE: few silty beds, pyrite blebs, 5% brown, hard, cryptocrystalline, dolomitic/sideritic nodules.

830-835 SHALE: medium grey, minor silty beds, trace grading to siltstone, pyritic tubes.

835-840 SHALE: platy, few brown nodules.

840-845 SHALE: medium grey, platy, minor silty laminae, rare very glauconitic laminae, silty and pyritic.

845-850 SHALE: medium grey, platy, pyrite blebs, trace silty laminae, trace brown dolomitic/sideritic nodules.

850-855 SHALE: trace silty laminae, platy, subplaty.

855-860 SHALE: platy, very slightly silty, few very thin silty beds, locally pyrite blebs and tubes.

860-865 SHALE: as above.

865-870 SHALE: medium to dark grey, trace micromicaceous, few silty beds, 5% brown dolomitic/sideritic nodules or laminae, clear and white crystalline calcite from fracture filling.

870-875 SHALE: medium and some dark grey, trace micromicaceous, trace pyrite blebs, trace silty shale, platy, subplaty.

875-880 SHALE: medium grey, trace micromicaceous, platy, some darker grey and slightly silty, subblocky.

880-885 SHALE: as above, coarse pyrite blebs, few brown dolomitic/sideritic nodules.

885-890 SHALE: disseminated pyrite, pyrite blebs, silty beds, platy, brown dolomitic/sideritic nodules.

890-895 SHALE: medium to dark grey, slightly silty, micromicaceous, pyrite blebs and disseminated pyrite, few brown nodules.

895-900 SHALE: medium to dark grey, micromicaceous, slightly silty, pyrite, platy, subplaty.

900-905 SHALE: increasing silty, silty beds, micromicaceous, pyrite blebs, cement cavings.

905-910 SHALE: slightly silty throughout with silty beds, micromicaceous, pyrite blebs, cement cavings.

910-915 SHALE: medium grey, slightly micromicaceous, platy, part slightly silty and subblocky, locally slightly pyritic.

915-920 SHALE: becoming silty and sandy, disseminated pyrite, micromicaceous, trace glauconite, very slightly dolomitic, grading in part to very argillaceous and silty sandstone, trace floating coarse quartz grains.
SANDSTONE: 10%, dark brownish grey, very fine to fine grained, silty, very argillaceous, mica, trace glauconite, pyrite, slightly dolomitic, trace siliceous, subangular, poor sorting, tight, no stain or cut.
SILTSTONE: thin beds, very argillaceous, very sandy.

920-925 SHALE: dark grey, silty, sandy, trace carbonaceous specks, few brown dolomitic/sideritic nodules.
SILTSTONE: very argillaceous, sandy, mica, slightly glauconitic, slightly pyritic.
SANDSTONE: 10%, fine grained, very argillaceous, silty, slightly glauconitic, pyrite, hard, siliceous, slightly dolomitic, trace ostracod, tight, no stain or cut.

925-930 SHALE: silty and sandy, disseminated pyrite, locally coarse pyrite, trace floating medium grains, well rounded quartz, grading to sandy siltstone.
SILTSTONE: thin beds, very argillaceous, slightly sandy.
SANDSTONE: laminae and thin beds, fine grained, trace medium grains, very argillaceous, silty, poorly sorted, tight.

930-935 SHALE: dark grey, silty and sandy, pyritic.
SILTSTONE: very argillaceous, very sandy, mica, slightly dolomitic.
SANDSTONE: 15%, very fine to fine grained, very argillaceous, very silty, quartz, mica, pyrite, slightly dolomitic, minor kaolinitic chips, poorly sorted, tight, no stain or cut.

935-940 SHALE: silty and sandy.
SILTSTONE: dark brownish grey, very argillaceous, very sandy, mica, slightly pyritic, trace dolomitic, trace floating medium-coarse-very coarse grains, well rounded, frosted quartz.
SANDSTONE: 20%, very fine to fine grained, argillaceous, silty, quartz, mica, slightly pyritic, trace glauconite, Begin minor amounts of lighter brownish grey and white, very fine to fine grained, occasional medium grains, quartz, clean to trace argillaceous, siliceous, very slightly dolomitic, slight dead stain specks, tight, no cut or fluorescence. Few chips kaolinitic sandstone.

ARCTIC RED SANDSTONE 938m (-722.5m)

940-943 SANDSTONE: white, very light brownish, part clear quartz, fine grained and very fine to fine grained, clean to trace argillaceous, siliceous, locally pyritic, moderate sorting, subangular, hard, tight to very poor porosity at best, slight dead stain, no cut or fluorescence. Also part very fine to fine grained, argillaceous, silty, mica, trace glauconite, subangular, poorly sorted, few floating medium and coarse grains of well rounded, frosted quartz, tight, no stain or cut. 5% kaolinitic chips.
SILTSTONE: very sandy, very argillaceous, thin interbeds.
SHALE: silty and sandy, thin interbeds.

943-945 Abundant shale caving after long tight trip.
SANDSTONE: predominantly very light brownish, part medium brownish, very fine to fine grained, quartz, mica, slight disseminated pyrite, part slightly glauconitic, trace to slightly argillaceous, slightly silty, siliceous, trace dolomitic, hard, tight to very poor porosity, trace carbonaceous coatings, slight dead stain, no cut or fluorescence. Also part white, fine grained, clear quartz, very clean, siliceous, hard, tight, trace dead stain specks, no cut or fluorescence.
Trace silty and sandy shale.

945-950 Abundant shale cavings.
SANDSTONE: very light brownish, white, fine grained, some fine to medium grained, quartz, locally glauconitic, trace mica and shale grains, clean to trace argillaceous, trace kaolin, very siliceous, part trace dolomitic, hard, tight, subangular, moderate sorting, slight dead stain, no cut or fluorescence. Part medium brown, very fine to fine grained, quartz, argillaceous, silty, disseminated pyrite, trace glauconite, tight.
Trace grading to sandy and silty dark brownish grey shale.

950-953 Abundant shale cavings.
SANDSTONE: light to medium brown, very fine grained, and very fine to fine grained, increasing argillaceous, increasing disseminated pyrite, trace glauconite, silty, trace carbonaceous specks, slightly dolomitic, locally siliceous, subangular and subrounded, poor sorting, tight, slight dead stain, no cut or fluorescence. Increasing grading to sandy and silty shale interbeds. 15% white, fine grained, with medium grains, quartz, trace glauconite, very siliceous, very clean, hard, tight.
SHALE: sandy, silty, dark brownish grey, thin beds.

953-955 SANDSTONE: medium brown, very fine to fine grained, increasing argillaceous, silty, disseminated pyrite, trace carbonaceous specks, dolomitic, poorly sorted, tight, part grading to sandy shale.
Part fine grained, slightly cleaner, slight dead stain, tight to very poor porosity at best, no cut or fluorescence. Minor clean, quartzose sandstone may be all cavings?
SHALE: medium brown, silty, sandy, dolomitic, blocky, firm.

GILMORE LAKE 955m (-739.5m)

955-958 CIRCULATED SAMPLE
SANDSTONE: very fine grained, medium to dark brown, argillaceous, silty, disseminated pyrite, slight carbonaceous specks, poorly sorted, tight, grading to silty and sandy shale. With laminae and thin beds clean sandstone, very fine to fine grained, tight, no stain or cut.
SHALE: 30%dark brown, silty and slightly sandy.
COAL: thin beds and partings.

958-960 SANDSTONE: medium to dark brown, very fine grained, some very fine to fine grained, argillaceous, silty, micaceous, increasing carbonaceous flakes and partings, dolomitic, poorly sorted, tight, barely visible slow cut off carbonaceous material, no streaming. Thin beds cleaner sandstone, fine grained, tight to very poor porosity streaks, minor friable fine grained sands, slight dead stain, no cut or fluorescence.
SHALE: dark brownish, silty, sandy, thin beds.
COAL: laminae and thin beds.

960-964 CIRCULATED SAMPLE
SANDSTONE: medium to dark brown, very fine grained, some very fine to fine grained, very argillaceous, carbonaceous, silty, pyritic, dolomitic, tight, barely visible slow cut off carbonaceous material, no streaming.
SHALE: very silty and sandy, carbonaceous, dolomitic.
COAL: 5%.

964-965 SANDSTONE: very fine grained, very fine to fine grained, dark brownish, very argillaceous, very carbonaceous, silty, mica, pyritic, dolomitic, minor kaolin, tight, no stain or cut.
SHALE: thin beds, dark brownish grey, silty, slightly sandy, carbonaceous in part.

965-970 SANDSTONE: dark, very fine grained, some very fine to fine grained, very carbonaceous as above, argillaceous, silty, tight, no stain or cut.
SHALE: 20%, dark brownish grey, carbonaceous, silty, slightly sandy.

IMPERIAL 974m (-758.5m)

970-975 SANDSTONE: dark brownish, very fine to fine grained, very carbonaceous, as above, trace floating, well rounded, very coarse quartz. Begin light to medium brownish grey, barely very fine grained, quartz, micromicaceous, very silty, argillaceous, grading to sandy siltstone, trace carbonaceous, subangular, moderate sorting, tight, no stain or cut.
SHALE: carbonaceous, as above.

975-980 SANDSTONE: light to medium brownish grey, very fine to fine grained, silty, argillaceous, mica, dolomitic, tight, trace fine grained, cleaner, quartzose sandstone laminae, no stain or cut.
SILTSTONE: 10-15%, brownish grey, argillaceous, very slightly sandy, micromicaceous, blocky, firm.
Increasing platy grey shale, probably cavings?

980-985 SANDSTONE: very fine grained, very fine to fine grained, brownish grey, part carbonaceous, argillaceous, silty, trace pyritic, mica, subangular, poor sorting.
SILTSTONE: thin beds, sandy.
Platy grey shale cavings?

985-990 SANDSTONE: finer, very fine grained, silty, argillaceous, grading to siltstone, very slightly dolomitic/sideritic, slightly carbonaceous, tight.
SILTSTONE: 10-20%.
SHALE: 30%, platy, medium grey, micromicaceous, non-silty, may be all cavings?

990-995 SANDSTONE: barely very fine grained, silty, grading to siltstone.
SILTSTONE: increasing abundance.
SHALE: platy and splintery as above, cavings?

995-1000 SANDSTONE: barely very fine grained, minor part very fine to fine grained, silty, grading to siltstone, mica, part carbonaceous, slightly dolomitic/sideritic, tight, no stain or cut.
SILTSTONE: 20-30%, sandy.
SHALE: platy, medium grey, pyrite blebs, slightly micromicaceous, cavings?

1000-1005 SILTSTONE: medium grey, slightly sandy, very argillaceous, grading to siltstone, micromicaceous, trace dolomitic, tight.
SANDSTONE: 30%, as above.
SHALE: medium grey, micromicaceous, silty, also part platy-splintery as above.

1005-1010 SILTSTONE: and sandstone, argillaceous, barely very fine grained, micromicaceous, slightly dolomitic, trace carbonaceous specks, tight.
SHALE: part grey and silty, grading to siltstone, part platy may be cavings.

1010-1015 SILTSTONE: sandy, argillaceous, micromicaceous.
SANDSTONE: 10-15%, barely very fine grained, argillaceous, silty, micromicaceous, tight.
SHALE: increasing brownish grey, silty, micromicaceous.

1015-1020 SHALE: silty, sandy laminae, micromicaceous, subblocky, platy shale cavings.
SILTSTONE: argillaceous, sandy, micromicaceous, tight.
SANDSTONE: laminae and very thin beds in siltstone.

1020-1025 SHALE: silty, medium grey.
SILTSTONE: 35%, argillaceous, micromicaceous, grading to silty shale.
SANDSTONE: laminae.

1025-1030 SHALE: as above.
SILTSTONE: 35%, grading to very silty shale.
SANDSTONE: laminae, very silty, micromicaceous.

1030-1035 SILTSTONE: increasing sandy, micromicaceous, argillaceous, carbonaceous specks.
SHALE: 40%, silty, micromicaceous.
SANDSTONE: very fine grained, silty, thin beds.

1035-1040 SILTSTONE: as above.
SHALE: silty, platy cavings.
SANDSTONE: laminae.

1040-1045 SILTSTONE: slightly sandy, argillaceous, micromicaceous.
SHALE: silty, micromicaceous.
SANDSTONE: very silty, barely very fine grained, grading to and interbedded with siltstone.

1045-1050 SILTSTONE: as above, trace carbonaceous specks.
SHALE: 10-15%.
SANDSTONE: grading to siltstone, minor amounts, barely very fine grained.

1050-1055 SILTSTONE: grey, argillaceous, sandy, micromicaceous.
SHALE: 25%.
SANDSTONE: 10-15%, thin beds, very silty.

1055-1060 SHALE: silty, micromicaceous.
SILTSTONE: 15%.
SANDSTONE: laminae.

1060-1065 SHALE: silty to very silty, micromicaceous, trace carbonaceous specks.
SILTSTONE: 25%, argillaceous, micromicaceous, barely sandy.
SANDSTONE: 10%, very fine grained, quartz, slightly argillaceous, silty, mica, tight, no stain or cut.

1065-1070 SHALE: medium grey, silty, micromicaceous.
SILTSTONE: 15%.
SANDSTONE: 15%, light to medium brownish, very fine grained, minor fine grains, silty, slightly argillaceous, grading to sandy siltstone, mica, trace glauconite, slightly dolomitic, locally kaolinitic, tight, no stain or cut.

1070-1075 SHALE: slightly silty to silty, micromicaceous.
SILTSTONE: 10%, argillaceous, sandy.
SANDSTONE: 10%, very light brownish grey, very fine grained, some fine grained, cleaner, slightly argillaceous, mica, slightly dolomitic, trace carbonaceous, tight.

1075-1080 SHALE: slightly silty to silty.
SANDSTONE: 15%, light grey, poorly salt and pepper, very fine to fine grained, quartz, carbonaceous flakes, mica, slightly argillaceous, silty, tight to very poor porosity at best, no stain or cut.
SILTSTONE: 10%, very argillaceous, micromicaceous.

1080-1085 SHALE: brownish grey, micromicaceous, slightly silty to silty, subblocky, firm.
SILTSTONE: 10%, very argillaceous.
SANDSTONE: 10%, laminae and thin beds, very fine grained, occasional fine grains, slightly argillaceous, tight, no stain or cut.

1085-1090 SHALE: as above.
SILTSTONE: argillaceous, sandy.
SANDSTONE: 15%, very fine to fine grained, clean, slightly argillaceous, quartz, carbonaceous, mica, slightly dolomitic, tight.

1090-1095 SHALE: slightly silty to silty, micromicaceous.
SILTSTONE: thin beds.
SANDSTONE: 5%, very fine grained, minor fine grains, tight.

1095-1100 SHALE: as above.
SANDSTONE: 30%, dark brown, very fine to fine grained, very carbonaceous, slightly argillaceous, slightly silty, dolomitic, subangular, moderate sorting, tight to poor porosity, 3-4% streaks, no stain or cut.
SILTSTONE: very thin beds and laminae.

1100-1105 SHALE: as above.
SANDSTONE: 20%, very dark brown, very fine to fine grained, very carbonaceous, silty, tight to poor porosity, no stain or cut.
SILTSTONE: laminae.

1105-1110 SHALE: slightly silty, silty beds.
SILTSTONE: 10%, sandy, argillaceous, carbonaceous specks.
SANDSTONE: 5%, carbonaceous, silty, argillaceous, tight.

1110-1115 SHALE: only slightly silty, subplaty, slightly micromicaceous.
SILTSTONE: very thin beds, 5%.
SANDSTONE: laminae.

1115-1120 SHALE: medium grey, slightly silty, with silty beds, micromicaceous, subplaty.
SILTSTONE: 5%, very argillaceous.

1120-1125 SHALE: increasing micromicaceous, silty to very silty.
SILTSTONE: 5-10%, grading to silty shale.
Trace sandstone laminae.

1125-1130 SHALE: silty to very silty, micromicaceous, subblocky, firm.
SILTSTONE: 5%, grading to silty shale.
Trace sandstone laminae, silty, argillaceous, micromicaceous, tight.

1130-1135 SHALE: as above.
SILTSTONE: 25%, increasing sandy, argillaceous, micromicaceous, slightly dolomitic.
SANDSTONE: 10%, light grey, speckled, medium brownish grey, barely very fine grained, very silty, argillaceous, micaceous, trace pyrite, slightly dolomitic, subangular, moderate sorting, tight, no stain or cut.

1135-1140 SHALE: silty, micromicaceous.
SILTSTONE: 35%.
SANDSTONE: 30%, barely very fine grained, silty, argillaceous, micaceous, tight, as above.

1140-1145 SHALE: as above.
SILTSTONE: 50%.
SANDSTONE: 5%, barely very fine grained.

1145-1150 SHALE: silty, micromicaceous.
SILTSTONE: 30%, sandy, argillaceous, micromicaceous.
SANDSTONE: laminae, barely very fine grained.

1150-1155 SILTSTONE: argillaceous, sandy, micromicaceous.
SHALE: 35%, slightly silty to silty.
SANDSTONE: 5%, barely very fine grained, argillaceous, silty, micromicaceous.

1155-1160 SILTSTONE: 65%.
SHALE: silty to very silty.
SANDSTONE: laminae.

1160-1165 SHALE: silty, micromicaceous.
SILTSTONE: 35%, micromicaceous, argillaceous, sandy, carbonaceous specks.
SANDSTONE: laminae.

1165-1170 SHALE: silty, micromicaceous, trace coarse pyrite.
SILTSTONE: 20%, very argillaceous, grading to silty shale.

1170-1175 SHALE: as above, silty, slightly sandy.
SILTSTONE: 10%, slightly sandy.
SANDSTONE: few laminae, silty, mica, tight.

1175-1180 SHALE: as above, silty, trace dolomite nodules.
SILTSTONE: 15%, sandy, grading to silty, argillaceous sandstone.
SANDSTONE: 10-15%, light, speckled, barely very fine grained, quartz, mica, silty, slightly argillaceous, slightly dolomitic, tight.

1180-1185 SHALE: as above.
SANDSTONE: 20%, brownish, fine grained, part very fine to fine grained, quartz, mica, carbonaceous, silty, argillaceous, slightly dolomitic, tight to poor porosity, 3-4%, no stain or cut.
SILTSTONE: 10%, sandy.

1185-1190 SILTSTONE: increasing sandy.
SANDSTONE: 30%, very argillaceous, very silty, carbonaceous, mica, trace pyrite, tight.
SHALE: 30%.

1190-1195 SILTSTONE: sandy, micromicaceous.
SANDSTONE: 35%, light to medium grey, slightly brownish, very fine grained, part barely fine grained, quartz, mica, silty, trace pyrite, tight to very poor porosity, no stain or cut.
SHALE: 20%, slightly silty to silty.

1195-1200 SILTSTONE: sandy, grading to sandstone.
SANDSTONE: 35%, light grey, brownish, speckled, very fine to barely fine grained, silty, argillaceous, mica, slightly carbonaceous, very slightly kaolinitic, tight to very poor porosity, 3-4%, no stain or cut.
SHALE: 20%.

1200-1205 SHALE: slightly silty, micromicaceous, trace pyrite.
SILTSTONE: 10-15%, thin beds, sandy, argillaceous.
SANDSTONE: laminae.

1205-1210 SHALE: slightly silty.
SILTSTONE: 10%, sandy.
SANDSTONE: 5%, very fine grained, part carbonaceous, tight, no stain or cut.

1210-1215 SANDSTONE: dark, very fine grained, quartz, silty, argillaceous, mica, carbonaceous specks, subangular, moderate sorting, tight to very poor porosity at best, part slightly friable.
SHALE: 45%, slightly silty,
SILTSTONE: very thin beds, very sandy, grading to sandstone.

1215-1220 SANDSTONE: part dark, carbonaceous, part lighter grey, cleaner, very fine grained, some fine grains, tight to very poor porosity, no stain or cut.
SHALE: as above.
SILTSTONE: laminae and thin beds.

1220-1225 SHALE: medium grey, subblocky, micromicaceous, slightly silty.
SANDSTONE: barely very fine grained, light grey and dark brownish, silty, argillaceous, part carbonaceous, tight to very poor porosity streaks, no stain or cut.
SILTSTONE: laminae, sandy.

1225-1230 SHALE: micromicaceous, silty.
SANDSTONE: 15%, very fine grained, trace fine grains, tight.
SILTSTONE: 5%, sandy, argillaceous.

1230-1235 SHALE: as above.
SANDSTONE: 15%, very fine grained, trace fine grains, argillaceous, silty, carbonaceous specks, locally kaolinitic, tight to minor very poor porosity, no stain or cut.
SILTSTONE: very thin beds.

1235-1240 SHALE: as above.
SANDSTONE: increasing to 35%, light to medium brownish grey, very fine grained, trace fine grains, quartz, mica, silty, slightly argillaceous, trace carbonaceous, slightly dolomitic, trace kaolinitic, tight to very poor porosity, 3-4%, no stain or cut.
SILTSTONE: laminae in sandstone.

1240-1245 SHALE: medium grey, subblocky, slightly silty, slightly micromicaceous.
SANDSTONE: 10%, very fine grained, as above.

1245-1250 SHALE: begin very dark grey, carbonaceous partings, slickensides, disseminated pyrite, also medium grey shale as above.
SANDSTONE: 5%, barely very fine grained, slightly carbonaceous, tight.
SILTSTONE: thin beds, sandy, argillaceous.

CANOL 1247m (-1031.5m)

1250-1255 SHALE: very dark grey, disseminated and blebs pyrite, blocky, hard. Also grey shale as above.
SANDSTONE: laminae.

1255-1260 SHALE: very dark grey, black, pyrite blebs and disseminated, trace carbonaceous partings, calcite on microfractures, blocky, hard.

1260-1265 SHALE: dark grey, black, pyrite, carbonaceous.
LIMESTONE: trace amounts, light grey, brownish grey, microcrystalline, silty, trace brachiopod fragments.
Silty shale and sandstone cavings.

HARE INDIAN 1264m (-1048.5m)

1265-1270 SHALE: dark grey, pyritic, carbonaceous.
LIMESTONE: only minor amounts recovered, light grey, slightly brownish, microcrystalline, very silty, grading to calcareous siltstone, argillaceous, disseminated pyrite.
Trace very light grey shale.

1270-1275 LIMESTONE: very light grey, white, microcrystalline, slightly argillaceous, silty, trace pyrite, also part very finely crystalline, possibly fragmental, tight, no shows, trace grey chert nodules.
SILTSTONE: very light grey and brownish, disseminated pyrite, calcareous, slightly argillaceous.
SANDSTONE: trace laminae, calcareous, very fine grained, tight.
SHALE: minor amounts, very light grey.

1275-1280 SANDSTONE: light brownish grey, fine to medium grained, quartz, slightly argillaceous, calcareous to very calcareous, interbeds sandy limestone, part siliceous, locally pyritic, angular, subangular, moderate sorting, trace dark carbonaceous/bitumen specks, trace dead stain, tight, no cut or fluorescence.
LIMESTONE: very light grey, microcrystalline, very finely crystalline, silty, sandy, trace pyrite, possible fragments, tight.
SHALE; very light grey, platy, micromicaceous.
SILTSTONE: trace laminae, light grey, argillaceous.

1280-1285 SANDSTONE: white, very light grey, fine grained, part barely medium grained, very fine grains, clean, slightly argillaceous laminae, quartz, calcareous to very calcareous, slightly siliceous, locally pyrite blebs, tight to very poor porosity streaks, trace bitumen specks, no cut.
SHALE: very light grey, micromicaceous, slightly silty, soft, part with disseminated pyrite.
SILTSTONE: very thin beds, light grey, argillaceous.
LIMESTONE: trace laminae, sandy, microcrystalline, pyrite.

1285-1290 SHALE: very light grey, platy, splintery, micromicaceous, slightly silty, trace sandy, part with trace carbonaceous specks.
SANDSTONE: 40%, light grey, fine grained, trace medium grains, quartz, silty, clean, slight increase argillaceous laminae, mica, minor pyrite, tight, trace bitumen specks, no stain or cut.
LIMESTONE: trace laminae, sandy, fossil fragments, tight.
SILTSTONE: laminae in shale.

1290-1295 SHALE: very light grey, platy, splintery, micromicaceous, slightly silty, very silty laminae, trace sandy, trace calcareous.
SANDSTONE: 15-20%, fine grained, part very fine to fine grained, trace floating medium grains, silty, slightly argillaceous, trace shale clasts, trace coarse pyrite, subangular, poor sorting, tight. With part cleaner, fine grained, well rounded, quartz, calcareous, carbonaceous specks, tight, no stain or cut.
SILTSTONE: laminae in shale, very light grey, trace calcareous, argillaceous.

1295-1300 Poor Sample caught after trip.
SHALE: light grey, silty beds, trace sandy laminae.
SANDSTONE: 15%? very fine to fine grained, argillaceous, tight, no stain or cut.
SILTSTONE: trace laminae in shale.

1300-1305 SHALE: light grey, medium grey, micromicaceous, slightly silty, trace sandy, minor darker shale, calcareous and very silty.
SANDSTONE: white, very light brownish grey, speckled, very fine grained to barely fine grained, slightly silty, clean to slightly argillaceous, trace pyritic, subangular, moderate to well sorted, tight.
SILTSTONE: dark brown, calcareous, very argillaceous, blocky.

1305-1310 LIMESTONE: light to medium mottled brown, microcrystalline, slightly argillaceous, silty, sandy in part, trace brachiopod fragments, tight.
SHALE: 35%, dark brown, silty, micromicaceous, calcareous, disseminated pyrite.

1310-1315 LIMESTONE: light brown, darker interbeds, microcrystalline, very finely crystalline, very silty, part sandy with silty sandstone laminae, argillaceous, argillaceous, micromicaceous, trace pyrite, crinoid and brachiopod fragments, tight, no stain or cut.
SHALE: dark brown, micromicaceous, silty, part slightly sandy, calcareous, part very calcareous, disseminated pyrite, grading to marlstone.

1315-1320 LIMESTONE: light-medium-dark brown, microcrystalline, very finely crystalline, variably argillaceous, silty, sandy to very sandy, fine fossil fragments, grading to very calcareous silty sandstone, tight.
SHALE: dark brown, silty, sandy, micromicaceous, very calcareous, grading to marlstone.

1320-1325 SHALE: begin medium grey, micromicaceous, slightly silty, calcareous. Also interbeds dark brown shale, very calcareous, silty, marlstone.
LIMESTONE: light to medium brown, microcrystalline, part very finely crystalline, argillaceous to very argillaceous, slightly silty, trace fossil fragments, tight.

1325-1330 SHALE: medium grey, slightly silty, micromicaceous, blocky.
LIMESTONE: brown, microcrystalline, very finely crystalline, silty, very argillaceous, slightly pyritic, part with fossil fragments, tight, grading to marlstone in part.

1330-1335 SHALE: medium grey, micromicaceous, slightly silty, calcareous, blocky, subplaty, firm, trace carbonaceous specks, trace disseminated pyrite. With 10% dark brown, calcareous shale interbeds.

1335-1340 SHALE: medium grey, as above, calcareous, trace silty, micromicaceous, trace calcite fossil fragments.

1340-1345 SHALE: slight decreasing calcareous, micromicaceous, trace silty, trace carbonaceous specks.

1345-1350 SHALE: medium grey, slightly calcareous throughout, slightly silty, firm, subblocky, subplaty.

1350-1355 SHALE: calcareous, micromicaceous, trace silty.

1355-1360 SHALE: medium grey, slightly micromicaceous, calcareous, slightly silty, trace brachiopods.

1360-1365 SHALE: calcareous, slightly silty, trace disseminated pyrite, rare carbonaceous specks.

1365-1370 SHALE: medium grey, calcareous, trace carbonaceous specks, trace brachiopods, slight disseminated pyrite, microscopic pyritic spines, minor laminae argillaceous, fossiliferous limestone.

1370-1375 SHALE: calcareous, as above, platy, subplaty, trace pyrite, trace carbonaceous specks.

1375-1380 SHALE: calcareous, trace brachiopods, trace pyrite laminae.

1380-1385 SHALE: as above.

1385-1390 SHALE: medium grey, platy, subplaty, calcareous, slightly micromicaceous, part disseminated pyrite, laminae with slight carbonaceous specks.

1390-1395 SHALE: as above, trace microcrystalline, argillaceous limestone.

1395-1400 SHALE: medium grey, part light grey, slightly micromicaceous, calcareous, part disseminated pyrite, trace carbonaceous specks, trace argillaceous limestone laminae.

1400-1405 SHALE: as above, platy, subplaty, calcareous, trace fossils.

1405-1410 SHALE: as above, calcareous, micromicaceous, trace silty.

1410-1415 SHALE: medium grey, platy, subplaty, subblocky, calcareous, silty.

1415-1420 SHALE: medium grey, calcareous, micromicaceous, slightly silty, increasing carbonaceous specks.

1420-1425 SHALE: as above, carbonaceous microspecks.

1425-1430 SHALE: medium grey, calcareous, micromicaceous, slightly silty, trace pyrite, part with carbonaceous specks.

1430-1435 SHALE: beginning darker interbeds, only trace calcareous, trace silty, with medium grey shale as above.

BLUERIDGE 1434m (-1208.5m)

1435-1440 SHALE: predominantly medium grey, calcareous, micromicaceous, with 15% dark grey beds, slight disseminated pyrite, slightly bituminous.

1440-1445 SHALE: increasing dark grey to black, carbonaceous/bituminous, disseminated pyrite. Medium grey shale as above is probably all cavings.

1445-1450 SHALE: dark grey, black, carbonaceous partings, bituminous, disseminated pyrite, medium grey shale cavings.

NAHANNI 1454m (-1238.5m)

1450-1455 SHALE: as above.
LIMESTONE: light brown, mottled, microcrystalline, slightly argillaceous, trace silty, trace silicification patches, trace fossil fragments, tight, no stain or cut. With interbeds dark brown, microcrystalline with very fine dolomite rhombs scattered throughout, very argillaceous, tight.

1455-1460 LIMESTONE: very light brown, mottled, microcrystalline, slightly argillaceous, trace silty, vague fossil fragments, trace pyrite, soft, tight, no stain or cut, trace calcite fracture filling.

1460-1465 LIMESTONE: light brown, microcrystalline, very vague fossil fragments, trace brachiopods and ostracods, slightly argillaceous, trace pyrite, tight. Also medium brown, microcrystalline, very argillaceous, disseminated pyrite, slightly bituminous, grading to marlstone, trace barely visible cut, tight, no streaming.

1465-1470 LIMESTONE: light to medium brown, microcrystalline, slightly argillaceous, very argillaceous beds grading to marlstone, vague fossil fragments, trace silty, trace pyrite, barely visible slow cut off darker bituminous beds, tight. Minor white crystalline calcite from fractures.

1470-1475 LIMESTONE: light-medium-dark brown, mottled, microcrystalline, some very finely crystalline, vague fossil fragments, ostracod, slightly argillaceous to argillaceous, tight, no stain or cut, trace pyrite, trace stylolites.
SHALE: very thin beds, light grey, disseminated pyrite, platy.

1475-1480 LIMESTONE: becoming predominantly very light brown, microcrystalline, soft, only trace argillaceous, vague fossil fragments, tight, no stain or cut.

1480-1485 LIMESTONE: predominantly light brown, microcrystalline, soft, clean to slightly argillaceous, trace pyrite, increasing fossil fragments, wackestone, possibly packstone, brachiopods, ostracods, crinoids, trace bitumen specks, dead organic specks, trace black stylolites, tight, no cut or fluorescence. Minor part medium to dark brown, very argillaceous, dolomitic, microcrystalline, blocky, hard. Thin beds microsucrosic, barely very fine sucrosic, slightly dolomitic, soft, friable, very poor sucrosic porosity, no stain or cut.

1485-1490 LIMESTONE: light brown, microcrystalline to poorly sucrosic, soft, friable, clean to slightly argillaceous, trace dolomitization, vague fine fossil fragments, rare bitumen specks, tight to very poor sucrosic porosity, no stain or cut. Minor part medium to dark brown, cryptocrystalline, microcrystalline, hard.

1490-1495 LIMESTONE: as above, light to medium brown, microcrystalline, slightly argillaceous, vague fine fossil fragments, minor microsucrosic recrystallization, trace dolomitization, trace pyrite, trace small vugs. Thin bed, dark brown, dense, hard.

1495-1500 LIMESTONE: microcrystalline, as above, fine fossil fragments, ostracods, crinoids, wackestone, also part light-medium-dark brown, cryptocrystalline to microcrystalline, trace argillaceous, scattered fossil fragments, dense, tight. Trace dark brown, very finely sucrosic, dolomitic patches.

1500-1505 LIMESTONE: light-medium-dark brown, mottled, microcrystalline, poorly sucrosic, soft, clean to slightly argillaceous, fine fossil fragments, wackestone, ostracods, crinoids, trace dead stain, no cut or fluorescence. Part dark brown, microcrystalline, hard. Part medium to dark brown, cryptocrystalline, dense, wackestone, scattered fine fossil fragments.

1505-1510 LIMESTONE: increasing light to dark brown, cryptocrystalline, dense, scattered fossil fragments, wackestone, also light brown, microcrystalline, soft, as above, poorly sucrosic, trace dolomitization, no stain or cut.

TOTAL DEPTH 1510m (-1294.5m)

APPENDIX 4

CORE ANALYSIS

Core Analysis: N/A

APPENDIX 5

TESTING RESULTS

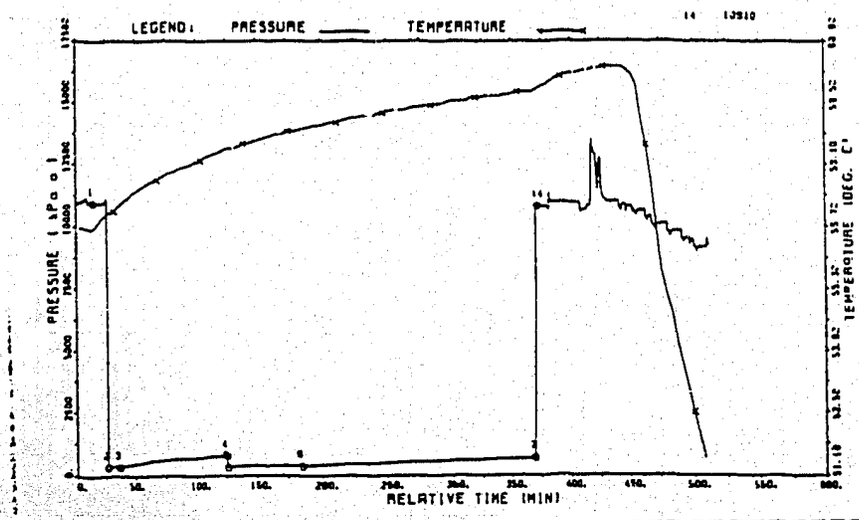
REF#:C-76-999-09000-66

TEST DATE: 91/03/16

CHEVRON RAMPARTS RIVER 65.45/130.085
400/ 65.452 / 130.085 /00
DST#01
960.00m to 973.10m
GILMORE LAKE

DEPTH: 962.00m

RECORDER # 001749



	PRESSURE kPa(a)
1) Initial Hydro :	10948.
2) 1st Flow Start:	328.
3) 1st Flow End :	328.
4) END 1st Shutin:	776.
5) 2nd Flow Start:	310.
6) 2nd Flow End :	362.
7) END 2nd Shutin:	672.
14) Final Hydro. :	10810.

TEST TIMES (MIN)	
1st FLOW :	10.0
SHUTIN:	89.0
2nd FLOW :	59.0
SHUTIN:	183.5

RECOVERY DATA

TOTAL FLUID RECOVERY CONSISTED OF 17 METERS OF DRILLING MUD. CLOSED CHAMBER WITH THE EVALUATORS.

REMARKS AND TEST SUMMARY

Test results indicate a mechanically successful test. Bottom hole pressures and the shape of the shut-in curves suggest LOW PERMEABILITY within the interval tested. The shut-ins were not extrapolated due to insufficient curve development.

TABLE OF CONTENTS

BAKER OIL TOOLS CANADA
DST#01 REPORT

Well name : CHEVRON RAMPARTS RIVER 65.45/130.085
Location : 400/ 65.452 / 130.085 /00
Interval : 960.00m to 973.10m
Test Date : 91/03/16
Test Type : INFLATE STRADDLE
Formation : GILMORE LAKE

K.B.Elevation : 215.56m
Grd.Elevation : 209.50m
TD @ test Date: 1510.00m
Ticket Number : 82718
Unit Number : SKID

Started in hole at : 0430 hrs
Tool opened at : 0750 hrs
Reverse circulated?: YES
Contractor & Rig No: SHEHTAH #1E
Baker#1 : 1 of 1 on the same trip.

Operator: CHEVRON CANADA RESOURCES LIMITED
14TH FLOOR
500 - 5TH AVE. S.W.
CALGARY, ALBERTA
T2P0L7

Company Rep : LUNDBERG IAN
Testers : SHEWCHUK M

5 REPORTS(S) TO: BRIAN GLOVER
Company:

BLOW DESCRIPTION

Closed Chamber with the Evaluators.

TOTAL LIQUID RECOVERY : 17.00m

For DST# 1 through DST# 1

3 Fluid Samples
Sent to: AGAT-EDM.

17.00m DRILLING MUD - BASED ON RECOVERY RECORDER.

GAS MEASUREMENTS

Bomb#: 6846
Sent to: AGAT-EDM.

No Gas Measurements

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00m to 973.10m

TOOL SEQUENCE

SUB	LENGTH (m)
PUMP OUT SUB	.33
DOUBLE PIN SUB	.30
CHOKE SUB	.30
INSIDE RECORDER	1.38
HYDRAULIC TOOL	1.50
BTM. HOLE SAMPLER	1.03
INSIDE RECORDER	1.68
HYDRAULIC JARS	2.25
SAFETY JOINT	.65
INFLATE PUMP	2.38
SCREEN	1.16
TOP INFLATE PACKER	1.78
PACKER STICK DOWN	.82
PORTED COMB SUB	.30
OUTSIDE RECORDER	2.06
CROSSOVER SUB	.30
DRILL PIPE	8.90
CROSSOVER SUB	.30
PACKER STICK UP	.42
BTM. INFLATE PKR.	1.90
PERFORATED SPACING	.60
RECORDER CARRIER	2.06
BELLY SPRING	2.00
******** TOOL TOTAL	34.40

DRILL COLLARS
ID= 73.0mm: 56.40
ID= :

DRILL PIPE
OD=114.3mm: 893.73
OD= :

COLLAR-PIPE TOTAL 950.13

STICK UP ABOVE TABLE : 4.87
TOOL ABOVE INTERVAL : 14.74
TOTAL INTERVAL : 13.10
BOTTOM CHOKE SIZE: 12.70 mm

RECORDER SUMMARY

1) NUMBER : 001749 LYNES ELECTRONIC GAUGE.
TYPE : DMRB
LOCATION: OUTSIDE
RANGE: 68900.00kPa(a)
DEPTH : 962.00m

2) NUMBER : 009496
TYPE : K-3
LOCATION: OUTSIDE
RANGE: 19700.00kPa
DEPTH : 962.00m

3) NUMBER : 013129 ABOVE INTERVAL.
TYPE : K-3
LOCATION: INSIDE
RANGE: 22100.00kPa
DEPTH : 947.00m

4) NUMBER : 014103
TYPE : K-3
LOCATION: OUTSIDE
RANGE: 20000.00kPa
DEPTH : 962.00m

5) NUMBER : 017024 BELOW INTERVAL.
TYPE : K-3
LOCATION: INSIDE
RANGE: 20000.00kPa
DEPTH : 977.00m

MUD AND HOLE DATA

Calipered Hole Size @ Test Depth: 240.00mm Water Loss : 6.5cc/s
Hole Condition at Test Time : FAIR Filter Cake: 1.0 mm
Hole Conditioned Prior to Test? : NO
Mud Weight : 1140.0 kg/m3 Main Hole Size: 216.00mm
Mud Type : GEL CHEMICAL/KELZAN
Viscosity : 86.0s/l Temperature @962.00m = 59.7C

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00 m to 973.10 m

Location: 400/ 65.452 / 130.085 /00
Test Type: INFLATE STRADDLE
Formation: GILMORE LAKE

Recorder Number: 001749
Recorder Depth: 962.00 m
Subsea Depth: -746.44 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
1	INITIAL HYDROSTATIC			10948	
2	START OF 1st FLOW	0.0		328	
		.5		345	
		1.0		345	
		2.0		362	
		2.5		362	
		3.0		362	
		3.5		362	
		4.0		362	
		4.5		362	
		5.0		362	
		6.0		379	
		6.5		379	
		7.0		379	
		7.5		379	
		8.0		379	
		8.5		379	
		9.0		328	
3	END OF 1st FLOW	10.0		328	
	1st SHUTIN PERIOD	0.0		328	
		.5	17	345	21.0000
		1.0	17	345	11.0000
		1.5	35	362	7.6667
		2.0	35	362	6.0000
		2.5	35	362	5.0000
		3.0	35	362	4.3333
		4.0	69	397	3.5000
		4.5	69	397	3.2222
		5.0	69	397	3.0000
		5.5	69	397	2.8182
		6.0	86	414	2.6667
		6.5	86	414	2.5385

* VALUES USED FOR EXTRAPOLATIONS

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00 m to 973.10 m

Location: 400/ 65.452 / 130.085 /00
Test Type: INFLATE STRADDLE
Formation: GILMORE LAKE

Recorder Number: 001749
Recorder Depth: 962.00 m
Subsea Depth: -746.44 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		7.0	86	414	2.4286
		8.0	103	431	2.2500
		8.5	103	431	2.1765
		9.0	103	431	2.1111
		9.5	103	431	2.0526
		10.0	121	448	2.0000
		10.5	121	448	1.9524
		11.0	138	466	1.9091
		12.0	138	466	1.8333
		12.5	138	466	1.8000
		13.0	138	466	1.7692
		13.5	155	483	1.7407
		14.0	155	483	1.7143
		14.5	155	483	1.6897
		15.0	155	483	1.6667
		16.0	155	483	1.6250
		16.5	172	500	1.6061
		17.0	172	500	1.5882
		17.5	172	500	1.5714
		18.0	172	500	1.5556
		18.5	172	500	1.5405
		19.0	172	500	1.5263
		20.0	190	517	1.5000
		20.5	207	535	1.4878
		21.0	207	535	1.4762
		21.5	207	535	1.4651
		22.0	207	535	1.4545
		22.5	207	535	1.4444
		23.0	207	535	1.4348
		24.0	224	552	1.4167
		24.5	224	552	1.4082
		25.0	224	552	1.4000
		25.5	241	569	1.3922
		26.0	241	569	1.3846
		26.5	241	569	1.3774
		27.0	241	569	1.3704

* VALUES USED FOR EXTRAPOLATIONS

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00 m to 973.10 m

Location: 400/ 65.452 / 130.085 /00
Test Type: INFLATE STRADDLE
Formation: GILMORE LAKE

Recorder Number: 001749
Recorder Depth: 962.00 m
Subsea Depth: -746.44 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		28.0	241	569	1.3571
		28.5	241	569	1.3509
		29.0	241	569	1.3448
		29.5	241	569	1.3390
		30.0	241	569	1.3333
		30.5	259	586	1.3279
		31.0	259	586	1.3226
		32.0	259	586	1.3125
		32.5	259	586	1.3077
		33.0	259	586	1.3030
		33.5	259	586	1.2985
		34.0	276	603	1.2941
		34.5	276	603	1.2899
		35.0	276	603	1.2857
		36.0	276	603	1.2778
		36.5	276	603	1.2740
		37.0	276	603	1.2703
		37.5	276	603	1.2667
		38.0	276	603	1.2632
		38.5	276	603	1.2597
		39.0	293	621	1.2564
		40.0	293	621	1.2500
		40.5	293	621	1.2469
		41.0	293	621	1.2439
		41.5	293	621	1.2410
		42.0	293	621	1.2381
		42.5	293	621	1.2353
		43.0	310	638	1.2326
		44.0	310	638	1.2273
		44.5	310	638	1.2247
		45.0	310	638	1.2222
		45.5	310	638	1.2198
		46.0	310	638	1.2174
		46.5	328	655	1.2151
		47.0	328	655	1.2128
		48.0	328	655	1.2083

* VALUES USED FOR EXTRAPOLATIONS

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00 m to 973.10 m

Location: 400/ 65.452 / 130.085 /00
Test Type: INFLATE STRADDLE
Formation: GILMORE LAKE

Recorder Number: 001749
Recorder Depth: 962.00 m
Subsea Depth: -746.44 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa (a)	(T+dt)/dt ABSCISSA
		48.5	328	655	1.2062
		49.0	328	655	1.2041
		49.5	328	655	1.2020
		50.0	328	655	1.2000
		50.5	328	655	1.1980
		51.0	345	672	1.1961
		52.0	345	672	1.1923
		52.5	345	672	1.1905
		53.0	345	672	1.1887
		53.5	345	672	1.1869
		54.0	345	672	1.1852
		54.5	345	672	1.1835
		55.0	345	672	1.1818
		56.0	345	672	1.1786
		56.5	345	672	1.1770
		57.0	345	672	1.1754
		57.5	345	672	1.1739
		58.0	362	690	1.1724
		58.5	362	690	1.1709
		59.0	362	690	1.1695
		60.0	362	690	1.1667
		60.5	362	690	1.1653
		61.0	362	690	1.1639
		61.5	362	690	1.1626
		62.0	362	690	1.1613
		62.5	379	707	1.1600
		63.0	362	690	1.1587
		64.0	379	707	1.1563
		64.5	379	707	1.1550
		65.0	379	707	1.1538
		65.5	379	707	1.1527
		66.0	379	707	1.1515
		66.5	379	707	1.1504
		67.0	379	707	1.1493
		68.0	379	707	1.1471
		68.5	379	707	1.1460

* VALUES USED FOR EXTRAPOLATIONS

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00 m to 973.10 m

Location: 400/ 65.452 / 130.085 /00
Test Type: INFLATE STRADDLE
Formation: GILMORE LAKE

Recorder Number: 001749
Recorder Depth: 962.00 m
Subsea Depth: -746.44 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		69.0	379	707	1.1449
		69.5	397	724	1.1439
		70.0	397	724	1.1429
		70.5	397	724	1.1418
		71.0	397	724	1.1408
		72.0	397	724	1.1389
		72.5	414	741	1.1379
		73.0	414	741	1.1370
		73.5	397	724	1.1361
		74.0	414	741	1.1351
		74.5	397	724	1.1342
		75.0	414	741	1.1333
		76.0	414	741	1.1316
		76.5	414	741	1.1307
		77.0	414	741	1.1299
		77.5	414	741	1.1290
		78.0	414	741	1.1282
		78.5	414	741	1.1274
		79.0	414	741	1.1266
		80.0	414	741	1.1250
		80.5	414	741	1.1242
		81.0	414	741	1.1235
		81.5	414	741	1.1227
		82.0	414	741	1.1220
		82.5	431	759	1.1212
		83.0	431	759	1.1205
		84.0	431	759	1.1190
		84.5	431	759	1.1183
		85.0	431	759	1.1176
		85.5	431	759	1.1170
		86.0	448	776	1.1163
		86.5	431	759	1.1156
		87.0	448	776	1.1149
		88.0	448	776	1.1136
		88.5	448	776	1.1130
4	END OF 1st SHUTIN	89.0	448	776	1.1124

* VALUES USED FOR EXTRAPOLATIONS

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00 m to 973.10 m

Location: 400/ 65.452 / 130.085 /00
Test Type: INFLATE STRADDLE
Formation: GILMORE LAKE

Recorder Number: 001749
Recorder Depth: 962.00 m
Subsea Depth: -746.44 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
5	START OF 2nd FLOW	0.0		310	
		1.0		345	
		2.5		362	
		3.5		362	
		4.5		328	
		6.0		362	
		7.0		362	
		8.0		379	
		9.0		379	
		10.5		379	
		11.5		379	
		12.5		379	
		14.0		397	
		15.0		379	
		16.0		379	
		17.0		362	
		18.5		379	
		19.5		379	
		20.5		397	
		22.0		397	
		23.0		397	
		24.0		397	
		25.0		362	
		26.5		379	
		27.5		379	
		28.5		397	
		30.0		397	
		31.0		397	
		32.0		362	
		33.0		362	
		34.5		379	
		35.5		379	
		36.5		379	
		38.0		397	
		39.0		397	

* VALUES USED FOR EXTRAPOLATIONS

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00 m to 973.10 m

Location: 400/ 65.452 / 130.085 /00
Test Type: INFLATE STRADDLE
Formation: GILMORE LAKE

Recorder Number: 001749
Recorder Depth: 962.00 m
Subsea Depth: -746.44 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		40.0		397	
		41.0		362	
		42.5		379	
		43.5		379	
		44.5		397	
		46.0		397	
		47.0		397	
		48.0		397	
		49.0		362	
		50.5		379	
		51.5		379	
		52.5		379	
		54.0		397	
		55.0		397	
		56.0		397	
		57.0		397	
		58.5		362	
6	END OF 2nd FLOW	59.0		362	
	2nd SHUTIN PERIOD	0.0		362	
		1.0	17	379	70.0000
		2.0	17	379	35.5000
		3.5	17	379	20.7143
		4.5	35	397	16.3333
		5.5	35	397	13.5455
		7.0	35	397	10.8571
		8.0	35	397	9.6250
		9.0	35	397	8.6667
		10.0	35	397	7.9000
		11.5	35	397	7.0000
		12.5	35	397	6.5200
		13.5	52	414	6.1111
		15.0	52	414	5.6000
		16.0	52	414	5.3125
		17.0	52	414	5.0588

* VALUES USED FOR EXTRAPOLATIONS

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00 m to 973.10 m

Location: 400/ 65.452 / 130.085 /00
Test Type: INFLATE STRADDLE
Formation: GILMORE LAKE

Recorder Number: 001749
Recorder Depth: 962.00 m
Subsea Depth: -746.44 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		18.0	52	414	4.8333
		19.5	52	414	4.5385
		20.5	52	414	4.3659
		21.5	69	431	4.2093
		23.0	69	431	4.0000
		24.0	69	431	3.8750
		25.0	69	431	3.7600
		26.0	69	431	3.6538
		27.5	69	431	3.5091
		28.5	69	431	3.4211
		29.5	69	431	3.3390
		31.0	69	431	3.2258
		32.0	86	448	3.1563
		33.0	86	448	3.0909
		34.0	86	448	3.0294
		35.5	86	448	2.9437
		36.5	86	448	2.8904
		37.5	86	448	2.8400
		39.0	86	448	2.7692
		40.0	86	448	2.7250
		41.0	103	466	2.6829
		42.0	103	466	2.6429
		43.5	103	466	2.5862
		44.5	103	466	2.5506
		45.5	103	466	2.5165
		47.0	103	466	2.4681
		48.0	103	466	2.4375
		49.0	103	466	2.4082
		50.0	121	483	2.3800
		51.5	121	483	2.3398
		52.5	121	483	2.3143
		53.5	121	483	2.2897
		55.0	121	483	2.2545
		56.0	121	483	2.2321
		57.0	121	483	2.2105
		58.0	121	483	2.1897

* VALUES USED FOR EXTRAPOLATIONS

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00 m to 973.10 m

Location: 400/ 65.452 / 130.085 /00
Test Type: INFLATE STRADDLE
Formation: GILMORE LAKE

Recorder Number: 001749
Recorder Depth: 962.00 m
Subsea Depth: -746.44 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		59.5	121	483	2.1597
		60.5	138	500	2.1405
		61.5	138	500	2.1220
		63.0	138	500	2.0952
		64.0	138	500	2.0781
		65.0	138	500	2.0615
		66.0	138	500	2.0455
		67.5	138	500	2.0222
		68.5	138	500	2.0073
		69.5	138	500	1.9928
		71.0	138	500	1.9718
		72.0	155	517	1.9583
		73.0	155	517	1.9452
		74.0	155	517	1.9324
		75.5	155	517	1.9139
		76.5	155	517	1.9020
		77.5	155	517	1.8903
		79.0	172	535	1.8734
		80.0	172	535	1.8625
		81.0	172	535	1.8519
		82.0	172	535	1.8415
		83.5	172	535	1.8263
		84.5	172	535	1.8166
		85.5	172	535	1.8070
		87.0	172	535	1.7931
		88.0	172	535	1.7841
		89.0	172	535	1.7753
		90.0	172	535	1.7667
		91.5	190	552	1.7541
		92.5	172	535	1.7459
		93.5	172	535	1.7380
		95.0	207	569	1.7263
		96.0	190	552	1.7188
		97.0	190	552	1.7113
		98.0	207	569	1.7041
		99.5	207	569	1.6935

* VALUES USED FOR EXTRAPOLATIONS

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00 m to 973.10 m

Location: 400/ 65.452 / 130.085 /00
Test Type: INFLATE STRADDLE
Formation: GILMORE LAKE

Recorder Number: 001749
Recorder Depth: 962.00 m
Subsea Depth: -746.44 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		100.5	207	569	1.6866
		101.5	207	569	1.6798
		103.0	207	569	1.6699
		104.0	207	569	1.6635
		105.0	207	569	1.6571
		106.0	207	569	1.6509
		107.5	207	569	1.6419
		108.5	207	569	1.6359
		109.5	207	569	1.6301
		111.0	207	569	1.6216
		112.0	207	569	1.6161
		113.0	207	569	1.6106
		114.0	207	569	1.6053
		115.5	207	569	1.5974
		116.5	224	586	1.5923
		117.5	224	586	1.5872
		119.0	224	586	1.5798
		120.0	224	586	1.5750
		121.0	224	586	1.5702
		122.0	224	586	1.5656
		123.5	224	586	1.5587
		124.5	224	586	1.5542
		125.5	224	586	1.5498
		127.0	241	603	1.5433
		128.0	241	603	1.5391
		129.0	241	603	1.5349
		130.0	241	603	1.5308
		131.5	241	603	1.5247
		132.5	241	603	1.5208
		133.5	241	603	1.5169
		135.0	241	603	1.5111
		136.0	241	603	1.5074
		137.0	241	603	1.5036
		138.0	241	603	1.5000
		139.5	259	621	1.4946
		140.5	241	603	1.4911

* VALUES USED FOR EXTRAPOLATIONS

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00 m to 973.10 m

Location: 400/ 65.452 / 130.085 /00
Test Type: INFLATE STRADDLE
Formation: GILMORE LAKE

Recorder Number: 001749
Recorder Depth: 962.00 m
Subsea Depth: -746.44 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		141.5	259	621	1.4876
		143.0	259	621	1.4825
		144.0	259	621	1.4792
		145.0	259	621	1.4759
		146.0	259	621	1.4726
		147.5	259	621	1.4678
		148.5	259	621	1.4646
		149.5	259	621	1.4615
		151.0	259	621	1.4570
		152.0	276	638	1.4539
		153.0	276	638	1.4510
		154.0	276	638	1.4481
		155.5	276	638	1.4437
		156.5	276	638	1.4409
		157.5	276	638	1.4381
		159.0	276	638	1.4340
		160.0	276	638	1.4313
		161.0	276	638	1.4286
		162.0	276	638	1.4259
		163.5	276	638	1.4220
		164.5	276	638	1.4195
		165.5	276	638	1.4169
		167.0	293	655	1.4132
		168.0	293	655	1.4107
		169.0	293	655	1.4083
		170.0	293	655	1.4059
		171.5	293	655	1.4023
		172.5	293	655	1.4000
		173.5	293	655	1.3977
		175.0	293	655	1.3943
		176.0	293	655	1.3920
		177.0	310	672	1.3898
		178.0	293	655	1.3876
		179.5	310	672	1.3844
		180.5	310	672	1.3823
		181.5	310	672	1.3802

* VALUES USED FOR EXTRAPOLATIONS

DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00 m to 973.10 m

Location: 400/ 65.452 / 130.085 /00
Test Type: INFLATE STRADDLE
Formation: GILMORE LAKE

Recorder Number: 001749
Recorder Depth: 962.00 m
Subsea Depth: -746.44 m

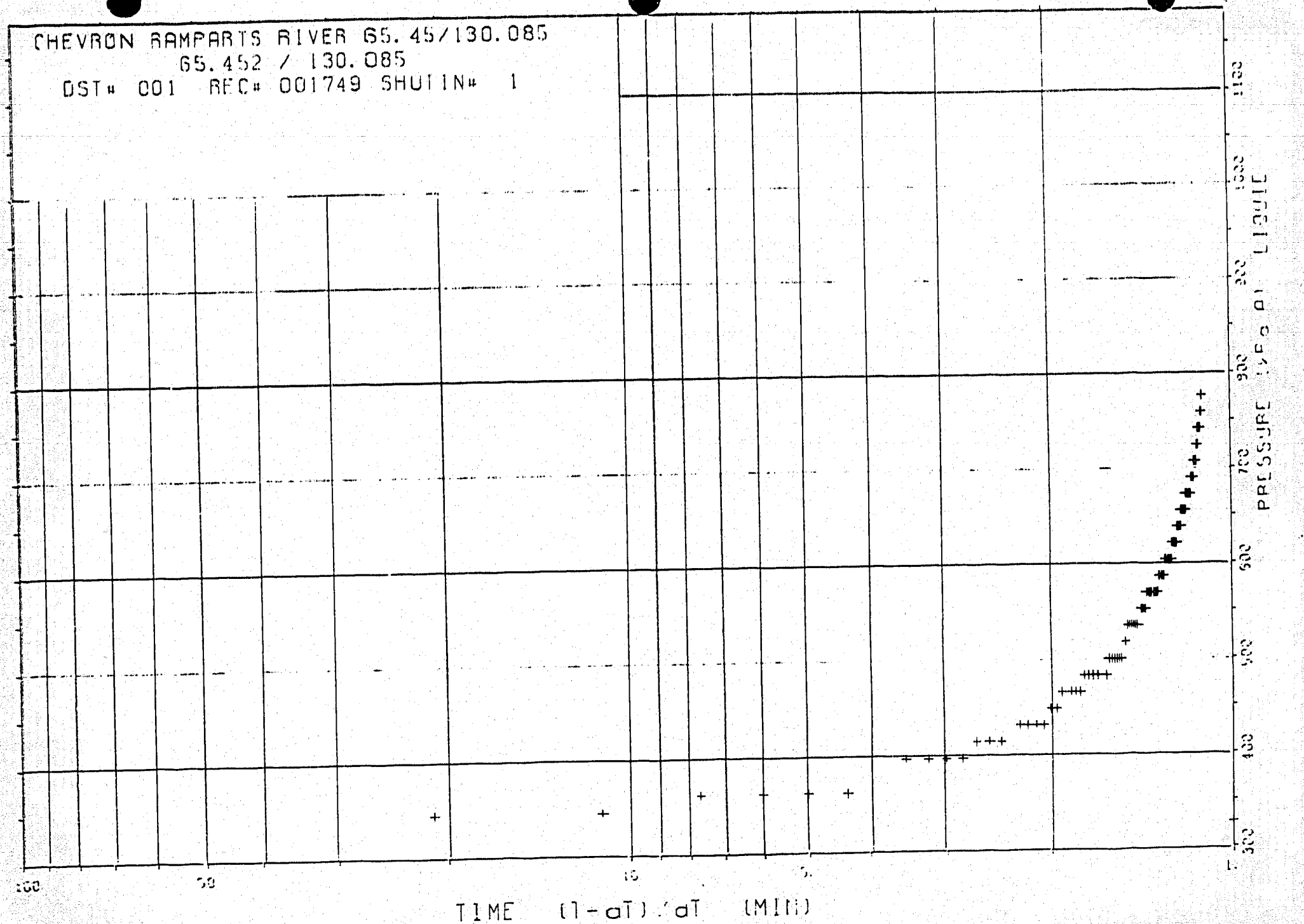
TIME-PRESSURE LISTING

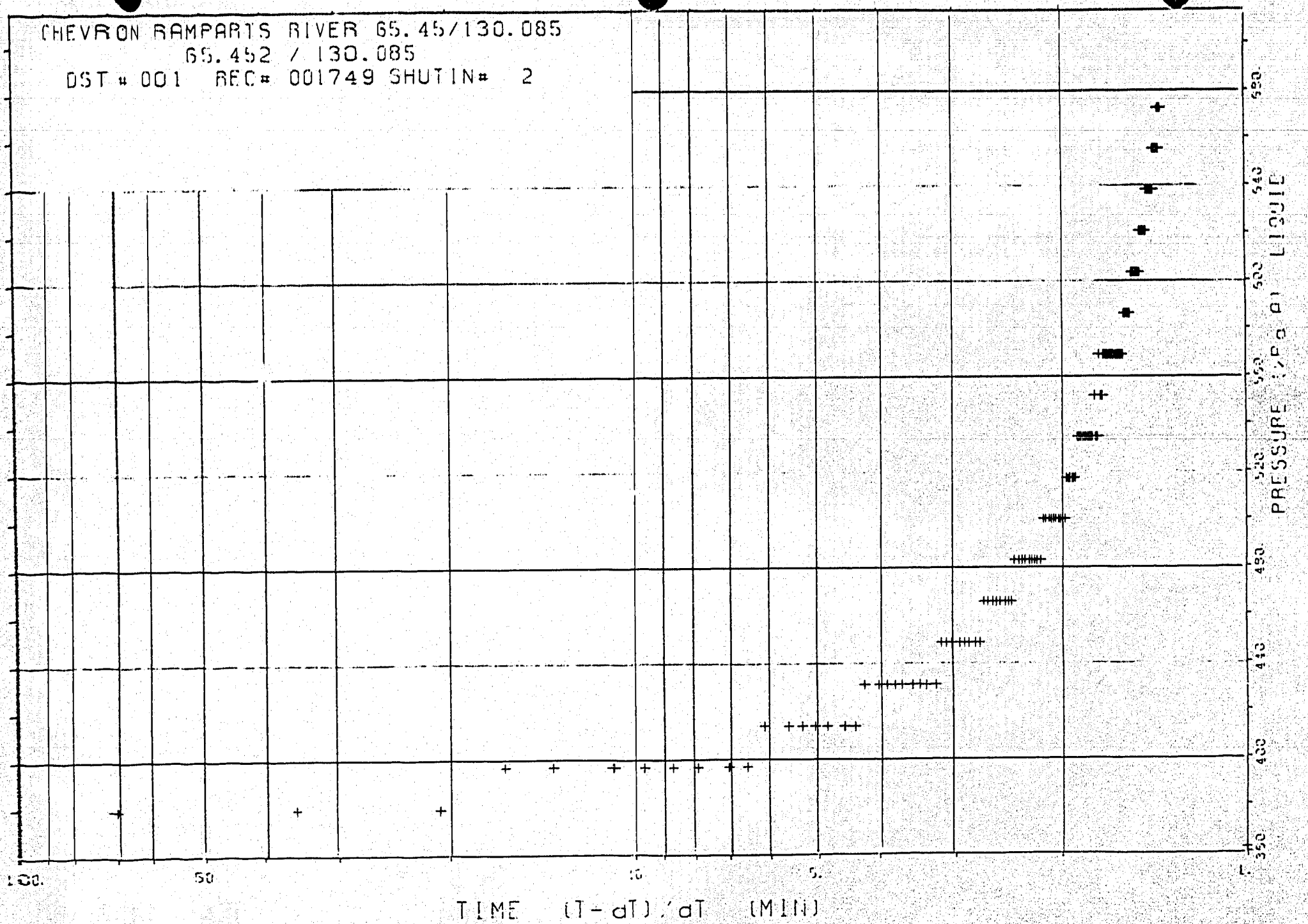
CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		183.0	310	672	1.3770
7	END OF 2nd SHUTIN	183.5	310	672	1.3760
14	FINAL HYDROSTATIC			10810	

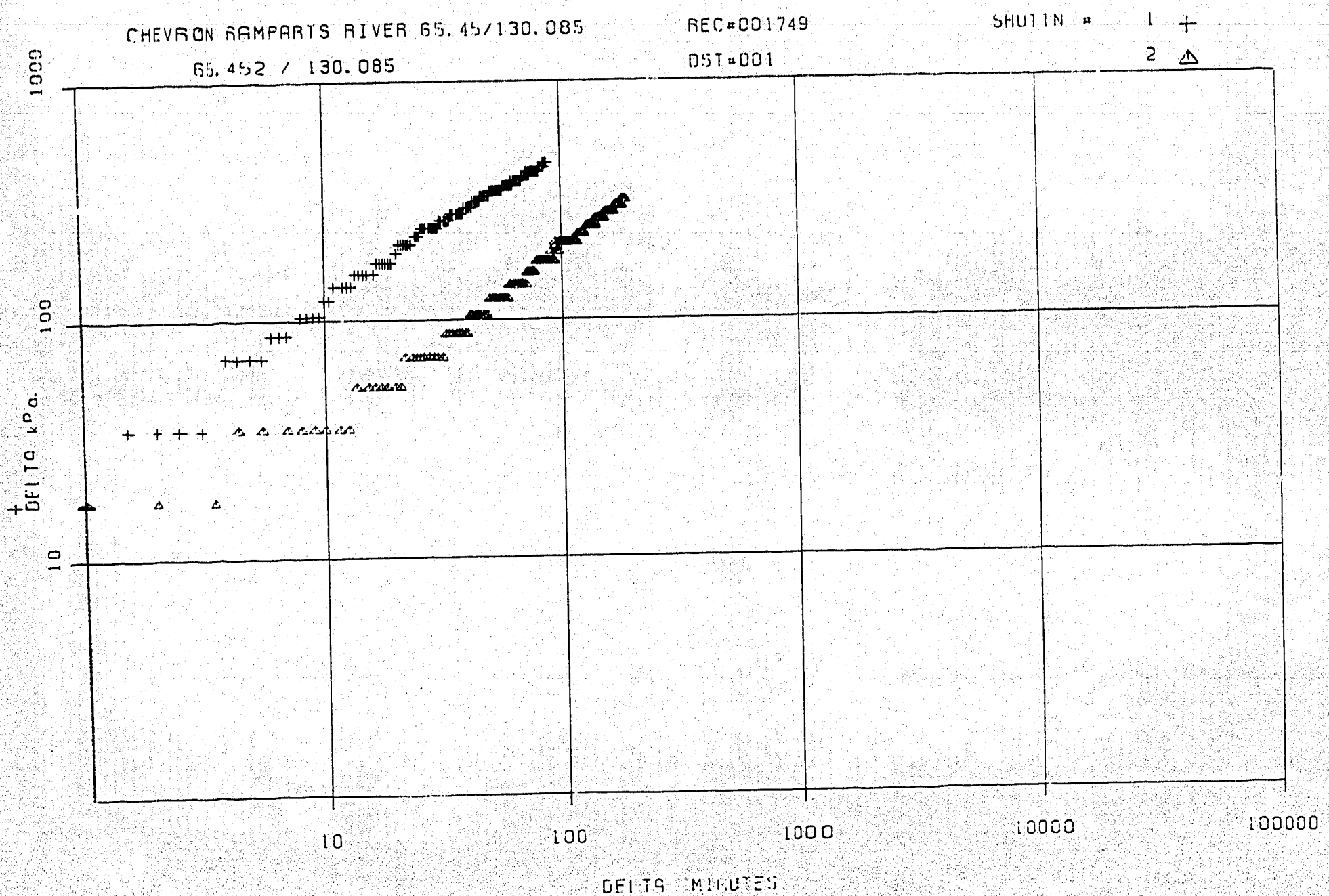
* VALUES USED FOR EXTRAPOLATIONS

1st SHUT-IN
HORNER EXTRAPOLATION .00 kPa(a)
HORNER SLOPE .00000 kPa/cycle

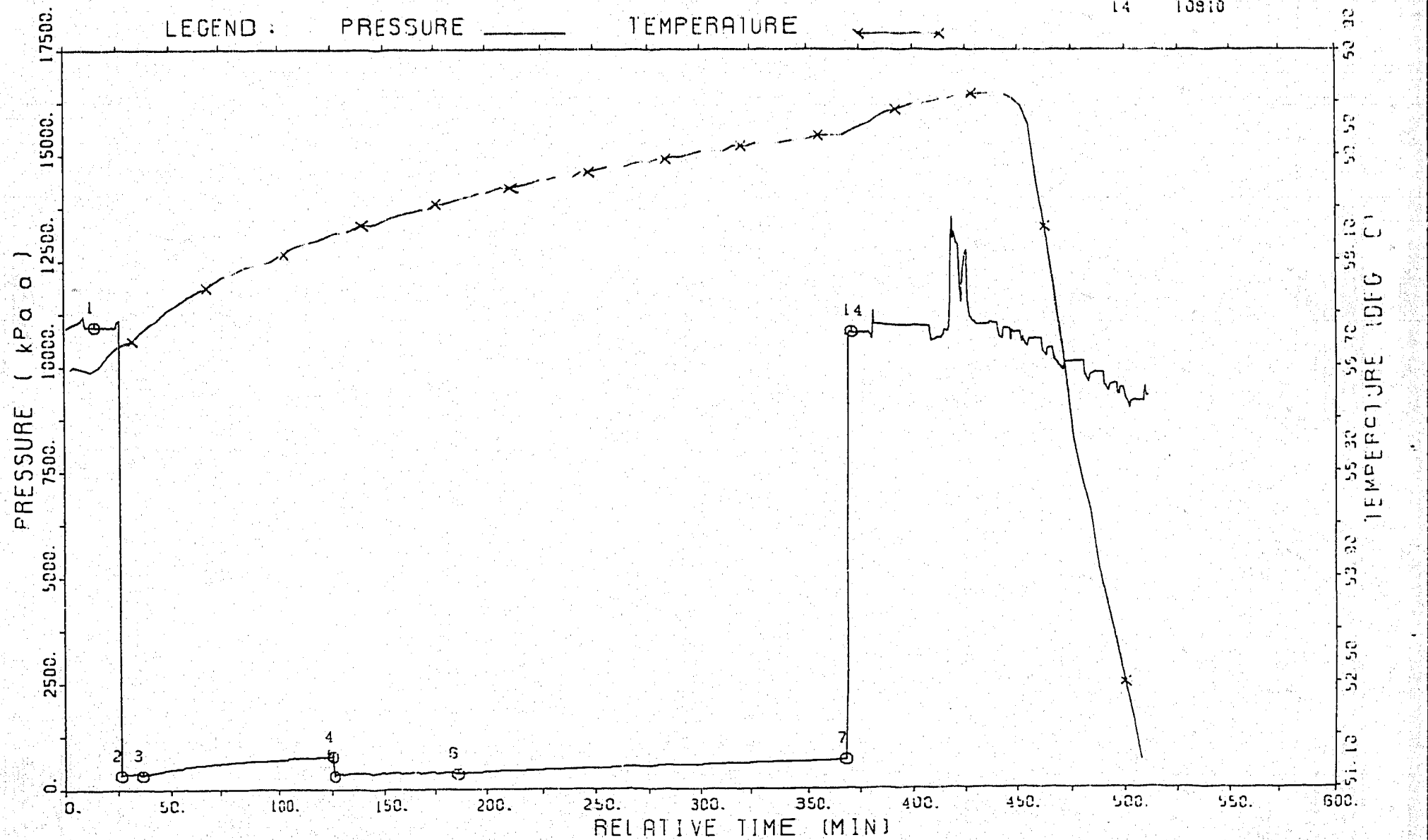
2nd SHUT-IN
HORNER EXTRAPOLATION .00 kPa(a)
HORNER SLOPE .00000 kPa/cycle


CHEVRON RAMPARTS RIVER 65.45/130.085
65.452 / 130.085
DST# 001 REC# 001749 SHUTIN# 1
PRESSURE (PSIG) AT LIQUID
TIME (T-dT)/dT (MIN)


CHEVRON RAMPARTS RIVER 65.45/130.085
65.452 / 130.085
DST # 001 REC# 001749 SHUTIN# 2
PRESSURE (PSIA) LIQUID
TIME (T-dT)/dT (MIN)


CHEVRON RAMPARTS RIVER 65.45/130.085
65.452 / 130.085
REC#001749
DST#001
SHUTIN # 1 +
2 △
1000
100
10
DELTA kPa.
10
100
1000
10000
100000
DELTA MINUTES

CHEVRON RAMPARTS RIVER F-46
65.452/130.085 DST #1
ELECTRONIC GAUGE #1749



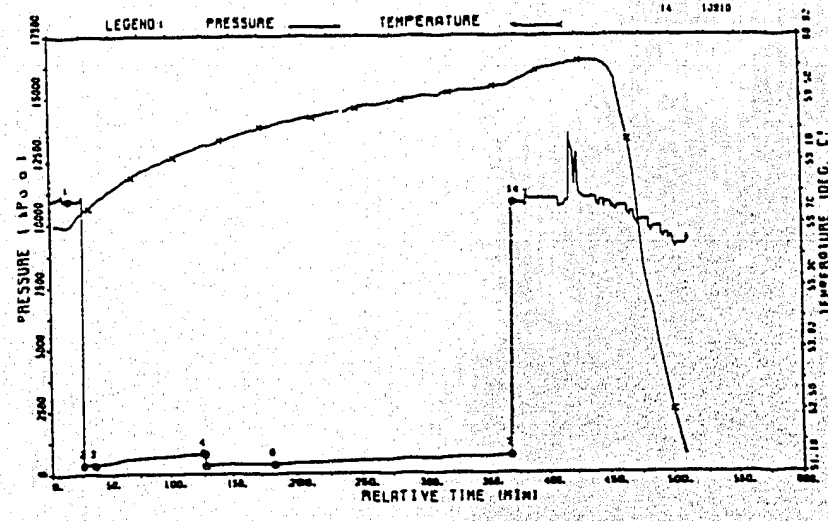
DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00m to 973.10m

PRESSURE RECORDER NUMBER : 001749

DEPTH : 962.00m
TYPE : DMRB
LOCATION : OUTSIDE
CAPACITY : 68900.00kPa(a)

***** TEMPERATURE AT RECORDER DEPTH = 59.7 C

	PRESSURE kPa(a)
1) Initial Hydro :	10948.
2) 1st Flow Start:	328.
3) 1st Flow End :	328.
4) END 1st Shutin:	776.
5) 2nd Flow Start:	310.
6) 2nd Flow End :	362.
7) END 2nd Shutin:	672.
14) Final Hydro. :	10810.



LYNES ELECTRONIC GAUGE.

TEST TIMES(MIN)

1st FLOW :	10.0
SHUTIN:	89.0
2nd FLOW :	59.0
SHUTIN:	183.5

PRESSURE RECORDER NUMBER : 009496

DEPTH : 962.00m
TYPE : K-3
LOCATION : OUTSIDE
CAPACITY : 19700.00 kPa

	PRESSURE kPa
1) Initial Hydro :	10764.
2) 1st Flow Start:	286.
3) 1st Flow End :	286.
4) END 1st Shutin:	652.
5) 2nd Flow Start:	243.
6) 2nd Flow End :	276.
7) END 2nd Shutin:	536.
14) Final Hydro. :	10764.

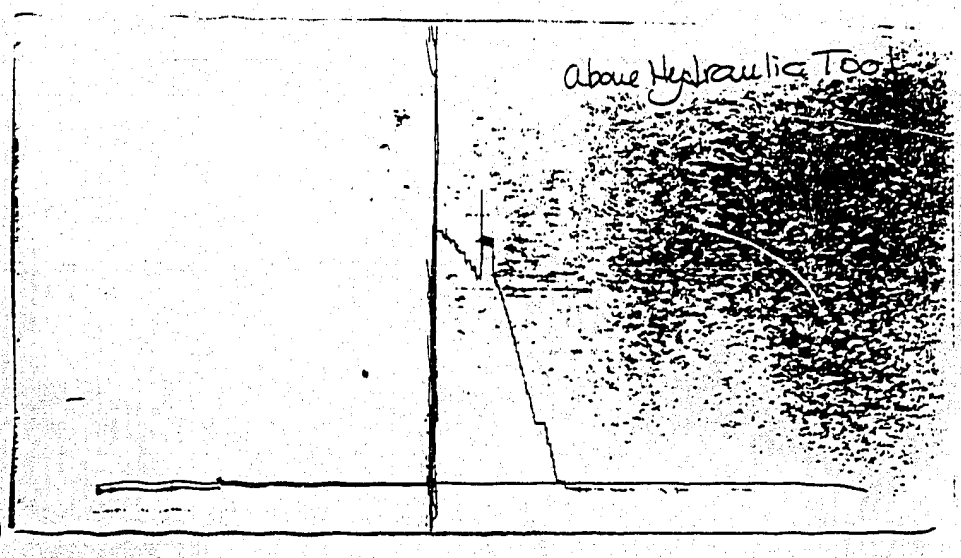
DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00m to 973.10m

PRESSURE RECORDER NUMBER : 013129

DEPTH : 947.00m
TYPE : K-3

LOCATION : INSIDE
CAPACITY : 22100.00 kPa

	PRESSURE kPa
1) Initial Hydro :	
2) 1st Flow Start:	0.
3) 1st Flow End :	132.
4) END 1st Shutin:	
5) 2nd Flow Start:	132.
6) 2nd Flow End :	198.
7) END 2nd Shutin:	198.
14) Final Hydro. :	



ABOVE INTERVAL.

TEST TIMES(MIN)

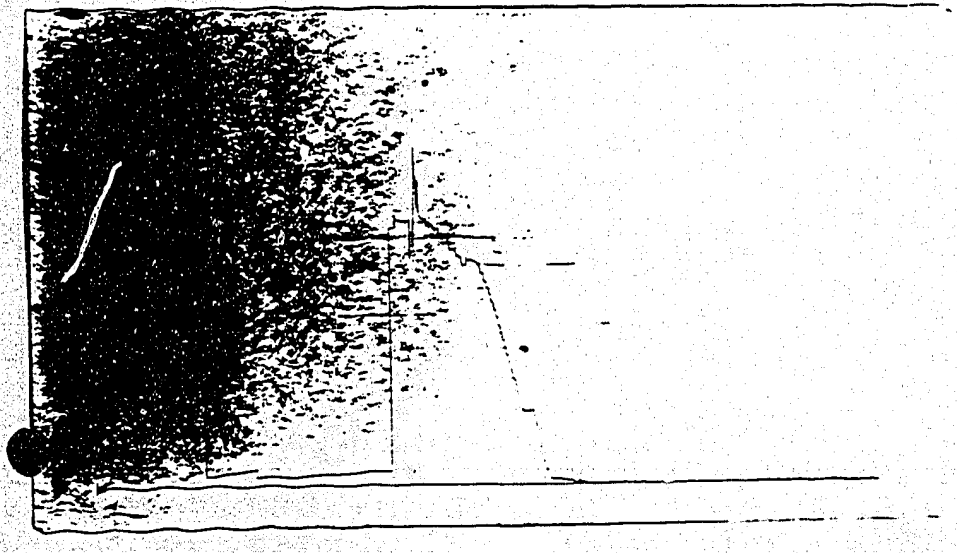
1st FLOW :	10.0
SHUTIN:	89.0
2nd FLOW :	59.0
SHUTIN:	183.5

PRESSURE RECORDER NUMBER : 014103

DEPTH : 962.00m
TYPE : K-3

LOCATION : OUTSIDE
CAPACITY : 20000.00 kPa

	PRESSURE kPa
1) Initial Hydro :	10732.
2) 1st Flow Start:	377.
3) 1st Flow End :	377.
4) END 1st Shutin:	676.
5) 2nd Flow Start:	320.
6) 2nd Flow End :	345.
7) END 2nd Shutin:	540.
14) Final Hydro. :	10751.



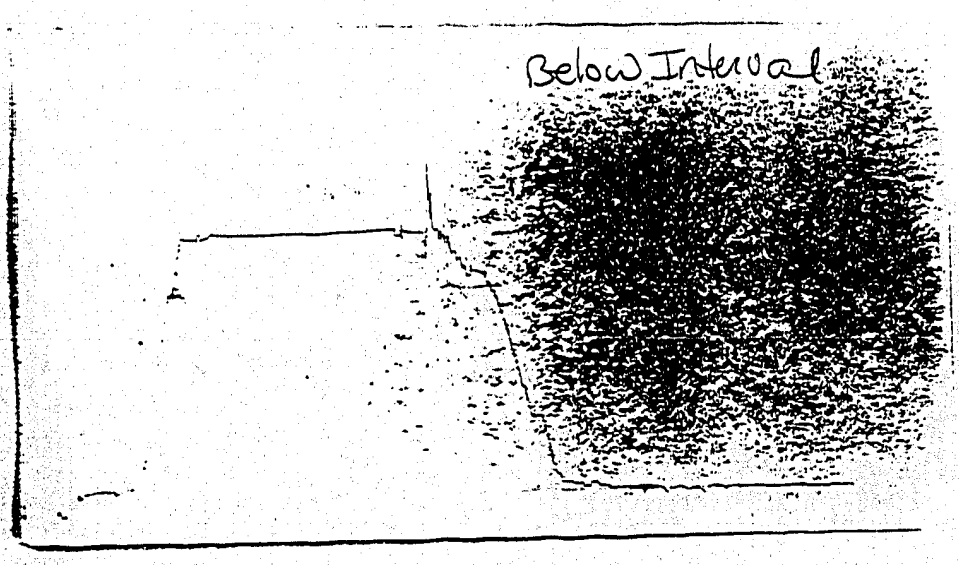
DST#01
CHEVRON RAMPARTS RIVER 65.45/130.085
960.00m to 973.10m

PRESSURE RECORDER NUMBER : 017024

DEPTH : 977.00m
TYPE : K-3

LOCATION : INSIDE
CAPACITY : 20000.00 kPa

	PRESSURE kPa
1) Initial Hydro	10953.
14) Final Hydro.	10953.



BELOW INTERVAL.

TEST TIMES (MIN)

1st	FLOW :	10.0
	SHUTIN:	89.0
2nd	FLOW :	59.0
	SHUTIN:	183.5

D.S.T. DATA you can RELY on.
D.S.T. DATA when you NEED it.
PH: 433-3443

THE EVALUATORS

CHEVRON RAMPART RIVER F-46

DST #1

FORMATION: GILMORE LAKE

INTERVAL: 960-973

REPORT FOR: BRIAN GLOVER
PREPARED BY: JAMES HEATHERINGTON

TEST DATE:
MARCH 16 1991

WELL DATA

HOLE (mm)	225
TD (m)	1510
GE (m)	209.5
KB (m)	215.56
FORMATION TEMP (DEG C)	55
FORMATION POROSITY (%)	12

MUD INFORMATION

MUD TYPE	GEL/KELZAN
WEIGHT (Kg/m3)	1130
VISCOSITY (SEC)	86
WATER LOSS (cc)	6.5
FILTRATE pH	10
FILTRATE SALINITY(ppm Cl⁻)	150
CUSHION TYPE	NONE
CUSHION AMOUNT	
CUSHION SALINITY(ppm Cl⁻)	

ON SITE PERSONNEL

COMPANY REPRESENTATIVE	IAN LUNDBERG
EVALUATOR	JAMES HEATHERINGTON
TESTING COMPANY	BAKER
TESTER	MURRAY SHEWCHUCK
DRILLING CONTRACTOR	SHEHTAH 1E

CHEVRON RAMPARTS RIVER F-46
DST 1 SUMMARY

Test times: 10-90-60-180

Blow Description and Mass Balances:

Preflow: 0.3 to 1.3 kPa
7.8 m3/day liquid flow
0.34 scm/day average gas rate

ISI: No breakout

Final flow: 1.1 to 3.75 kPa
0.4 m3/day liquid flow
3.1 scm/day average gas rate

FSI: No breakout

Pipe Recovery:

17 m drilling mud
(from pipe recovery chart)

Chart Pressures:

IH	11191 kPa
IPF	440 kPa
PF	440 kPa
ISI	743 kPa
IFF	393 kPa
FF	393 kPa
FSI	719 kPa
FH	11191 kPa

Comments:

Slight gas production
Extremely tight formation

CLOSED CHAMBER REPORT

PRETEST

Preliminary test times of 10-90-60-180 were set. The long shutins were necessary as the formation was believed to be tight. 0.3 kPa of pressure increase was seen prior to the test, likely due to the pipe warming up as it was run in the hole.

PREFLOW AND ISI

The surface closed chamber pressure rose from 0.3 to 1.3 kPa in 10 minutes. There was no breakout. Post test closed chamber mass balances combined with the data from the downhole fluid recovery chart yield the following:

Liquid produced	= .05 m3
Liquid rate	= 7.8 m3/day
Gas rate	= .34 scm/day
GLR	= .04 scm/m3

FINAL FLOW AND FSI

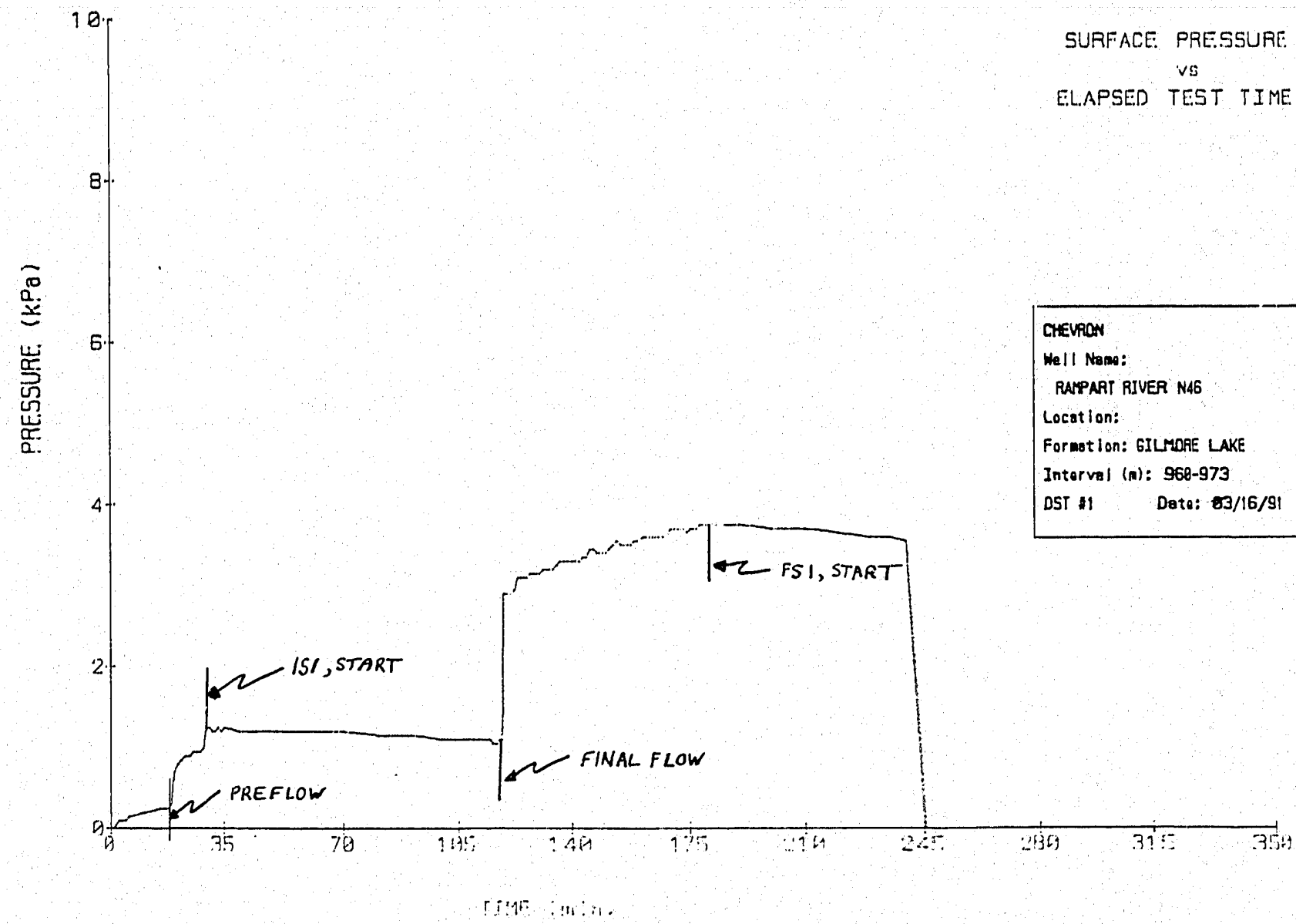
The surface closed chamber pressure rose from 1.1 to 3.75 kPa in 60 minutes. A gas huff of 3.3 kPa/min occurred in the second half minute. No breakout occurred during the FSI. The closed chamber was bled down with no gas to surface.

The surface closed chamber pressures were combined with data from the fluid recovery chart to show:

Liquid produced	= 0.02 m3
Liquid rate	= 0.4 m3/day
Gas rate	= 3.1 scm/day
GLR	= 7.7 scm/m3

A plot of surface pressure vs time follows, and a complete listing of pressure time data is included at the back of the report.

SURFACE PRESSURE
vs
ELAPSED TEST TIME



CHEVRON
Well Name:
RAMPART RIVER N46
Location:
Formation: GILMORE LAKE
Interval (m): 960-973
DST #1 Date: 03/16/91

THE EVALUATORS

PIPE RECOVERY REPORT

The recovery was: 17 m (.07 m3) total

The recovery was reversed out. One sample was caught during reversing, one sample below the pumpout sub, and a third sample was obtained from the downhole sampler. Results are listed below.

-All samples were drilling fluid, with no oil flecking.

-Nitrates were added to the mud to act as a tracer.

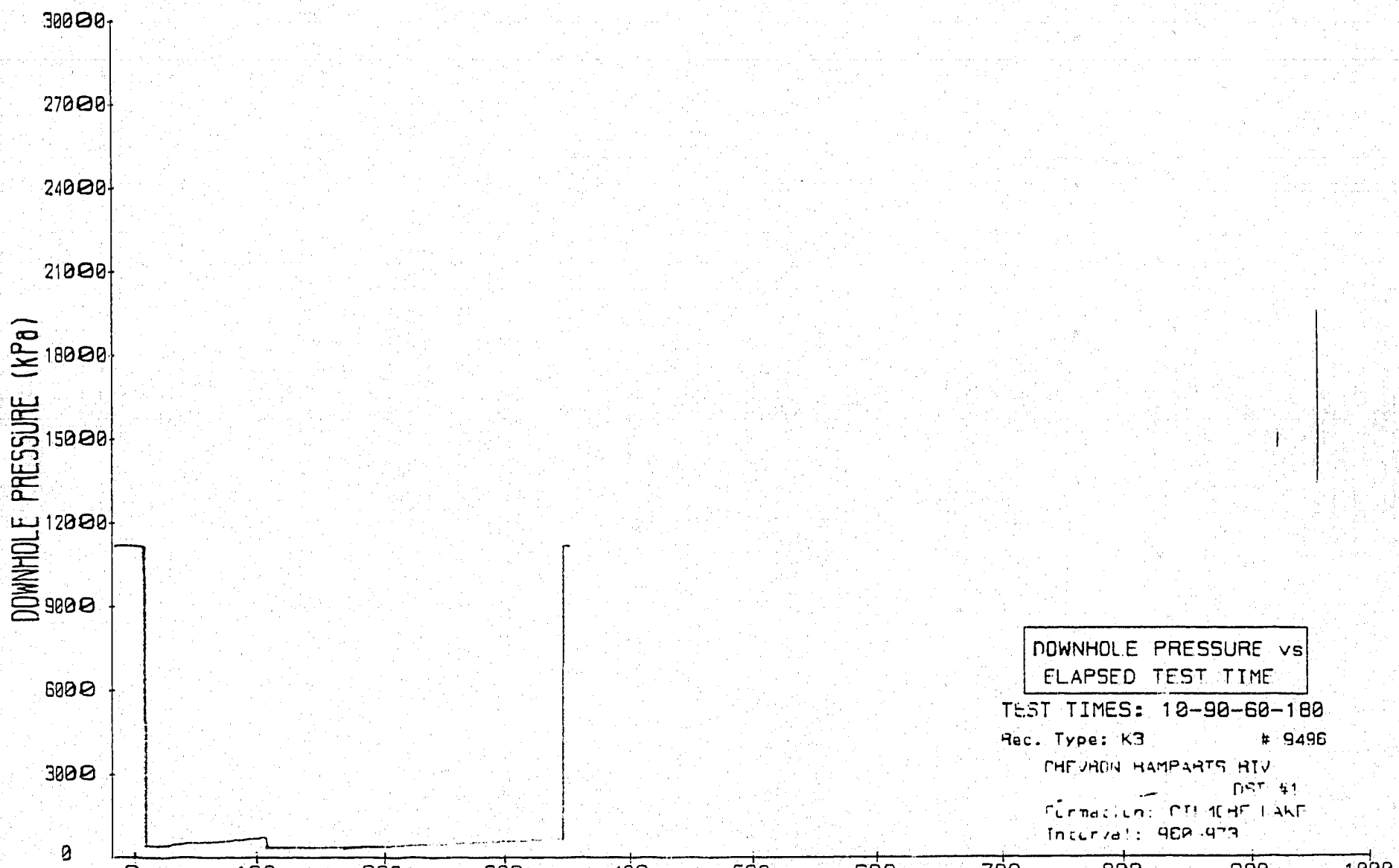
The mudman performed specific ion analysis as follows:

Sample #:		mud tank	1	2	3
salinity	(ppm Cl-)	150	250	230	400
Nitrates	(mg/l)	110	105	95	110

The rathole volume was .38 m3

DOWNHOLE CHART REPORT

A k3 guage was digitized and plotted up on site. The chart showed virtually no buildup for either shutin. No PTA was possible due to the lack of pressure buildup. No estimate of formation pressure was possible.


30000
27000
24000
21000
18000
15000
12000
9000
6000
3000
0
DOWNHOLE PRESSURE (kPa)
0
100
200
300
400
500
600
700
800
900
1000
TIME (min)
DOWNHOLE PRESSURE vs
ELAPSED TEST TIME
TEST TIMES: 10-90-60-180
Rec. Type: K3
9496
CHEVRON HAMPARTS RIV
DST #1
Formation: CRUICHE LAKE
Interval: 960-973
Refer to HORNER DATA for
Exact Buildup Description
THE EVALUATORS

RESERVOIR REPORT

DST #1 was a test of the Gilmore Lake formation. There was some gas produced, but at very low rates. No production of connate water can be shown. The downhole chart showed essentially a very tight formation.

The preflow produced gas at a calculated rate of .3 scm/day. The final flow produced gas at a rate of 3 scm/day. The minimum detectable flowrate for this test was 0.9 scm/day. These gas rates are as calculated from the closed chamber pressures and the downhole pipe recovery chart. Potential errors in the fluid level calculation of 17 m could reduce the calculated gas influx for the preflow to zero, but there was definite gas production during the final flow.

Final flow gas production is shown by two facts: The gas huff in the first minute of the final flow, and the calculated mass balances. The gas huff was caused by a buildup of gas in the interval during the ISI, which was released into the drill pipe on VO. Secondly, the mass balances showed definite gas influx. Pure liquid influx would have required a fluid recovery of 52 m and 570 kPa pressure recorded on the pipe recovery chart. Instead, 17 m of recovery was determined from a pressure of 187 kPa. A gas/liquid balance then shows the above calculated rates.

The fluid analysis showed a slight increase in the chlorides from the mud system to the recovered samples. The increase is not enough to say that there was any connate water production from the formation, but the 17 m (.07 m3) of production is much smaller than the rathole volume of .38 m3. There was no significant change in the nitrates concentration. In short, no definite production of connate water can be shown.

The downhole chart showed a mechanically successful test. No quantitative PTA information was obtainable, but the low shutin buildups show a very low permeability formation.

If there are any questions on any aspect of our analysis, or if the reader wants information on any other aspect of DST's in general, please feel free to contact the Evaluators' office and talk with one of our engineers.

CHEVRON RAMPART RIVER F46 F46 DST #1

TEST STRING INFORMATION

CLOSED CHAMBER:

No.	COMPONENT NAME	ID (MM)	OD (MM)	LENGTH (M)	VOLUME (M3)
1	DRILL PIPE	97.18		671.28	4.9791
2	HEAVY WEIGHT	70		222.45	0.8561
3	DRILL COLLARS	73		56.4	0.2361
4	TOOLS ABOVE	25		2.31	0.0011

RATHOLE:

1	TOOLS BELOW	25	127	12.43	0.00610
2	PERF	25	127	1.12	0.00055
3	INTERVAL TOOLS	25	127	2.36	0.00000
4	HEAVY WEIGHT	70	114	8.9	0.00000
5	INTERVAL TOOLS	25	127	.72	0.00000

TOTAL CLOSED CHAMBER VOLUME: 6.07 M3

TOTAL RATHOLE VOLUME: 0.383 M3

BASED ON THE CUSHION VOLUME,
NEW CLOSED CHAMBER VOLUME: 6.07 M3

THE INITIAL PARAMETERS ARE:

AVERAGE DRILLING FLUID TEMPERATURE: 40 C
ATMOSPHERIC PRESSURE: 101 kPA
N1: 5.60 scm

MINIMUM SURFACE PRESSURE WHEN RATHOLE VOLUME HAS BEEN PRODUCED THROUGH SHUTIN TOOL: 6.81 kPA

MAXIMUM UNRECORDABLE FLOWRATE = 0.9 scm/day

PRETEST

R= 0

TIME min	SURFACE PRESSURE kPA	dP/dt kPA/min	GASSIFIED LIQUID FLOW m3/day	CUMMULATIVE m3	BREAKOUT GAS RATE scm/day	CUMMULATIVE scm
0.50	0.0	0.0				
1.00	0.0	0.0				
2.00	0.1	0.1				
3.00	0.1	0.0				
4.00	0.1	0.0				
5.00	0.1	0.0				
6.00	0.2	0.1				
10.00	0.2	0.0				
15.00	0.3	0.0				
17.00	0.3	0.0				
18.00	0.3	0.0				

PREFLOW

R= .04

TIME min	SURFACE PRESSURE kPA	dP/dt kPA/min	GASSIFIED LIQUID FLOW m3/day	CUMMULATIVE m3	BREAKOUT GAS RATE scm/day	CUMMULATIVE scm
19.00	0.3	0.1	4.1	0.00	0	0
20.00	0.7	0.4	33.0	0.03	1	0
21.00	0.8	0.1	8.2	0.03	0	0
22.00	0.8	0.0	4.1	0.03	0	0
23.00	0.9	0.1	4.1	0.04	0	0
24.00	0.9	0.0	0.0	0.04	0	0
25.00	0.9	0.0	4.1	0.04	0	0
26.00	0.9	0.0	0.0	0.04	0	0
27.00	0.9	0.0	0.0	0.04	0	0
28.00	1.0	0.1	4.1	0.04	0	0
29.00	1.3	0.3	20.4	0.06	1	0

INITIAL SHUTIN

TIME min	SURFACE PRESSURE kPA	dP/dt kPA/min	R= .04 GASSIFIED LIQUID FLOW m3/day	CUMMULATIVE m3	BREAKOUT GAS RATE scm/day	CUMMULATIVE scm
30.00	1.3	0.0			0	0
31.00	1.2	-0.1			-4	-0
32.00	1.2	0.0			0	-0
33.00	1.3	0.1			4	0
34.00	1.2	-0.1			-4	-0
35.00	1.3	0.1			4	0
40.00	1.2	-0.0			-1	-0
45.00	1.2	0.0			0	-0
50.00	1.2	0.0			0	-0
55.00	1.2	0.0			0	-0
60.00	1.2	0.0			0	-0
70.00	1.2	0.0			0	-0
80.00	1.2	-0.0			-0	-0
90.00	1.2	0.0			0	-0
100.00	1.1	-0.0			-0	-0
110.00	1.1	0.0			0	-0
115.00	1.1	0.0			0	-0
116.00	1.1	-0.0			-4	-0
117.00	1.1	0.0			0	-0
117.50	1.1	0.0			0	-0
118.00	1.1	0.1			8	-0
118.50	1.1	0.0			0	-0

FINAL FLOW

TIME min	SURFACE PRESSURE kPA	dP/dt kPA/min	R= 7.7 GASSIFIED LIQUID FLOW m3/day	CUMMULATIVE m3	BREAKOUT GAS RATE scm/day	CUMMULATIVE scm
119.00	1.3	0.3	2.7	0.06	21	0
119.50	2.9	3.3	30.2	0.07	232	0
120.00	2.9	0.0	0.0	0.07	0	0
120.50	2.9	0.0	0.0	0.07	0	0
121.00	2.9	0.0	0.0	0.07	0	0
121.50	2.9	0.0	0.0	0.07	0	0

TIME min	SURFACE PRESSURE kPA	dP/dt kPA/min	R= 7.7 GASSIFIED LIQUID FLOW m3/day	CUMMULATIVE m3	BREAKOUT GAS RATE scm/day	CUMMULATIVE scm
122.00	2.9	0.0	0.0	0.07	0	0
123.00	2.9	0.0	0.5	0.07	4	0
124.00	3.1	0.2	1.4	0.07	11	0
125.00	3.1	0.0	0.0	0.07	0	0
126.00	3.1	0.0	0.0	0.07	0	0
127.00	3.1	0.0	0.0	0.07	0	0
128.00	3.2	0.1	0.5	0.07	4	0
129.00	3.2	0.0	0.0	0.07	0	0
130.00	3.2	0.0	0.0	0.07	0	0
131.00	3.2	0.0	0.0	0.07	0	0
132.00	3.2	0.0	0.5	0.07	4	0
133.00	3.2	0.0	0.0	0.07	0	0
134.00	3.2	0.0	0.0	0.07	0	0
135.00	3.2	0.0	0.0	0.07	0	0
136.00	3.3	0.1	0.5	0.07	4	0
137.00	3.3	0.1	0.5	0.07	4	0
138.00	3.3	0.0	0.0	0.07	0	0
139.00	3.3	0.0	0.0	0.07	0	0
140.00	3.3	0.0	0.0	0.07	0	0
141.00	3.3	0.0	0.0	0.07	0	0
142.00	3.3	0.0	0.0	0.07	0	0
143.00	3.3	0.0	0.5	0.07	4	0
144.00	3.3	0.0	0.0	0.07	0	0
145.00	3.4	0.1	0.9	0.07	7	0
146.00	3.4	0.0	0.0	0.07	0	0
147.00	3.4	-0.0	-0.5	0.07	-4	0
148.00	3.4	0.0	0.0	0.07	0	0
149.00	3.4	0.0	0.0	0.07	0	0
150.00	3.4	0.0	0.0	0.07	0	0
151.00	3.4	0.0	0.5	0.07	4	0
152.00	3.5	0.1	0.5	0.07	4	0
153.00	3.6	0.1	0.5	0.07	4	0
154.00	3.5	-0.1	-0.5	0.07	-4	0
155.00	3.5	0.0	0.0	0.07	0	0
156.00	3.5	0.0	0.0	0.07	0	0
157.00	3.5	0.0	0.0	0.07	0	0
158.00	3.6	0.1	0.5	0.07	4	0
159.00	3.6	0.0	0.0	0.07	0	0
161.00	3.6	0.0	0.2	0.07	2	0
162.00	3.6	0.0	0.0	0.07	0	0
163.00	3.6	0.0	0.0	0.07	0	0
164.00	3.6	0.0	0.0	0.07	0	0
165.00	3.6	0.0	0.0	0.07	0	0

TIME min	SURFACE PRESSURE kPA	dP/dt kPA/min	R= 7.7 GASSIFIED LIQUID FLOW m3/day	CUMMULATIVE m3	BREAKOUT GAS RATE scm/day	CUMMULATIVE scm
166.00	3.6	0.0	0.0	0.07	0	0
167.00	3.6	0.0	0.0	0.07	0	0
168.00	3.6	0.0	0.0	0.07	0	0
169.00	3.7	0.1	0.9	0.07	7	0
170.00	3.7	0.0	0.0	0.07	0	0
171.00	3.7	0.0	0.0	0.07	0	0
172.00	3.7	0.0	0.0	0.07	0	0
173.00	3.7	0.0	0.0	0.07	0	0
174.00	3.7	-0.0	-0.5	0.07	-4	0
175.00	3.7	0.0	0.5	0.07	4	0
176.00	3.7	0.0	0.0	0.07	0	0
177.00	3.7	0.0	0.0	0.07	0	0
178.00	3.8	0.1	0.5	0.07	4	0
179.00	3.8	0.0	0.0	0.07	0	0

FINAL SHUTIN

TIME min	SURFACE PRESSURE kPA	dP/dt kPA/min	R= 7.7 GASSIFIED LIQUID FLOW m3/day	CUMMULATIVE m3	BREAKOUT GAS RATE scm/day	CUMMULATIVE scm
180.00	3.8	0.0			0	0
181.00	3.8	0.0			0	0
182.00	3.8	0.0			0	0
183.00	3.8	0.0			0	0
190.00	3.8	0.0			0	0
200.00	3.7	-0.0			-0	0
210.00	3.7	0.0			0	0
220.00	3.7	-0.0			-0	0
230.00	3.6	-0.0			-0	0
235.00	3.6	0.0			0	0
240.00	3.6	-0.0			-1	0
245.00	-0.5	-0.8			-64	-0

APPENDIX 7

DRILLING FLUID REPORT

Chevron Rampart

65°45'18.6" N

130°08'51.44"W

F-46

Well Recap

M-I Drilling Fluids Canada, Inc.

Chevron Rampart
65°45'18.6"N
130°08'51.44"W

Spud Date:	February 25, 1991
Rig Release Date:	March 17, 1991
Total Days:	21
Total Depth:	1510
Total Cost:	$46,774.63
Cost/Metre:	$30.97

Sales Representative:	K. King
Field Representative:	R. Birdsell

TABLE OF CONTENTS

Chevron Ramparts Creek
F-46

SURFACE HOLE SECTION:

Interval:	0 - 45 m
Mud Type:	Gel Chemical
Hole Size:	660 mm
Casing Size:	508 mm
Total Days:	2 days
Product Cost:	$3,975.54
Cost/Meter:	$88.35

Comments: Spud and drill 660 mm hole to 45 m, had minor lost circulation. Condition hole. Ran 508 mm conductor to 42.46 m and cement. Had good cement returns.

Material Usage:

Product	Units	Cost
Natural Gel	182	$1,587.04
Kelzan XCD	5	2,254.10
Sawdust	20	92.80
Soda Ash	2	41.60
TOTAL:		$3,975.54

Chevron Ramparts Creek
F-46

INTERMEDIATE HOLE:

Interval:	45 - 448 m
Mud Type:	Gel/
Hole Size:	445 mm
Total Days:	6
Product Cost:	$14,677.92
Cost/Meter:	$36.42

Comments: N/U diverter, pressure test and drilled out shoe had severe cement contamination. Drilled ahead to 209 m, wiper trip had 36 m tight hole and 6 m fill. Drilled to 274 m and wiper trip to 122 m, very tight and had 10 m fill. Had to lower pump strokes due to pressure limitations. Drilled to 331 m had P.O.H. for bit, deviation 4 degrees, hole very tight. R.I.H. and reamed bridged 273 m to 331 m. Drilled to 393 m wiper trip. Hole tight. Reamed to 318 m to 393 m. Drilled to 440 m, circulation, POOH to casing, R.I.H. Reamed bridges and drilled to 448 m, wiper trip, hole good. P.O.H. to log, hole good for logging, Ran 339.7 mm casing to 445.67 m and cemented.

Material Usage:

Product	Units	Cost
Natural Gel	233	$2,031.76
Kelzan XCD	28	12,622.96
Sawdust	5	23.00
TOTAL:		$14,677.92

Chevron Ramparts Creek
F-46

MAIN HOLE:

Interval:	448 - 1510 m
Mud Type:	Gel Chemical
Hole Size:	216 mm
Total Days:	17
Product Cost:	$28, 121.17
Cost/Meter:	$26.48 m

Comments: N/U and pressure test. Drilled out with 311 mm bit with water and displace to mud. R.I.H. with 216 mm bit and drilled ahead to 943 m. Trip for bit hole very tight, had to pump out singles in various spots. R.I.H. and reamed 516 m to 943 m. Raised viscosity from 45-50 s/L to 75+ s/L. Drilled ahead, hole starting to slough but is cleaning well. Drilled ahead to 1300 m while pumping occasional high-vis. Pills, P.O.H. at 1300 m, hole was tight coming out. R.I.H. and reamed 726 m - 973 m, 1178 - 1200 m, had 16 m fill. Drilled ahead to 1510 m (T.D.) circualte survey and wiper trip to casing. Hole was tight 1320-1290 m, but was good running back in with 7 m fill. P.O.H. to log, run logs #1 and logs #2. Clean out trip for tight hole. Finish logging and run DST. #1. Decide to plug and abandon.

Material Usage:

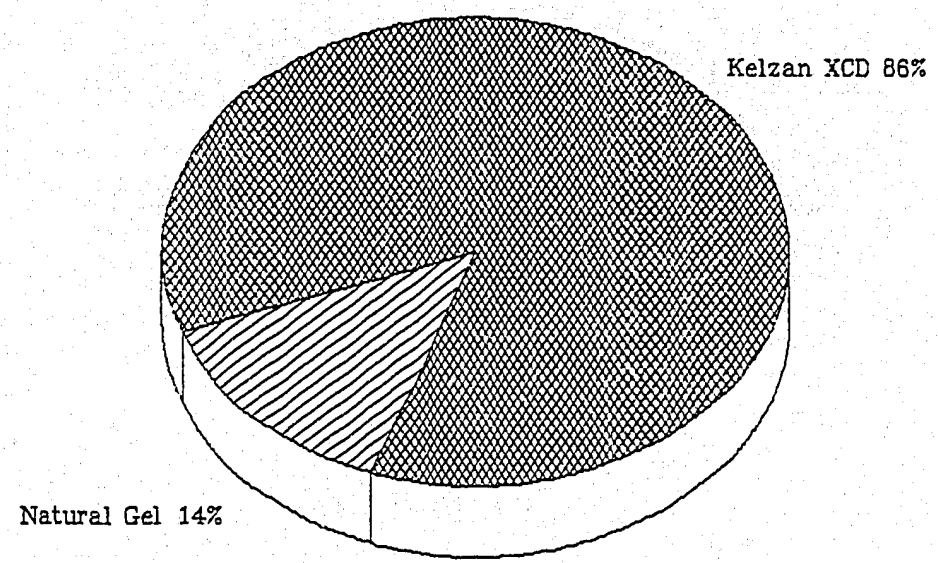
Product	Units	Cost
Natural Gel	378	$3,296.16
Barite	131	1,566.76
Kelzan XCD	41	18,483.62
Sawdust	40	185.60
Soda Ash	7	145.60
Calcium Nitrate	13	1,552.59
SAPP	3	402.00
Caustic Soda	29	997.60
Peltex	9	333.36
Drispac S.L.	6	1,157.88
TOTAL:		$28,121.17

DRILLING MUD COST SUMMARY

PRODUCT	SIZE	QUANTITY	COST
M-I Bar	40.36 kg	131	$1,566.76
Natural Gel	40 kg	793	6,919.96
Kelzan XCD	25 kg	74	33,360.68
Sawdust		65	301.40
Soda Ash	40 kg	9	187.20
Calcium Nitrate	25 kg	13	1,552.59
SAPP	40 kg	3	402.00
Caustic Soda	22.68 kg	29	997.60
Peltex	25 kg	9	333.36
Dirspac S.L.	22.68 kg	6	1,157.88
		TOTAL:	$46,774.63
		COST/METER:	$30.97

Product Cost %

Chevron Rampart 65°45'18.6''N 130°45'18.6''N/INTERMEDIATE HOLE



Products % of Total Cost

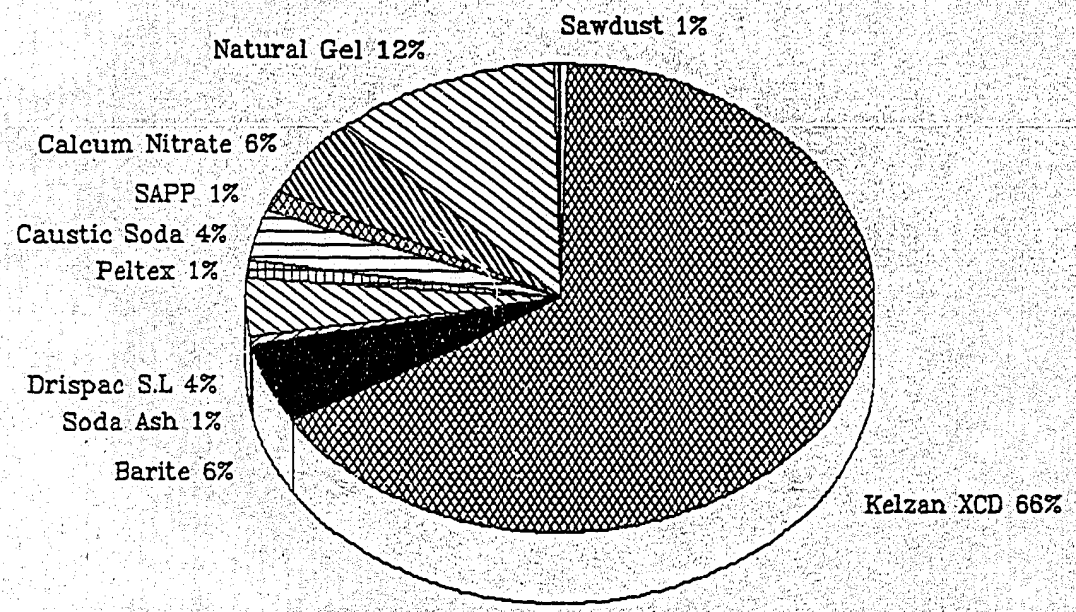
M - I Drilling Fluids Canada, Inc.

X Data	Series 1
Natural Gel	2031.76
Xanthan XCD	12622.96

X Data	Series 1
Soda Ash	145.6
Barite	1566.76
Kelzan XCD	18482.619
Sawdust	185.6
Natural Gel	3296.16
Calcum Nitrate	1552.59
SAPP	402
Caustic Soda	997.6
Peltex	333.36
Drispac S.L	1157.88

Product Cost %

Chevron Rampart 65°45'18.6"N 130°08'51.44"W / MAIN HOLE

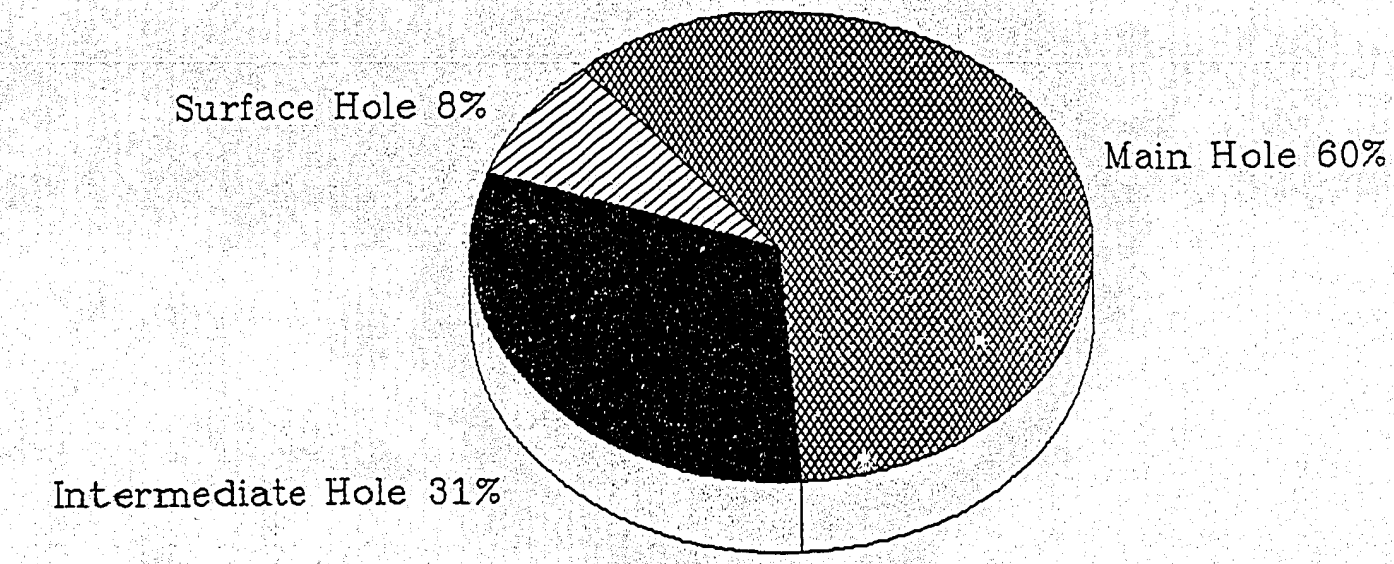


Products % of Total Cost

M – I Drilling Fluids Canada, Inc.

Product Cost %

Chevron Rampart 65°45'18.6"N 130°08'51.44"W



Products % of Total Cost

M – I Drilling Fluids Canada, Inc.

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

				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: CHEVRON RAMPARTS RIVER Area: F-46

Grid Area: 65° 50', 130° 00' Field/Pool: Exploratory Wildcat

Permit or Lease No.: N 90 A 418 Final Coordinates: Lat.: 65° 45' 18.60" N Long: 130° 08' 51.44" W

Drilling Unit: Shehtah 1E Elevations-RT/KB: 215.6 m SF/GL: 209.5 m

Spud Date: 1991-02-24 Rig Released: 1991-03-18 Total Depth: 1510m

CASING AND CEMENTING

O.D.:	Weight:	Grade:	Depth Set:	Cement and Additives:
508.0 mm	197.9 kg/m	K-55	42m	Alaskan Class "G" Permafrost + 6% Gilsonite + .15% Permafrost retarder.
339.7 mm	90.8 kg/m	K-55	446m	Alaskan Class "G" Permafrost + 6% Gilsonite + .15% Permafrost retarder.

PLUGGING PROGRAM

Approval of the following program was obtained by (person) Ian Lundberg from (person) Maurice Thomas of the Canada Oil and Gas Lands Administration by means of telephone on March 15th 19 91.

Type of Plug:	Interval:	Felt:	Cement and Additives:
Abandonment #1	1510m - 1410m	No Feel	Class "G" 0:1:0 + .25% CFR-3
Abandonment #2	1010m - 910m	Yes	Class "G" 0:1:0 + .25% CFR-3
Halliburton EZSV	398m		
Abandonment #3	398m - 368m	No Feel	Alaskan Permafrost + 6% Gilsonite + .15% retarder.

Lost Circulation/Overpressure Zones: None

Equipment left on Seafloor (Describe): N/A

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

Cores: Type: Intervals: See attached

Other Downhole Completion/Suspension Equipment:

CERTIFICATION

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

Signed: Loyd Kettle P. Eng.

Name: for R. H. GARMAN

Title: MANAGER DRILLING DIVISION

Date: 1991-03-26

Acknowledged by: Engineering Branch

Date: 91-04-26

File: 9211-C4-1-6

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

Chevron Canada Resources
500 - Fifth Avenue S.W., Calgary, Alberta T2P 0L7
Phone (403) 234-5000 Fax (403) 234-5947

W.H. Garman
Manager
Drilling Division

Calgary, Alberta
1991-03-26

COGLA
YELLOWKNIFE

Attention: Mr. Maurice Thomas, P. Eng.

Chevron Canada Resources elected to abandon the Chevron Ramparts River F-46 well, located at 65° 45' 18.60" N, 130° 08' 51.44" W. The following abandonment program was approved by COGLA 1991-03-15:

Plug No.	Interval	Length	Cement Type	Cement Volume	Tag Plug
1	1510m - 1410m	100m	Class "G" 0:1:0	Caliper + 20% excess	No
2	1010m - 910m	100m	Class "G" 0:1:0	Caliper + 20% excess	Yes
EZSV	398m				
3	398m - 368m	30m	Permafrost + 6% Gilsonite	Caliper	No

Chevron has also complied with COGLA Regulations 210 (1) (g), and 205 by cutting casing 1m below ground level, placing a 10m plug inside the 339.7mm surface casing, welding a steel plate over the top of the casing and marking the well with an appropriate sign.

Attached is the pertinent well data and sketch of the abandonment program for the subject Ramparts River well. Should you require any additional information, contact Mr. Roy S. Rettie, Staff Drilling Engineer, at (403) 234-5522 (office).

Yours very truly,

L.J.S. Rettie P. Eng.

for W. H. GARMAN
Manager Drilling Division

JDT/45:im

cc: F. H. Lepine - COGLA, Ottawa

CHEVRON RAMPARTS RIVER F-46
ABANDONMENT PROGRAM

WELL DATA

KB Elevation : 215.6
T.D. : 1510m
Drilling Program No. : 9211-C4-1
Land Use Permit No. : N 90 A 418
UWI : 300F466550130000

Casing:

Conductor : 508.0mm, 197.9 kg/m, K-55, Buttress set @ 42m.
Surface : 339.7mm, 90.8 kg/m, K-55, ST&C set @ 446m.

Lost Circulation:

None encountered.

DST:

DST #1 : 960m to 973m. Inflate straddle closed chamber test (Gilmore Lake).

Remarks: Recovered 17m of drilling fluid (based on fluid recovery recorder), 230 ppm Cl^-.

Cored Intervals:

No cores cut.

Logs:

Surface : Long Space Sonic.

Main Hole: DIL-GR, Sonic-GR-Cal, CNS-GR-Cal, Neutron Density-GR-Cal, Neutron-GR, Microlog-GR, Checkshot survey, SSL.

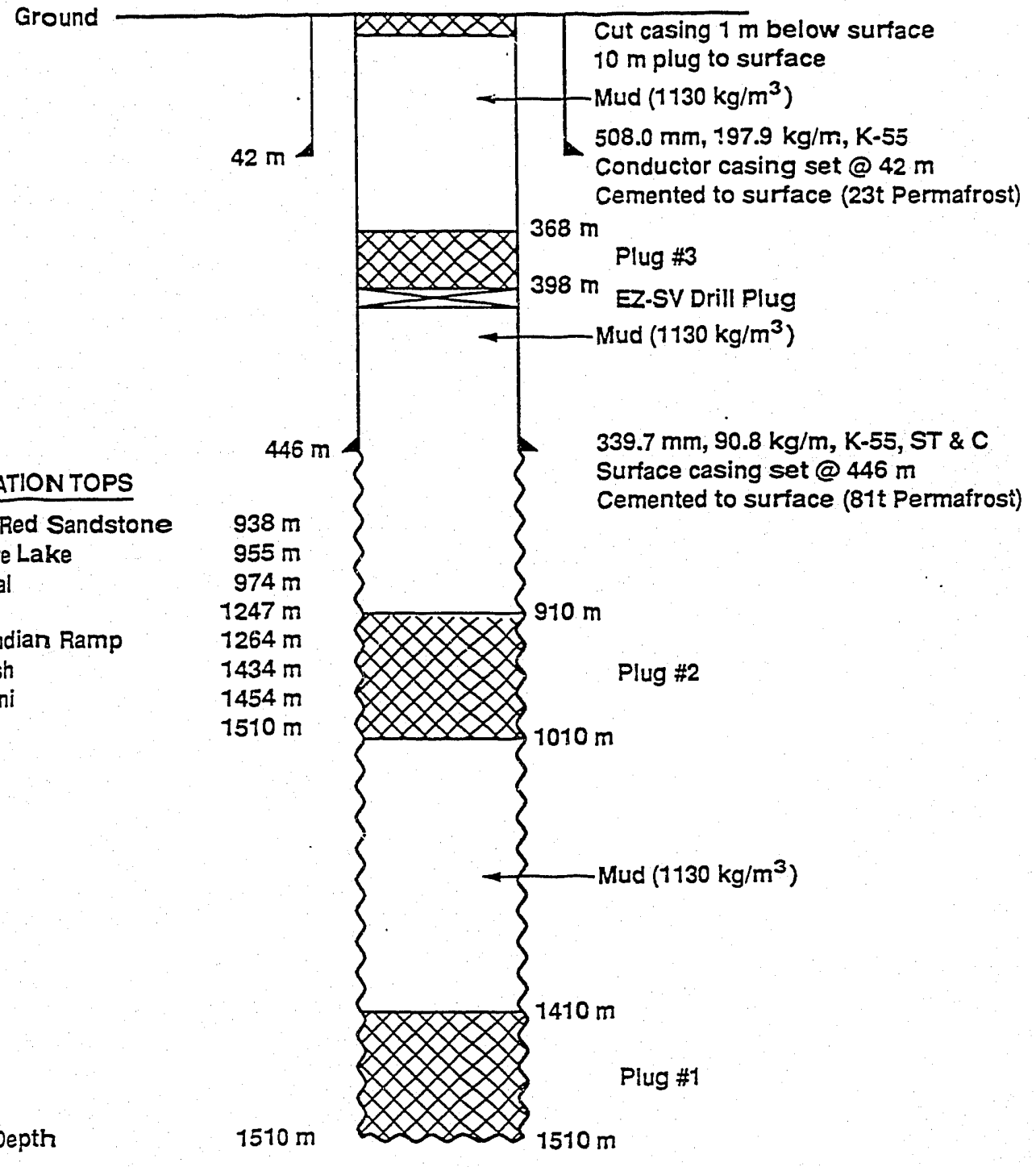
Formation Tops: (RKB)

Arctic Red Sandstone	938 m
Gilmore Lake	955 m
Imperial	974 m
Canol	1247 m
Hare Indian Ramp	1264 m
Bluefish	1434 m
Nahanni	1454 m
Total Depth	1510 m

JDT/70:im

CHEVRON RAMPARTS RIVER F-46
ABANDONMENT PROGRAM

KB Elevation = 215.6 m
KB-Ground = 5.5 m
Ground = 210.1 m



FORMATION TOPS

Arctic Red Sandstone	938 m
Gilmore Lake	955 m
Imperial	974 m
Canol	1247 m
Hare Indian Ramp	1264 m
Bluefish	1434 m
Nahanni	1454 m
TD	1510 m

Total Depth 1510 m

Note: (1) Cap welded on casing
(2) Sign welded on 1.5 m marker
(3) Sign 5 mm thick, 500 mm by 200 mm with well name and coordinates bead welded on sign
(4) Marker and sign painted iridescent orange

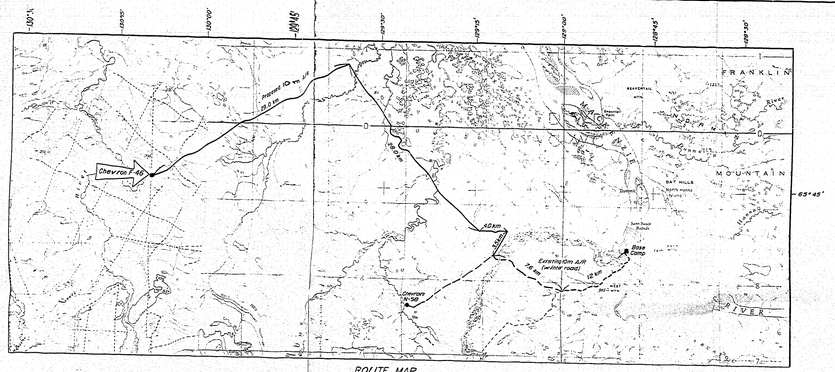
G04845

SURVEY PLAN/

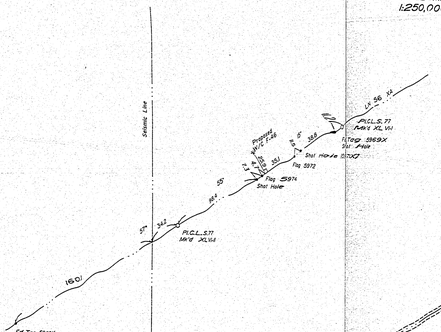
LOCATION

MAP

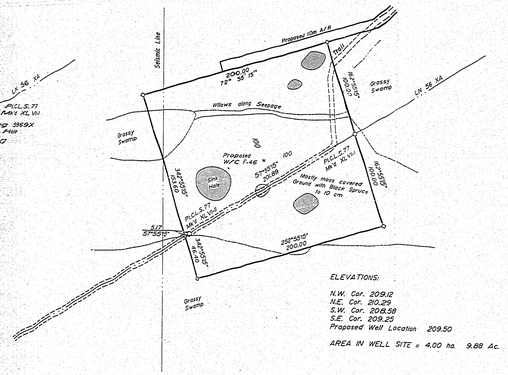
9411-C4-1.6



ROUTE MAP
1:250,000



SEISMIC DETAIL
1:2000

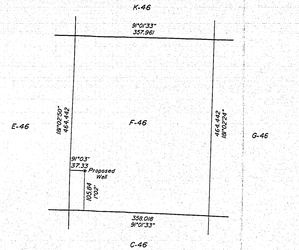


DETAIL
1:2000

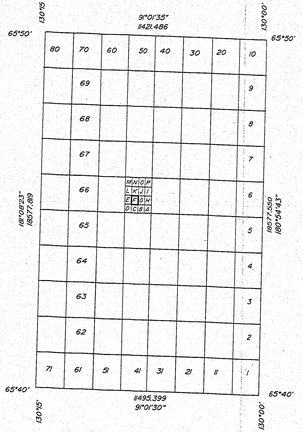
ELEVATIONS:

N.W. Cor. 209.12
N.E. Cor. 210.29
S.W. Cor. 208.58
S.E. Cor. 209.25
Proposed Well Location 209.50

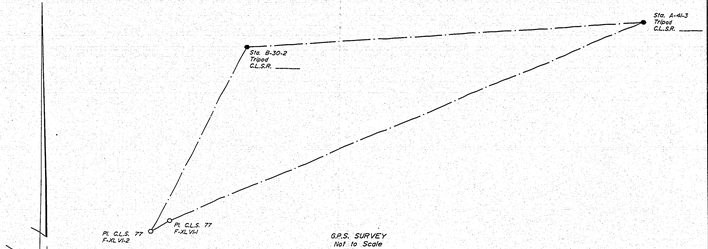
AREA IN WELL SITE = 4.00 ha 9.88 Ac.



DETAIL
UNIT F - SECTION 46
SCALE = 1:30000



GRID AREA 65°50', 130°00'
SCALE = 1:100 000



G.P.S. SURVEY
Not to Scale

TABLE OF GPS OBSERVATIONS (ECEF, WGS84)

FROM STATION	TO STATION	DELTA X (M)	DELTA Y (M)	DELTA Z (M)	BASELINE LENGTH (M)
A 41-3	F 46-1	-6498.438	-2731.325	-2783.971	7378.340
B 30-2	A 41-3	16869.427	-11703.598	737.109	20544.953
F 46-2	F 46-1	193.868	-32.382	46.070	201.881
F 46-1	F 41-3	23367.338	-8971.278	3521.243	25277.132

TABLE OF ADJUSTED GEOGRAPHIC AND U.T.M. COORDINATES ZONE 9 CM 129°W (NAD 1927)

STATION	NORTH LATITUDE	WEST LONGITUDE	NORTHING (M)	EASTING (M)	SPHEROD HEIGHT (M)	GEOID ELLIPSOID SEPERATION (M)	ORTHOMETRIC HEIGHT (M)
FIXED CONTROL MONUMENTS							
B 30-2	65°49'01.32456"	130°04'31.57854"	7 299 743.773	450 839.896	182.95	7.12	175.83
A 41-3	65°50'04.7351"	129°37'41.21404"	7 301 432.795	471 306.734	108.01	6.83	101.18
NEW MONUMENTS							
F-XLVI-1	65°45'19.60068"	130°08'43.97930"	7 292 939.446	447 510.141	217.57	7.39	210.18
F-XLVI-11	65°45'16.03913"	130°08'57.25289"	7 292 832.274	447 339.136	216.73	7.40	209.33
GRID AREA							
N.E.	65°50'	130°00	7 301 506.422	454 317.051			
S.E.	65°40	130°00'	7 282 931.224	454 021.429			
N.W.	65°50'	130°15	7 301 711.021	442 897.398			
S.W.	65°40	130°15	7 283 136.878	442 527.871			
F-46 N.E.			7 293 262.937	447 741.759			
F-46 S.E.			7 292 798.572	447 733.329			
F-46 N.W.			7 293 265.345	447 383.856			
F-46 S.W.			7 292 804.981	447 375.368			
PROPOSED WELL LOCATION							
F-46	65°45'18.598"	130°08'51.440"	7 292 910.130	447 414.627			

PLAN AND FIELD NOTES OF SURVEY OF

PROPOSED EXPLORATORY WELL RAMPARTS RIVER IN UNIT F, SECTION 46 GRID AREA 65°50', 130°00'

NORTHWEST TERRITORIES

CANADA OIL AND GAS REGULATIONS

LEGEND

UTM coordinates are computed for Zone 09, central meridian 129° W.

Bearings were derived (3D L.S. Network adjustment) by GPS observations as shown and are referred to meridian 129°W.

Distances are expressed in metres and decimals thereof and have been check measured.

Distances shown in traverse are measured distances reduced to the horizontal at general ground level.

For the computation of coordinates measured ground distances must be reduced to the UTM plane by multiplying them by an average combined scale factor of 0.999580

Distances shown on grid are subdivisions are UTM plane.

Authorized control monuments found shown thus . . . . . ⊕

Monuments placed shown thus (C.L.S. 77). . . . . ○

Monuments found shown thus (C.L.S. 77). . . . . ●

Traverse lines shown thus . . . . . ———

Wooden Hub placed shown thus . . . . . □

Elevations were derived from GPS data. Average elevation is 175m.

Survey was completed prior to drilling; therefore well as drilled may not necessarily agree with proposed location.

AFFIDAVIT

I, Akbar Karsan, of the City of Edmonton, Alberta, Canada Lands Surveyor, make oath and say that I have in my own proper person, according to the law and the instructions of the Surveyor General of Canada Lands, faithfully and correctly executed the survey shown by this plan and field notes, and that the said plan and field notes are correct and true to the best of my knowledge and belief.
SO HELP ME GOD.

Sworn before me at the City of Edmonton
in the Province of Alberta this 13th day
of September, 1990.

A Commissioner for Oaths in and for
the Province of Alberta.
Ole B. Hansen
13/10/1992

Akbar Karsan
Canada Lands Surveyor

THIS SURVEY WAS EXECUTED DURING THE PERIOD AUGUST 29, 1990 TO SEPTEMBER 1, 1990, BY AKBAR KARSAN, C.L.S.

CHEVRON CANADA RESOURCES LIMITED.

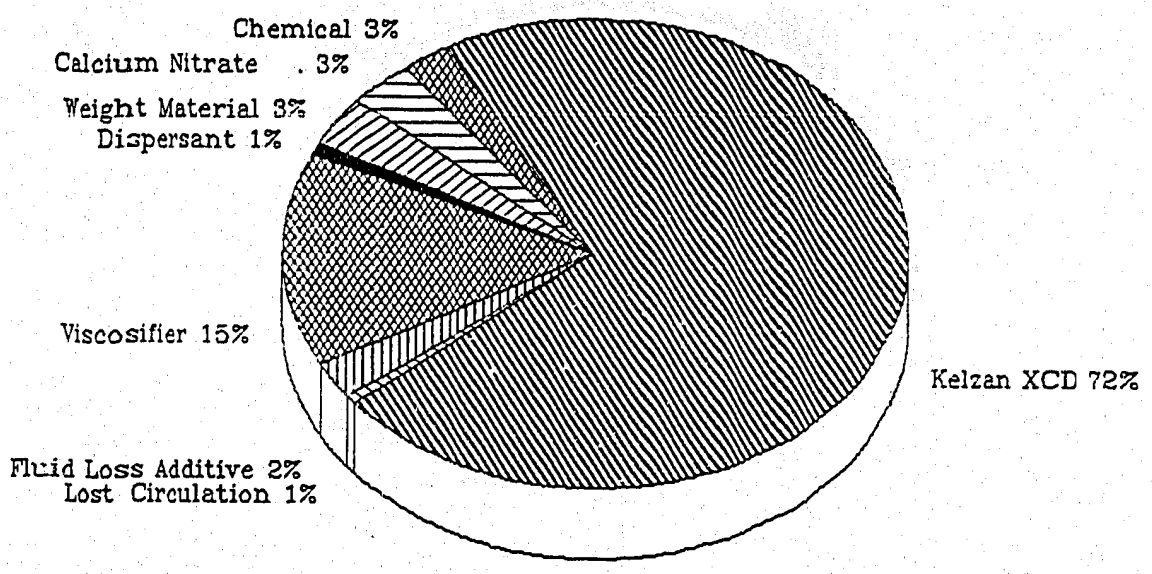
K. Hatfield Mgr.

STAR TECH LAND SURVEYS LTD.
205, 8915–51 Avenue Edmonton
Phone: 486–6555
Job No. S9900328
Dwg No. S9900328B

X Data	Series 1
Surface Hole	3975.54
Intermediate Hole	14677.92
Main Hole	28121.17

Product Cost %

Chevron Rampart 65°45'18.6"N 130°08'51.44"W



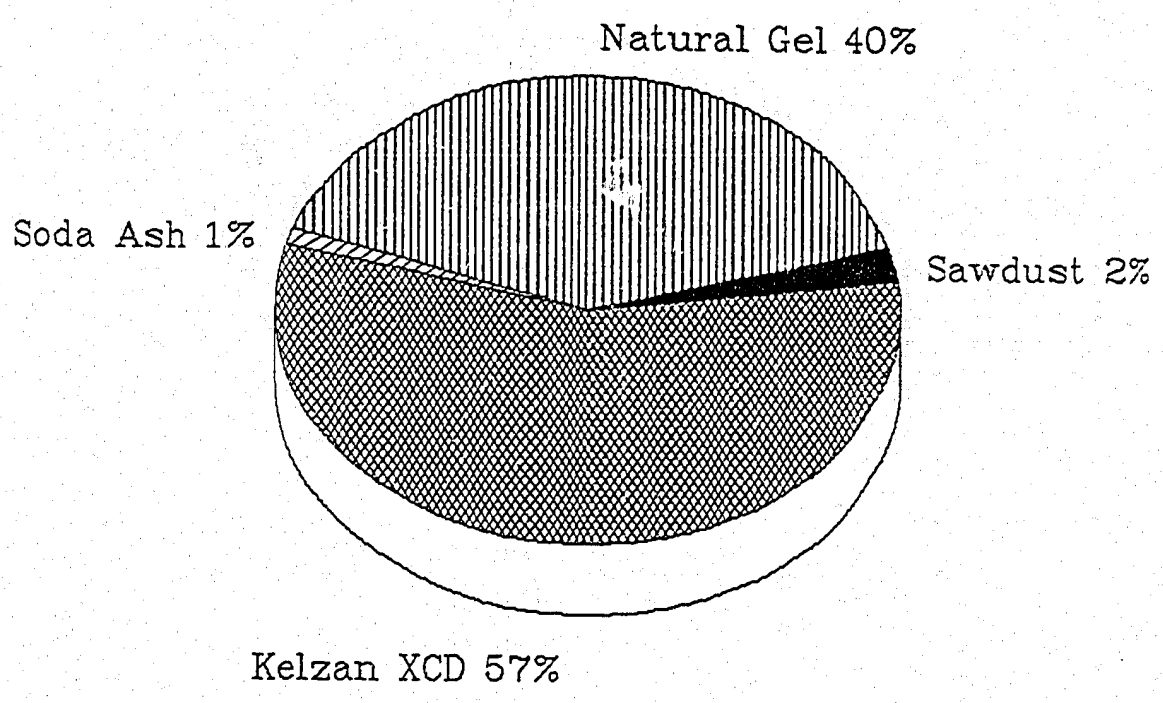
Products % of Total Cost

M – I Drilling Fluids Canada, Inc.

X Data	Series 1
Weight Material	1566.76
Dispersant	402
Viscosifier	6914.96
Fluid Loss Additive	1157.88
Lost Circulation	301.6
Kelzan XCD	33360.68
Chemical	1184
Calcium Nitrate	1551.59

Product Cost %

Chevron Rampart 65°45'18.6"N 130°08'18.6"N/SURFACE HOLE



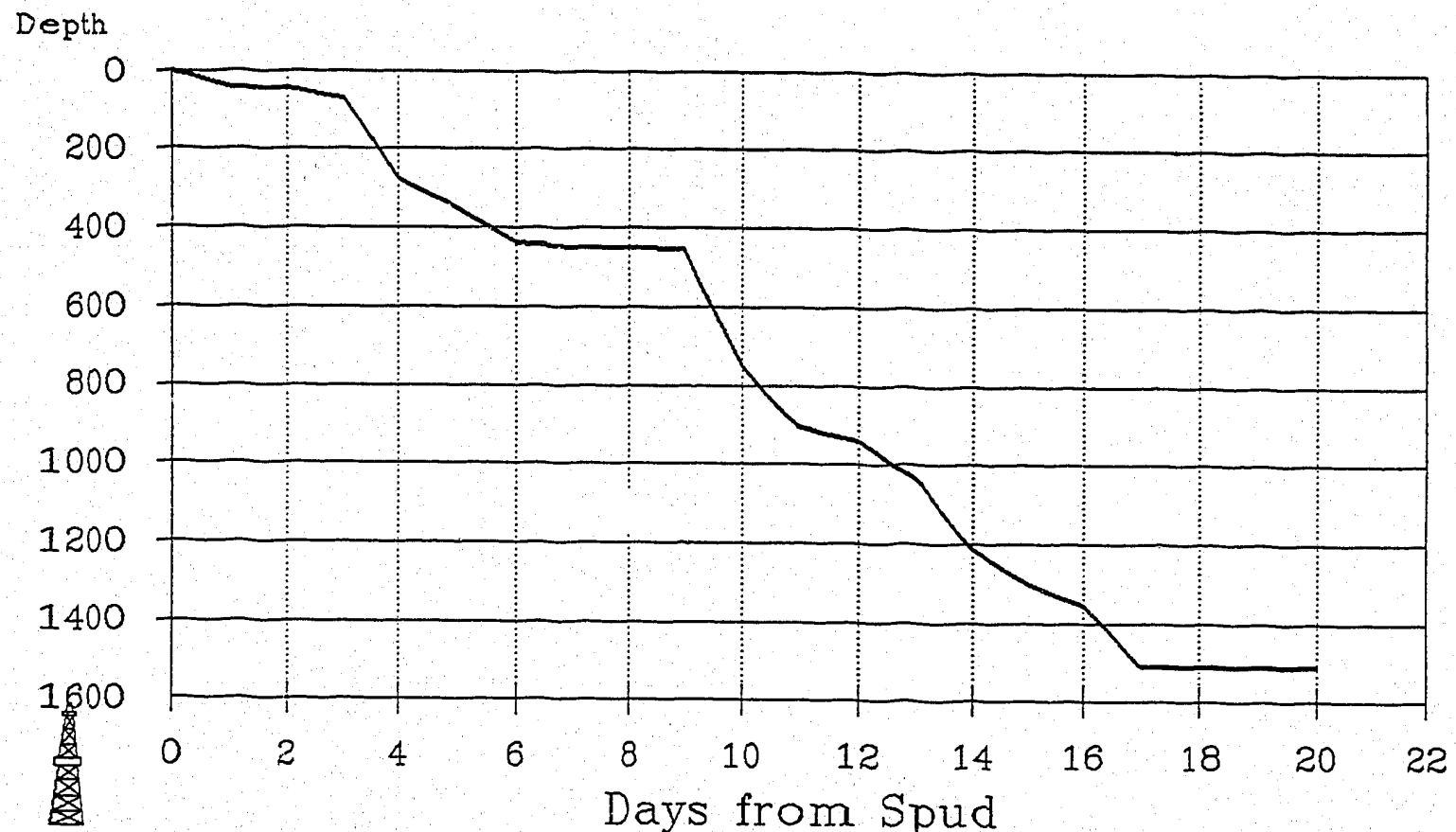
Products % of Total Cost

M - I Drilling Fluids Canada, Inc.

X Data	Series 1
[illegible]a Ash	41.6
Kelzan XCD	2254.1
Sawdust	92.8
Natural Gel	1587.05

Days vs. Depth

Chevron Rampart 65°45'18.6"N 130°08'51.44"W

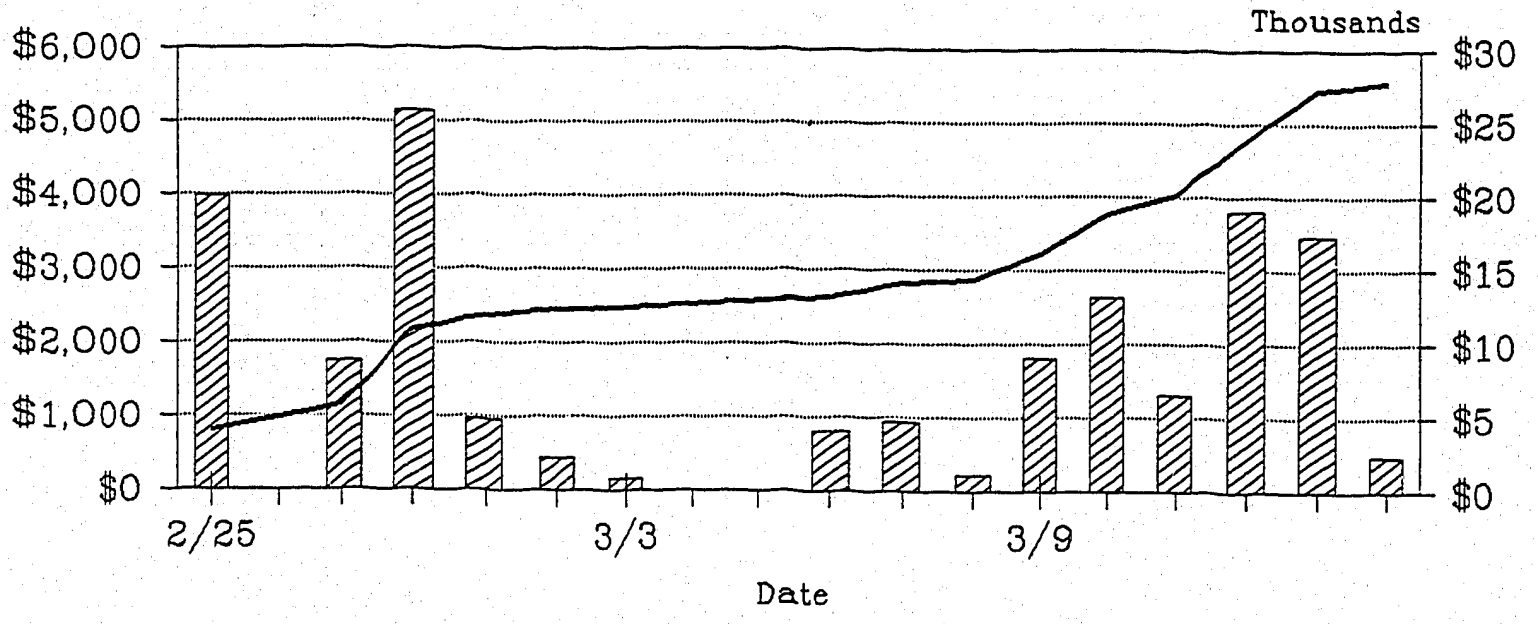


M – I Drilling Fluids Canada, Inc.

X Data	Days from Spud
0	0
5	1
[redacted]	2
[redacted]	3
274	4
353	5
440	6
448	7
448	8
453	9
753	10
907	11
943	12
1039	13
1215	14
1300	15
1354	16
1510	17
1510	18
1510	19
1510	20

Mud Costs – Daily/Total

Chevron Rampart 65°45'18.6"N 130°08'51.44"W



M-I Drilling Fluids Canada, Inc.

X Data	Daily Cost	Cumulative Cos
2/25	3975.54	3975.54
26		
27	1742.14	5717.68
28	5131.04	10848.721
3/1	965.3	11814.021
3/2	427.28	12241.301
3/3	145.28	12386.581
3/4		
3/5		
3/6	809.73	13196.311
3/7	928.844	14125.154
3/8	209.28	14334.435
3/9	1811.94	16146.375
3/10	2639.28	18785.654
3/11	1314.5	20100.154
3/12	3804.88	23905.035
3/13	3459.84	27364.875
3/14	478.4	27843.275

ng

M-I Drilling Fluids Magcobar/IMCO A Dresser/Halliburton Company

AL

WEEKLY SUMMARY

WELL NAME EIGENRUN RAMPARTS CREEK E-46

LEGAL 650' 43' 12" N 130° 08' 51.44" W

MUD TYPE GEL/KLEEZAN MUD ENGINEER RUSS BIRDSELL CONTRACTOR SIDEWINDER RIG #16 PAGE 1 OF

DATE	DEPTH m	MUD DENSITY Kg/m³	FUN VIS s/L	FANN READINGS θ 600	FANN READINGS θ 300	P.V. mPa.s	Y.P. Pa	GEL STRENGTH Pa 10 sec	GEL STRENGTH Pa 10 min	FLUID LOSS cm³/30 min Std. API	FLUID LOSS cm³/30 min HTHP	FILT CAKE mm	EXC. SULF. mg/L	pH	ALKALINITY Pf	ALKALINITY Mf	CHLORIDES mg/L	Ca mg/L	CO_3 mg/L	HCO_3 mg/L	K_+ ion mg/L	POLYMER kg/m³	MBT kg/m³	VOLUME FRACTION OIL	VOLUME FRACTION SOLIDS	VOLUME FRACTION SAND	D/B ratio	FL TEMP °C	ESTIMATED DAILY COST $	ESTIMATED ACCUM COST $
1 01-24 SPUD	43	1130	70	65	42	23	9.5	2	8	–	–	–	–	8.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–		
DAYS FROM SPUD	SPUDDED 23:30 HRS 91/02/24. MIDNIGHT DEPTH 5m. DRILL 660mm CONDUCTOR HOLE TO																												5K	5K
2	45m. MINOR LOST CIRCULATION. CONDITION HOLE. TOOH TO RUN CASING																												3975	3975
01-26	43																													
	RIG UP & RUN 508 mm CONDUCTOR TO 42.7Lm. CEMENT. GOOD RETURNS																													5K
3	WOC. RIG OUT & BEGIN NIPPLING UP DIVERTER																												–	3975
01-27	70	1080	43	36	20	16	2	3	7	25	1.5	–	–	10.5	.12	.12	150	120	–	–	–	–	36	0	.05	.005	2/1	25			
	FINISH NIPPLING UP. PRESSURE TEST. DRILL OUT CEMENT & SHOE. SEVERE																												14	68
4	CEMENT CONTAMINATION ABOVE SHOE DRILL 444.5 mm HOLE TO 115m.																												1736	5716
01-28	274	1100	59	61	45	16	14.5	5	7	8.5	1.0	–	–	8.0	.9	.2	150	60	0	244	–	–	54	0	.063	.003	1/1	38			
	DRILL AHEAD WIPER TRIP 209m – 36m. TIGHT. 6m FILL. WIPER TRIP 274m – 122m. VERY																												01	73
5	TIGHT. 10m FILL. PUMP SWEEPS DOWN DUE TO PRESSURE LIMITATIONS. MIDNIGHT DEPTH 303m																												5126	10,847
01-01	353	1110	68	88	63	25	19	8	11	25	6.0	–	–	7.5	–	–	150	60	–	–	–	–	21	0	.07	.003	1/1	42			
	DRILL TO 331m. TRIP FOR BIT. 4° DEVIATION. HOLE TIGHT (NOT CLEANING) CBU PUMPED HI-VIS																													02
6	PILL. NO VISIBLE RESULTS. REAMED BRIDGES 273m TO TD. DRILL AHEAD TO 366m.																												9653	11,813.
01-02	340	1135	63	71	54	17	16.3	6	7.5	7.4	–	1.0	–	7.0	–	–	150	60	–	–	–	–	21	0	.08	.005	2/1	51			
	DRILL TO 393m. WIPER TRIP TIGHT SPOTS PULLING OUT. REAM BRIDGES 318m TO 393m. DRILL AHEAD TO 440m																													30
7	CIRC. POOH, WIPER TRIP TO CASING RIH. REAM BRIDGES. DRILL TO 448m, WIPER TRIP, 6m FILL.																												427-28	12,240.
01-03	448	1140	72	94	68	26	21	8	10	7.6	–	1.0	–	7.0	–	–	150	60	–	–	–	–	74	0	.09	.003	2/1	52			
	WIPER TRIP 4 STDS OK. POOH TO LOG. LOGGING. HOLE OK. RIG UP TO AND RUN 344mm																													58
8	SURFACE CASING. CEMENT & WOC.																												1452-2872,	385.

CALGARY OFFICE

M-I Drilling Fluids
Magcobar/MCO A Dresser/Halliburton Company

WEEKLY SUMMARY

CHEVRON
WELL NAME RAMPARTS CREEK F-46
LEGAL 65° 45' 18.80" N 130° 05' 51.44" W
MUD TYPE GEL/KCL/LIGNOSULFONATE MUD ENGINEER RUSS BIRDSELL
CONTRACTOR SNIDER RIG #16 PAGE 2 OF

DATE	DEPTH m	MUD DENSITY Kg/m³	FUN VIS s/L	FANN READINGS θ 600	θ 300	P.V. mPa.s	Y.P. Pa	GEL STRENGTH Pa 10 sec	10 min	FLUID LOSS cm³/30 min Std. API	HTHP	FILT CAKE mm	EXC. SULF. mg/L	pH	ALKALINITY Pf	Mf	CHLORIDES mg/L	Ca mg/L	CO_3 mg/L	HCO_3 mg/L	K+ ion mg/L	PCLIME kg/m³	MBT kg/m³	VOLUME FRACTION OIL	SOLIDS	SAND	D/B ratio	FL TEMP °C	ESTIMATED DAILY COST $	ESTIMATED ACCUM. COST $
9-03-04	248																													
DAYS FROM SPUD 9	WOC, NIPPLE UP + PRESSURE TEST																													
03-05	453	1115	49	53	37	16	105	4	7	7.2	—	1.0	—	8.0	—	—	150	80	—	—	—	—	56	0	.02	.023	2/1	28		55
10	FINISH PRESSURE TESTING. LAY DOWN 228 mm D.C.'S. PICK UP NEW 13½". DRILL OUT CEMENT, COLLAR + SHOE w/ 311mm BIT + WATER. DISPLACE TO MUD. RUN 12 JTS.																												—	12,385.
03-06	753	1120	53	62	42	20	11	3	6	9.6	—	1.5	—	9.5	.12	.3	150	0	144	73	—	—	53	0	.076	.003	2/1	28		85
11	TRIP FOR BIT. DRILL AHEAD TO 825m.																												—	12,385.
03-07	901	1125	49	64	45	19	13	3.5	5	9.0	—	2.0	—	10.0	.15	.35	150	0	180	97	—	—	64	0	.077	.004	2/1	32	80	31
12	DRILL TO 943m. VERY HIGH ROP TOOH FOR BIT. HOLE VERY TIGHT. DUMP OUT IN SEVERAL SPOTS.																												273	13,195.
03-08	943	1140	76	113	77	36	20.5	7	11	7.4	—	2.0	—	10.0	.32	.66	150	0	384	24	—	—	71	0	.055	.004	2/1	32		15
13	REAM TO BOTTOM. 560m TO TD. RAISE VISCOSITY TO CLEAN HOLE. DRILL TO 950m.																												928.84	14,124.
03-09	1039	1170	73	121	81	40	20.5	7	21	7.5	—	2.0	—	9.5	.25	.42	150	100	300	24	—	—	67	0	.07	.001	2/1	40		43
14	DRILL AHEAD. HOLE SLOUGHING WHILE DRILLING. HOLE SEEMS TO BE CLEANING OK. DRILL TO 1069m.																												209.28	14333.
03-10	1215	1130	79	103	72	31	20.5	8.3	9.5	5.2	—	2.0	—	10.3	.32	1.09	150	20	624	Cl	—	—	67	0	.083	.001	2/1	43		94
15	DRILL AHEAD. HOLE SLOUGHING. DUMP HI-VIS PILL. NO NOTICEABLE RESULTS. DRILL TO 1239m																												1811	37
																													28	16,145.
																													2639	18,784.

CALGARY OFFICE

M-I Drilling Fluids
Magcobar/IMCO A Dresser/Halliburton Company

WEEKLY SUMMARY

WELL NAME CHEVRON RAMPARTS RIVER F-46
LEGAL 650 45' 18.60" N 130 08' 51.44" W
MUD TYPE GEL/ICELAND MUD ENGINEER RUSS BIRDSELL CONTRACTOR SHEITAH RIG #12 PAGE 3 OF

DATE	DEPTH m	MUD DENSITY Kg/m³	FUN VIS s/L	FANN READINGS θ 600	θ 300	P.V. mPa.s	Y.P. Pa	GEL STRENGTH Pa 10 sec	10 min	FLUID LOSS cm³/30 min Std. API	HTHP	FILT CAKE mm	EXC. SULF. mg/L	pH	ALKALINITY Pf	Mf	CHLORIDES mg/L	Ca mg/L	CO_3 mg/L	HCO_3 mg/L	K^+ ion mg/L	POLYMER kg/m³	MBT kg/m³	VOLUME FRACTION OIL	SOLIDS	SAND	D/B ratio	FL TEMP °C	ESTIMATED DAILY COST $	ESTIMATED ACCUM COST $
03-11	1700	1135	76	125	85	40	22.5	7.5	9	8.0	—	1.0	—	10.0	.44	.99	150	20	525	134	—	—	71	0	.056	.002	2/1	4/5		
DAYS FROM SPUD	DRILL AHEAD TO 1390m.																													
16	TO 24																												EST	75
																												13,14	20,098.
03-12	1354	1130	82	122	81	41	20	7.5	9	7.0	—	1.0	—	10.5	.35	.8	150	0	420	198	—	—	71	0	.083	.003	2/1	4/2		
	REAM		844-1173,		1178-1200		16m	FILL + U.G. HOLE.				DRILL AHEAD TO 1390m																	EST	61
17																													3804	23,901.
03-13	1510	1130	80	117	80	37	21.5	7.5	10.0	7.0	—	1.0	—	10.5	.44	.78	150	0	408	34	—	—	68	0	.063	.002	2/1	4/5		
	DRILL AHEAD TO 1510m, TOTAL DEPTH. CIRCULATE + SURVEY. WIPER TRIP TO CASING																												EST	415
18	TIGHT 7- & STAB OUT. OK RUNNING IN. 7m FILL.																												2459	27,763.
03-14	1510	1130	82	118	82	36	23	6.5	10.6	6.5	—	1.0	—	10.0	.32	.6	150	0	336	17	—	—	68	0	.08	trace	2/1		38	
	POOH TO LOG. RUN #1 12 - HOLE TIGHT RIH TO REAM BRIDGE 7 HOLE GOOD																													85
19	POOH TO LOG. LOGGING.																												475.4	27,541
03-15	1510																													
			LOGGING																											
20																														
03-16	1510																													
	FINISH LOGGING RUN DST #1. POOH W/ TEST RIH OPEN END ED																													
21																														
03-17	1510																													
		PLUG + ABANDON																												
22																														

CALGARY OFFICE

APPENDIX 8

DEVIATION SURVEYS

EASTMAN CHRISTENSEN

Canada District

WELL DEFLECTION SURVEY

for

CHEVRON CANADA RESOURCES LIMITED

RAMPARTS RIVER

Slot : RAMPART F-46
Well : F-46

Survey Reference : 903104.0CH

Measured Depth	Drift Angle	Drift Direction	Course Length	Vertical Depth	Vertical Section	RECTANGULAR COORDINATES		Dogleg Severity
445.00	0.00	0.00	0.00	445.00	0.00	0.00 N	0.00 E	0.00
525.00	1.50	35.00	80.00	524.99	0.86	0.86 N	0.60 E	0.56
679.00	1.00	40.00	154.00	678.95	3.54	3.54 N	2.62 E	0.10
829.00	1.00	47.00	150.00	828.93	5.43	5.43 N	4.42 E	0.02
1020.00	0.75	56.00	191.00	1019.91	7.27	7.27 N	6.67 E	0.04
1277.00	1.75	295.00	257.00	1276.87	9.87	9.87 N	4.51 E	0.26
1430.00	3.50	20.00	153.00	1429.75	15.25	15.25 N	3.99 E	0.74
1486.00	4.00	15.00	56.00	1485.63	18.74	18.74 N	5.08 E	0.32
1510.00	4.00	15.00	24.00	1509.57	20.36	20.36 N	5.52 E	0.00

CALCULATION METHOD : Minimum curvature
SLOT COORDINATES : 0.00 N 0.00 E
BOTTOM HOLE LOCATION : Referenced to SLOT
DISTANCE : 21.09
DIRECTION : 15.16

Report Units : Meters
Accepted by :
Checked by :

SURVEY RUN INFORMATION
==========

ASSUMED VERTICAL TO 445M
SURVEY FILE UPDATED: 22-MAR-91
1510MD EXTRAPOLATION, NOT AN ACTUAL SURVEY

APPENDIX 10

WELLSITE HYDROCARBON REPORT

DATALOG
TECHNOLOGY INC.

Hydrocarbon Report

for

Chevron Canada Resources Ltd.

Chevron Ramparts River F-46

Lat 65°45'18.60"N/Long 130°08'51.44"W

Prepared By

Greg Rivers

BAY 5, 3925 - 56th AVENUE S.E., CALGARY, ALBERTA T2C 2E4 TELEPHONE: BUS. (403) 279-5363 FAX: (403) 279-5320

Chevron Ramparts River F-46 was spudded on February 24,1991. 660mm conductor hole was drilled to a depth of 42m.444mm surface hole was then drilled to a depth of 448m and surface casing set at 446m.

Logging services commenced on February 28,1991 at a depth of 150m. For logging services Datalog used an MTI chromatograph and a Datalog Geologger total gas detector.

The following is a summary of the hydrocarbon analysis for the well.

TREVOR FORMATION 150m-639m

This formation was characterized by medium to dark grey shales, often carbonaceous,with minor interbedded siltstones.

444mm hole was drilled from 150m-448m.The background gas over this interval measured between 20 and 150 units,increasing downwards through the interval.The gas was composed of C1-C4 with C3-C4's increasing in the lower part of the interval.The oil indicator ranged between .04 and .5 ,increasing downwards through the interval. There was one show over this interval;

431m-440m 368/149u .27 oil ind.

This show was the result of carbonaceous shales/siltstones.

216mm hole was drilled from 448m to TD.The background gas from 448m-639m measured between 20 and 60 units and was composed of C1-C4's.The oil indicator ranged between .04 and .10 .There were no significant gas responses over this interval.

TREVOR SANDSTONE 639m(prog.)-729m

This interval was characterized by medium to dark grey shales.
There was no snadstone development in this well.
The background gas measured between 25 and 110 units and was composed of C1-C3 with minor C4's.The oil indicator was in the .03 to .06 range.
There were no significant gas responses over this interval.Any minor increases were due to increased rop and/or carbonaceous shale.

TREVOR SILTSTONE 729m(prog.)-938m

This interval consisted mainly of medium to dark grey shales with some tight siltstone development occurring between 750m and 775m.
The background gas measured between 15 and 50 units and was composed of C1-C2 with minor C3's.The oil indicator was in the .01 to .03 range.
There were no significant gas responses over this interval.

ARCTIC RED SANDSTONE 938m-955m

This formation was characterized by a tight very fine to fine grained sandstone with some traces of dead oil staining.
The background gas measured between 15 and 40 units and was composed mainly of C1 with lesser C2's and minor C3's.The oil indicator was in the .01 to .03 range.
There were no significant gas responses over this interval.

GILMORE 955m-974m

This formation consisted of sandstone with interbedded shale and thin coal laminae.The sandstone was very fine to fine grained, tight,and very carbonaceous.

The background gas measured between 15 and 35 units and was composed mainly of C1 with minor C2's and trace C3's.The oil indicator was consistently .01 or less.

There were three minor shows over the interval;

1)	955m-958m	63/25u	.01 oil ind.
2)	962m-964m	46/27u	.01 oil ind.
3)	967m-971m	54/30u	.01 oil ind.

There was some slight dead oil staining in the cuttings samples but no fluorescence or cut.The dry gas was likely the result of thin coal laminae and the carbonaceous nature of the sandstone.

IMPERIAL 974m-1247m

This formation consisted of interbedded sandstone,siltstone,and shale.The sandstone was consistently very fine to fine grained and often carbonaceous.the sandstone was generally tight with scattered poor intergranular porosity.

The background gas varied between 40 and 260 units and was composed mainly of C1 with lesser C2's and minor C3's.The oil indicator was consistently .01 or less.

There were three significant gas responses over the interval;

1)	980m-988m	321/82u	.01 oil ind.
2)	1074m-1076m	233/32u	.01 oil ind.
3)	1095m-1098m	914/60u	.01 oil ind.

There was no fluorescence or cut in the cuttings samples.The sandstone over all three shows was carbonaceous.Visual intergranular porosity ranged from tight to poor at best.The oil indicator suggests the presence of gas or gas charged water.The lack of shows would lean more towards gas charged water.The third show is significant due to magnitude,but also due to the fact that produced gases were consistent after penetrating the zone.Wireline logs and a possible dst should help determine any reservoir potential.

CANOL 1247m-1264m

This formation consisted of dark grey to black carbonaceous shale. The background gas measured between 240 and 340 units and was composed mainly of C1 with lesser C2's and minor C3's.The oil indicator was consistently .01 or less.

There were no significant gas responses over this interval.

HARE INDIAN 1264m-1427m

This formation consisted of limestone,sandstone,siltstone,and shale.The limestone and sandstone were predominant in the upper part of the formation while the lower part consisted entirely of shale.The limestone was micro to very fine crystalline and argillaceous.The sandstone was very fine to fine grained.Both rock types were tight and had no visual shows.

The background gas over the sandstone/limestone zone decreased from 200 units at the top down to 15 units at the base of the limestone.The background gas over the shale zone measured between 6 and 40 units.The gas over the entire formation was composed mainly of C1 with minor C2's and trace C3's.The oil indicator,when present,was .01 or less.

There were no significant gas responses over this interval.

BLUEFISH 1427m-1454m

This formation was characterized by black bituminous shale.

The background gas measured between 60 and 120 units and was composed of C1 with minor C2's and trace C3's.The oil indicator, when present,was .01 or less.

There were no significant gas responses over this interval.

NAHANNI 1454m-1510m FTD

This formation consisted of tight microcrystalline limestone with common fossils.

The background gas measured between 7 and 30 units and was composed

of C1 with minor C2's.

There were no visual shows or significant gas responses over this interval.

Datalog services were released March 14,1991 at a final depth of 1510m.

APPENDIX 11

WATER ANALYSIS

AGAT Laboratories

CALGARY — EDMONTON — GRANDE PRAIRIE

WATER ANALYSIS

CONTAINER IDENTIFICATION: PB#1

LABORATORY NUMBER: WE2876A

OPERATOR NAME: CHEVRON CANADA RESOURCES LIMITED *****

UNIQUE WELL IDENTIFIER:

WELL NAME: CHEVRON RAMPARTS RIVER F-46

ELEVATIONS: KB m 215.56 GRD m 209.50

FIELD OR AREA: RAMPARTS RIVER

POOL OR ZONE:

NAME OF SAMPLER:

COMPANY: B.O.T.

TEST TYPE: DST

NO: 1

TEST RECOVERY:

SAMPLING POINT: TOP

AMT & TYPE OF CUSHION:

MUD RESISTIVITY @ 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): 91-03-16

DATE RECEIVED (Y-M-D): 91-03-20

DATE REPORTED (Y-M-D): 91-03-25

ANALYST: C

OTHER INFORMATION: 65 50' 130 00'

ION	mg/L	MASS FRACTION	mmol/L
Na			
K			
Ca			
Mg			
Ba			
Sr			
Fe			

ION	mg/L	MASS FRACTION	mmol/L
Cl	175.0	1.000	4.9
Br			
I			
HCO_3			
SO_4			
CO_3			
OH			
H_2S			

DISSOLVED TOTAL SOLIDS mg/L

EVAPORATED AT 110° C:

EVAPORATED AT 180° C:

AT IGNITION:

CALCULATED:

RELATIVE DENSITY @ 25° C:

REFRACTIVE INDEX @ 25° C:

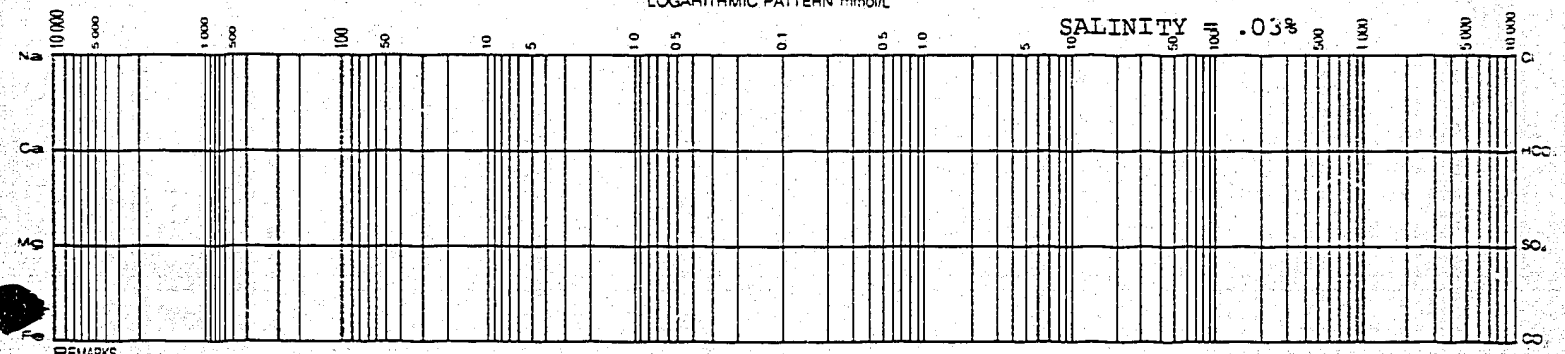
OBSERVED pH @ 25° C:

RESISTIVITY Ω-M @ 25° C: 2.08

THE "30 MINUTE" API MUD FILTRATE LOSS IS 5.5 mls. THE ABOVE RESULTS PERTAIN TO THE WATER EXTRACTED FROM THE MUD

LOGARITHMIC PATTERN mmol/L

SALINITY = .03%



REMARKS:

TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC*= LESS THAN 0.001 N.A.= NOT ANALYZED

AGAT Laboratories

CALGARY — EDMONTON — GRANDE PRAIRIE

WATER ANALYSIS

CONTAINER IDENTIFICATION: PB#2

LABORATORY NUMBER: WE2876B

OPERATOR NAME: CHEVRON CANADA RESOURCES LIMITED *****

UNIQUE WELL IDENTIFIER:

WELL NAME: CHEVRON RAMPARTS RIVER F-46

ELEVATIONS: KB m 215.56 GRD m 209.50

FIELD OR AREA: RAMPARTS RIVER

POOL OR ZONE:

NAME OF SAMPLER:

COMPANY: B.O.T.

TEST TYPE: DST NO: 1

TEST RECOVERY:

SAMPLING POINT: TOP OF TOOL

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): 91-03-16

DATE RECEIVED (Y-M-D): 91-06-20

DATE REPORTED (Y-M-D): 91-03-25

ANALYST: C

OTHER INFORMATION: 65 50′ 130 00′

ION	mg/L	MASS FRACTION	mmol/L
Na			
K			
Ca			
Mg			
Ba			
Sr			
Fe			

ION	mg/L	MASS FRACTION	mmol/L
Cl	170.0	1.000	4.8
Br			
I			
HCO_3			
SO_4			
CO_3			
OH			
H_2S			

DISSOLVED TOTAL SOLIDS mg/L

EVAPORATED AT 110° C:

EVAPORATED AT 180° C:

AT IGNITION:

CALCULATED:

RELATIVE DENSITY @ 25° C:

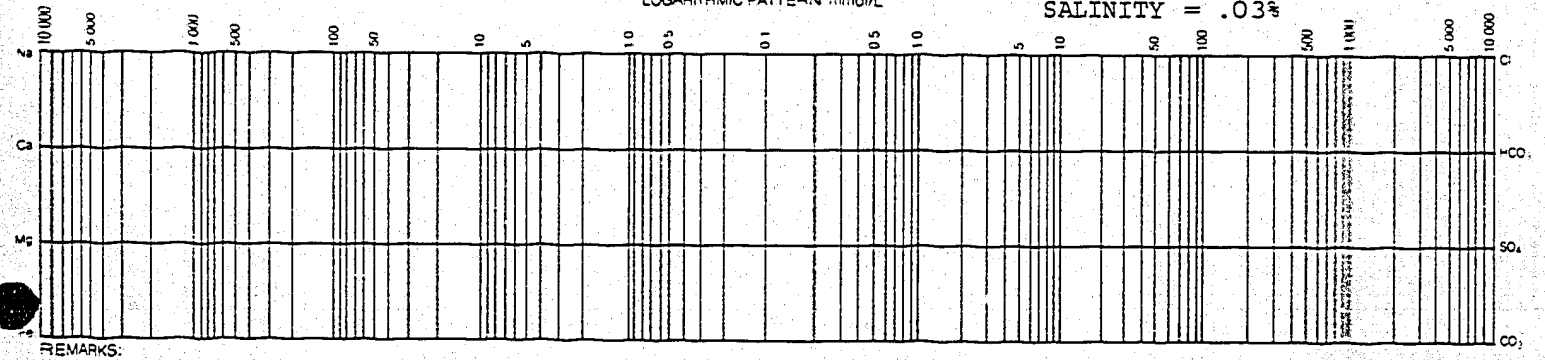
REFRACTIVE INDEX @ 25° C:

OBSERVED pH @ 25° C:

RESISTIVITY OHM·m @ 25° C: 2.10

THE "30 MINUTE" API MUD FILTRATE LOSS IS 5.5 mls. THE ABOVE RESULTS PERTAIN TO THE WATER EXTRACTED FROM THE MUD SALINITY = .03%

LOGARITHMIC PATTERN mmol/L



REMARKS:

TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC*= LESS THAN 0.001 N.A.= NOT ANALYZED

AGAT Laboratories

CALGARY — EDMONTON — GRANDE PRAIRIE

WATER ANALYSIS

CONTAINER IDENTIFICATION: PB#3

LABORATORY NUMBER: WE2876C

OPERATOR NAME: CHEVRON CANADA RESOURCES LIMITED *****

UNIQUE WELL IDENTIFIER:

WELL NAME: CHEVRON RAMPARTS RIVER F-46

ELEVATIONS: KB m 215.56 GRD m 209.50

FIELD OR AREA: RAMPARTS RIVER

POOL OR ZONE:

NAME OF SAMPLER:

COMPANY: B.O.T.

TEST TYPE: DST NO: 1

TEST RECOVERY:

SAMPLING POINT: BHS

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): 91-03-16

DATE RECEIVED (Y-M-D): 91-03-20

DATE REPORTED (Y-M-D): 91-03-25

ANALYST: C

OTHER INFORMATION: 65 50' 130 00'

ION	mg/L	MASS FRACTION	mmol/L
Na	920.0	0.302	40.0
K	15.5	0.005	0.4
Ca	14.4	0.005	0.4
Mg	2.8	0.001	0.1
Ba	N.A.	N.A.	N.A.
Sr	N.A.	N.A.	N.A.
Fe	0.8	TRC*	TRC+

ION	mg/L	MASS FRACTION	mmol/L
Cl	248.0	0.081	7.0
Br	N.A.	N.A.	N.A.
I	N.A.	N.A.	N.A.
HCO_3	1240.0	0.407	20.3
SO_4	400.0	0.131	4.2
CO_3	207.0	0.068	3.5
OH	NIL	NIL	NIL
H_2S	N.D.	N.D.	N.D.

DISSOLVED TOTAL SOLIDS mg/L

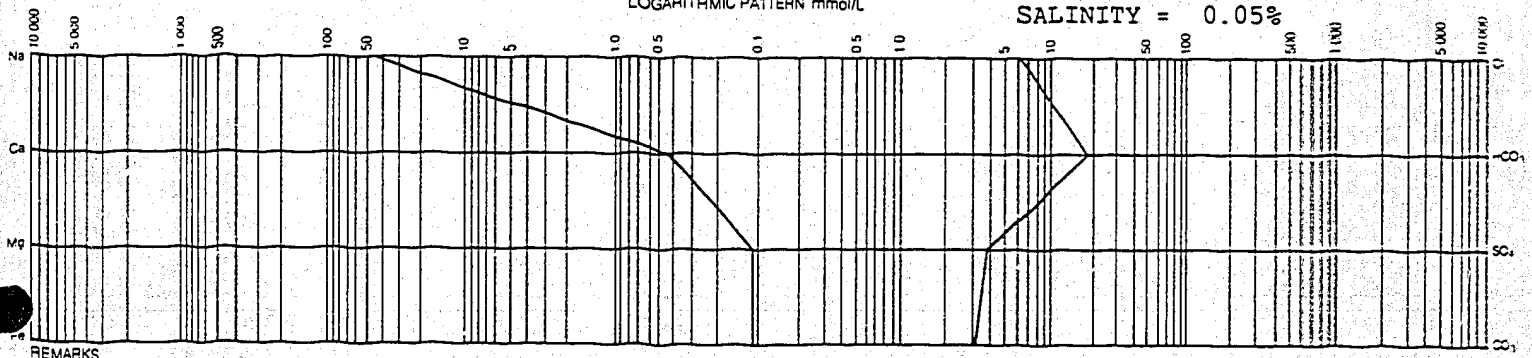
EVAPORATED AT 110° C	EVAPORATED AT 180° C
AT IGNITION	CALCULATED
	3050.0

RELATIVE DENSITY	REFRACTIVE INDEX
0.998 @ 25° C	N.A. @ 25° C

OBSERVED pH	RESISTIVITY OHM • m
9.20 @ 25° C	1.94 @ 25° C

THE "30 MINUTE" API MUD FILTRATE LOSS IS 6 mls. THE ABOVE RESULTS PERTAIN TO THE WATER EXTRACTED FROM THE MUD SALINITY = 0.05%

LOGARITHMIC PATTERN mmol/L



REMARKS

TRC+= LESS THAN 0.1 N.D.= NOT DETECTED NIL= 0.0 TRC*= LESS THAN 0.001 N.A.= NOT ANALYZED

APPENDIX 12

LOGS