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

D.A. 1402
EL 322

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 MOUNTAIN RIVER O-18

Operator: CHEVRON CANADA RESOURCES — Drilling Program No.: 9211-C4-1

Contractor: SHEHTAH DRILLING — Permit or Lease No.: (LAND USE) N 89 A 099

Drilling Rig or Unit: One (1) — Estimated Well Cost: $2.5 MM

Location-Unit: O — Section: 18 — Grid Area: 65° 40', 129° 00'

Coordinates: Lat.: 65° 37' 57.89" N — Long.: 129° 2' 28.76" W

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

Elevation-~~RT~~/KB: 112.0m KB (ASL) — Seafloor: N/A (BRT)

Approx. Spud Date: 1989-12-10 — Estimated Days on Location: 30

Anticipated Total Depth: 1250m — Target Horizon(s): Key Scarp, Arnica, Mount Kindle.

UWI: 3000186540129000

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 Below Seafloor:	Cementing Program (Volumes):
508.0 mm	139.9 kg/m	X-56	40 m	* Alaskan Permafrost
339.7 mm	101.2 kg/m	K-55	160 m	* Alaskan Permafrost (Gauge + 100% Excess)
244.5 mm	59.5 kg/m	K-55	650 m	** Class "G" Neat + 2% $CaCl_2$
177.8 mm	34.2 kg/m	K-55	1250 m	** Class "G" + 0.5% CF ?

* Cemented To Surface
** Caliper + 25% 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: [signature]
Title: Drilling Manager
Date: 1989-09-05
Company: Chevron Canada Resources

APPROVAL

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

Signed: [signature]
Engineering Branch
Date: 89-11-23
File: 9211-C4-1-1

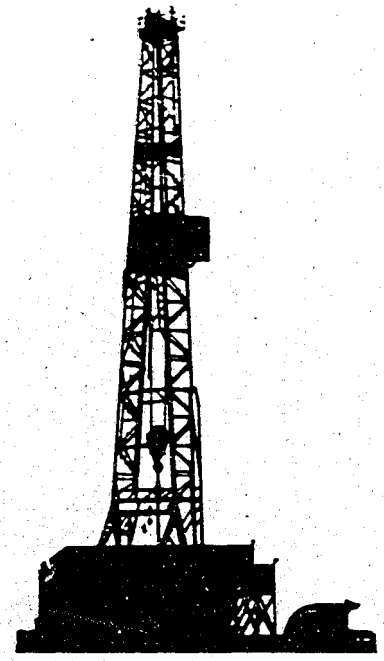
Department of Energy, Mines and Resources | Ministère de l'Énergie des Mines et des Ressources
Department of Indian Affairs and Northern Development | Ministère des Affaires indiennes et du Nord canadien

Canada

Chevron Canada Resources

9211-C4-1-
OTTAWA

Final Well Report
Volume 1



Chevron Mountain River O-18

65° 37' 57.89" N
129° 2' 28.76" W

FORT GOOD HOPE

OTTAWA COPY

CANADA OIL AND GAS LANDS
ADMINISTRATION
APR 3 1990
MONITORING AND CONTROL
BRANCH

FINAL WELL REPORT

CHEVRON MOUNTAIN RIVER O-18

65° 37' 57.89" N

129° 2' 28.76" W

Grid Area 65° 40', 129° 00'

1990-03-13

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FINAL WELL REPORT

INTRODUCTION

i) Summary

The Chevron Mountain O-18 well location occurs in a Laramide age thrusted anticlinal structure and has dual objectives in the Upper Devonian Kee Scarp dolomite and the Middle Devonian Arnica dolomite. A secondary objective is the Silurian Mount Kindle dolomite.

The Kee Scarp Formation is a reefal limestone unit. The proposed well location is situated in a central backreef location. Porosity in this unit is believed to be in vuggy and intercrystalline dolomite bodies. The vertical and lateral seal is believed to be formed by tight Kee Scarp backreef limestone. The Canol black shale acts as the source rock.

The Arnica Formation consists of regionally porous brown dolomite deposited in a shallow shelf environment. Porosity is generally intercrystalline, although some vuggy porosity is also present. Permeability is excellent. Tight Landry lime mudstone forms the seal. Seismic evidence over this anticlinal structure indicates that the Arnica porosity has been thrusted up against the excellent Bluefish black shale source rock.

The Mount Kindle Formation comprises a thick sequence of very shallow water dolomite. Vuggy porosity is best developed in the upper and middle parts of the formation, with excellent permeability. The Fort Norman evaporite would form a suitable seal. The Bluefish shale could act as a source if it is juxtaposed with the reservoir; however, there is a risk of insufficient thrusting.

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 Appendix 6)

GENERAL DATA

i) Well Name: Chevron Mountain River O-18
Exploration Agreement Number: EL322
Federal Designation N 65° 37' 57.89"/W 129° 2' 28.76"
Unit O, Section 18
Grid Area 65° 40', 129° 00'

ii) Well Location

Wellsite Location

The desired field location of the well was on shot point 950X, on line 63R. Because of a lake in the vicinity, the wellsite location was moved to the west, and staked such that there was at least 100 metres between the east boundary of the lease and the small lake shown on the Locality Map. The staked lease is an irregular shape, oriented to take advantage of the existing terrain. Please refer to the Locality Map for details.

Legal Survey Requirements

All surveys for exploratory wells must be done in accordance with the "Canada Oil and Gas Land Regulations". Basically the regulations require that a survey be performed to establish the location of the well relative to a grid area, defined by geographic coordinates. In this particular case the survey was completed in two stages: a control survey by GPS techniques to locate legal CLS77 posts near the wellsite, and a conventional survey based on these two monuments to locate the well centre and lease boundary.

GPS Survey

The GPS control survey was done using four Trimble 4000OST GPS receivers over a period of two days October 5 and 6, 1989. Please refer to the Locality Map for Chevron Mountain River, Unit O, Section 18, for the traverse details. Two existing control stations 74T087 and 789029 were used and two new intervisible monuments 610 and 611 were placed approximately 362 metres apart on seismic line 63X, on either side of the well centre.

All of the baseline processing was done using Trimvec-Plus suite of software provided by Trimble Navigation.

Conventional Survey

The layout of the wellsite boundary and well centre was accomplished by conventional means.

Computations

For the GPS data, only non-trivial baselines have been included in the network adjustment. Each loop contains vectors from a minimum of at least two independent sessions. The 3-D least squares adjustment and coordinate transformations were done using Geolab, station 74T087 was held fixed in all three dimensions, while station 669029 on the horizontal coordinates were held fixed. No significant misclosures were noted between the controls.

All of the geoid-ellipsoid conversions shown on the Locality Map were computed using the geoid prediction program from the University of New Brunswick, based on Rapp 78 data.

All of the geographic and UTM coordinates shown on the various tables of the Locality Map are referred to the Clarke 1866 ellipsoid, and are based on the NAD 27 adjustment.

iii) Unique Well Identifier

Drilling Program No.: 9211-C4-1
Land Use Permit No.: N89A099

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

a) Conductor Hole

The 660.4 mm conductor hole was drilled to 18 m using a 241.3 mm mud motor. The motor malfunctioned and was replaced with a conventional rotary drilling assembly which drilled to casing point at 46 m.

On two occasions, the 508.0 mm condutor casing could not be run past 18 m. The hole was reamed with a stabilized BHA and the 508.0 mm conductor casing run and cemented to a depth of 45.5 m.

Time to Drill and ream 660.4 mm conductor hole	= 100 3/4	hours*
Time to Run and Cement 508.0 mm conductor casing	= 8 1/4	hours
TOTAL:	109	hours

*Estimated Delay Time: 64 hours

SUMMARY OF DRILLING OPERATIONS

i) Elevations

Ground:	109.46 m
Fill:	0.10 m
KB to Ground:	5.45 m
KB Elevation:	115.01 m

ii) Total Depth

Drilled:	1 120 m
Logged:	1 120 m
Plugged Back:	370 m

iii) Date Spudded

1989-11-30-09:30 hours.
Notified COGLA Yellowknife of spud.

iv) Date Drilling Completed

Drilling was completed 1990-01-02.

v) Date of Rig Release

Shehtah Rig 1E was released at 24:00 hrs 1990-01-08.

vi) Well Status

Abandoned.

vii) Hole Size and Depth

Hole	Size	Depth
a) Conductor	660.4 mm (26")	46 m (151 ft)
b) Surface	444.5 mm (17 1/2")	144 m (472 ft)
c) Intermediate	311.2 mm (12 1/4")	534 m (1752 ft)
d) Main	215.9 mm (8 1/2")	1 120 m (3675 ft)

viii) Casing and Cementing Record

HOLE	SIZE	WEIGHT	GRADE	MAKE	NO. OF JTS.	THREAD TYPE	DATE SET	DEPTH SET (m)	CEMENT TYPE & VOLUME
Conductor	508.0 mm	139.9 kg/m	X-56	Sumitomo	5	Vetco RL-4S	89-12-04	45.5	3m3 SAPP Water pre-flush followed by 27m3 (33.5t) Alaskan (Class "G") Permafrost cement c/w 6% Gilsonite and 0.15% permafrost retarder mixed to 1760 kg/m3 slurry density
Surface	339.7 mm	101.2 kg/m	K-55	Sumitomo	11	ST&C	89-12-08	144.0	3m3 SAPP water pre-flush followed by 29.5m3 (36.4t) Alaskan (Class "G") Permafrost cement c/w 6% Gilsonite and 0.15% permafrost retarder mixed to 1760 kg/m3 slurry density
Intermediate	244.5 mm	59.6 kg/m	K-55	Algoma	41	LT&C	89-12-23	534.4	1.5m3 water pre-flush followed by 27.4m3 (36t) 0-1-0 Class "G" + 0.5% CFR-3 mixed to 1900kg/m3 slurry density. (Added 4 sks of Celloflake to 1st 4m3 of cement slurry)

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	1070	93	11	10	45	15	5/15	4%	Nil	250
Surface	444.5 (17 1/2)	Gel-Chemical	1070	92	12.2	10	40	14	2/15	4%	Nil	250
Inter-mediate	311.2 (12 1/4)	Gel-Chemical	1110	65	10.8	9.5	27	13	3/6	7%	Nil	250
Main	215.9 (8 1/2)	Gel-Chemical	1070	46	9.4	9.5	12	5.5	2/3	4%	Nil	250

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)	45.5 m				N/A	N/A
339.7 (13 3/8)	144.0 m	1060	1 000	17.4	1770	89-12-13
244.5 (9 5/8)	534.4 m	1020	10 000	28.7	2930	89-12-25

xiv) Time Distribution

	HOURS	DAYS
DRILLING OPERATIONS		
1. Drilling	220 3/4	9.2
2. Tripping	26 1/2	1.1
3. Coring	151 3/4	6.3
4. Deviation Surveys	18	0.8
5. Rig Service and Tests	15	0.6
DEAD TIME		
1. Drillstem Testing	35	1.5
2. Logging	117	4.9
3. Circulating Samples	10 1/2	0.4
4. Casing, Cementing and WOC	282 3/4	11.8
5. Hole Conditioning	14 3/4	0.6
6. Rig Move, Up, Down	216 3/4	9.0
7. Completing	35	1.5
LOST TIME		
1. Fishing	-	-
2. Lost Circulation	10 1/2	0.4
3. Repairs	-	-
4. Waiting	13 3/4	0.6
5. Miscellaneous	-	-
TOTAL:	1168	48.7

xv) Deviation Surveys
(Refer to Appendix 8)

xvi) Abandonment Plugs

PLUG NUMBER	INTERVAL	LENGTH (m)	FLUID BETWEEN PLUGS	FORMATION ISOLATED
1	1120m - 1020m	100 m		Bottom hole
2	900m - 700m	200 m	Gel-Chemical	Ft Norman
3	584m - 484m	100m	Gel-Chemical	Arnica
EZSV	399m			
4	399m - 370m	29m	Gel-Chemical	in 244.5mm int. csg.
5	17m - 7m	10m	Gel-Chemical	in 244.5mm int. csg.
	WELD ON CAP ON 339.7 mm SURFACE CASING 1m BELOW GROUND			

xvii) Composite Well Record

(Refer to Appendix 2)

SUMMARY REPORT

WELL NAME	Chevron Mountain River 0-18
LOCATION UNIT	Unit 0, Sec. 18
COORDINATES	N 65° 37' 59.87" W 129° 02' 28.76" (longitude)
GROUND ELEVATION	109.46 m Fill 0.1 m
KB TO GROUND LEVEL	5.45 m
KB ELEVATION	115.01 m
TOTAL DEPTH	1120 m
STATUS	Dry and Abandoned
SPUDDED	1989-11-30-09:30
RIG RELEASE	1990-01-08-24:00
GEOLOGIST	Dave Hendry
ENGINEERS	Mike Gelleny, Rod Uchytil, Bill Meyer, Kevin Anderson
CONTRACTOR	Shehtah 1
MUD LOGGER	Datalog
HOLE SIZE	660 mm Surface to 46 m 444.5 mm 46 m to 146 m 311 mm 146 m to TD m
CONDUCTOR CASING	Ran 5 joints of 508 mm, 139.9 kg/m, X-56, Vetco RL-4S. Landed at 45.5 m. Total string 46.18 m. Cemented with 33.5 tonnes of class "G" permafrost cement. C.I.P. 1989-12-05-03:00
SURFACE CASING	Ran 12 joints of 139.7 mm, 101.2 kg/m, K-55, 8rnd, ST & C casing. Landed at 144 m. Total string 148.92 m. Cemented with 36.4 tonnes of permafrost cement. C.I.P. 1989-12-08-24:00

KB 115.01

INTERMEDIATE CASING

Ran 41 joints of 244.5 mm, 59.6 kg/m, K-55, 8rnd, LT & C casing. Landed at 534.4 m. Total string 535.62 m. Cemented with 36 tonnes of 0-1-0 class "G" plus 0.5% CFR-3.

C.I.P. 1989-12-23-05:15

ABANDONMENT PLUGS

Plug #1	1120 m	- 1020 m
Plug #2	900 m	- 700 m
Plug #3	584 m	- 484 m
Plug #4	400 m	- 370 m
Plug #5	17 m	- 7 m

DITCH SAMPLES

5 m intervals

One set of vialed samples for Chevron Canada Resources and one set of bagged samples, one set of vialed samples, and one set of canned samples for the COGLA. Samples stored at ISPG.

SAMPLE DESCRIPTION

Ground zero - 1120 m (Refer to Appendix 3)

WELL SITE ROCK LOG DESCRIPTION

Ground zero - 1120 m (Refer to Appendix 9)

CORED INTERVALS

(Refer to Appendix 4)

Core #1	146 m	- 157.4 m	Cut	11.4 m	Recovered	11.4 m
Core #2	194 m	- 212 m	Cut	18 m	Recovered	18 m
Core #3	212 m	- 239 m	Cut	27 m	Recovered	27 m
Core #4	239 m	- 266 m	Cut	27 m	Recovered	26 m
Core #5	789 m	- 797 m	Cut	8 m	Recovered	8 m
Core #6	1075 m	- 1092 m	Cut	17 m	Recovered	17 m

LITHOLOGY

(Refer to Appendix 10)

LOST CIRCULATION

Slight loses at 287 m, 379 m, 383 m, 397 m, 440 m.

FORMATION TESTS

DST #1 190 m to 205 m Kee Scarp
Inflate Straddle - Baker Oil Tools

Times: 8, 26, 88, 154

Preflow: Weak air blow steady throughout. No gas to surface.

Valve Open: Weak air blow decreasing to very weak air blow in 25 minutes, steady throughout. No gas to surface.

Recovery: 30 m drilling fluid.

Pressures: IHP 2 190 1st IFP 379 1st FFP 397

(In Kpa)	ISIP	2 121	2nd IFP	431	2nd FFP	707
	FHP	2 121	FHP	2 207		

Recorder at 193 m BHT 26.8°C

DST #2 848 m to 856 m Fort Norman
Inflate Straddle - Baker Oil Tools

Times: 10, 27, 120, 178

Preflow: Very weak air blow, steady throughout. No gas to surface.

Valve Open: Very weak air blow decreasing slightly throughout. No gas to surface.

Recovery: 12 m drilling fluid

Pressures:	IHP	9 216	1st IFP	328	1st FFP	336
(In Kpa)	ISIP	5 948	2nd IFP	353	2nd FFP	422
	FHP	7 250	FHP	9 216		

Recorder at 851 m BHT 42.3°C

BIOSTRATIGRAPHIC DATA N/A

GEOLOGICAL MARKERS
Chevron Mountain River 0-18
KB Elevation 115 m (Actual KB 115.01 m)

Formation	Samples Depth - m	Log Depth - m	Log Elevation- m
1. Kee Scarp	140	141	-26
2. Carajou	263	263	-148
3. Hare Indian Ramp	266	265	-150
4. Hare Indian Shale	276	280	-165
5. Bluefish	482	483	-368
6. Nahanni	495	491	-376
7. Headless	544	540	-425
8. Landry	589	594	-479
9. Arnica	686	686	-571
10. Fort Norman	798	798	-683
11. Tatsieta	920	920	-805
12. Mount Kindle	950	946	-831
Total Depth	1120	1120	-1005

i) **LOGGING** By Computalog (Refer to Appendix 12)

	Run 1 1989-12-08	Run 2 1989-12-21	Run 3 1990-01-03
LSS-GR-CAL	146 m - 46 m	534 m - 186 m	1120 m - 534 m
DIL-GR-SP		534 m - 186 m	1120 m - 534 m
SLN-DNS-SGR-CAL		534 m - 186 m	1120 m - 534 m
DLL-MSFL-SP		534 m - 186 m	1120 m - 534 m
SSS-GR-CAL		534 m - 186 m	1120 m - 534 m
SED-GR		534 m - 186 m	1120 m - 534 m
MEL-GR			1110 m - 960 m
SFT			795 m - 680 m (taken at several intervals)

ii) **FORMATION STIMULATION** N/A

iii) **FORMATION & PRODUCTION TEST RESULTS** N/A

Environmental Well Report: N/A

APPENDIX 1

WELLSITE OPERATIONS SUMMARY

DAILY PROGRESS SUMMARY

DATE: 01-12-89
OPERATIONS SUMMARY: Rig to spud, Drill 660mm hole, nozzle plugged, POOH, pick up mud motor, RIH, Drill ahead.
MIDNIGHT DEPTH: 30m **OPERATION:** Drilling ahead **PROGRESS:** 30m

DATE: 02-12-89
OPERATIONS SUMMARY: Continue drilling ahead, mud motor failed, POOH, lay down mud motor, RIH with bit and 2nd mud motor, Drill to 46m, circ, wiper trip, circ, raise vis to 90, POOH, remove rotary table, install false floor, run 508mm casing, hit bridge at 18m.
MIDNIGHT DEPTH: 46m **OPERATION:** Running casing **PROGRESS:** 16m

DATE: 03-12-89
OPERATIONS SUMMARY: Make up circ head for csg, try to rotate csg, circ and spud csg, POOH lay down csg, remove false floor and install rotary table, RIH with bit, no obstructions, work and clean hole, ream, POOH, remove rotary table and install false floor, attempt to run 508mm csg, tag obstruction at 18m, no success rotating csg, circ, POOH and lay down csg, rig out false floor, install rotary table.
MIDNIGHT DEPTH: 46m **OPERATION:** Rig out false floor & install rotary. **PROGRESS:** 0

DATE: 04-12-89
OPERATIONS SUMMARY: Finish installing rotary table, RIH with 660mm bit and 311 stabilizer, clean and work to bottom, circ, POOH, RIH, clean to bottom, circ and cond hole while waiting on 660mm stabilizer. Fabricate bit breaker in cellar, POOH and pick up 660mm stabilizer, RIH and ream.
MIDNITE DEPTH: 46m **OPERATION:** Reaming **PROGRESS:** 0

DATE: 05-12-89
OPERATIONS SUMMARY: Finish reaming with stabilizer, dummy trip, circ, POOH, remove rotary table, install false floor, rig up and run 508mm conductor pipe, rig in cementers.
MIDNIGHT DEPTH: 46m **OPERATION:** Rig in cementers **PROGRESS:** 0

DATE: 06-12-89
OPERATIONS SUMMARY: Rig in cementers, cement 508mm csg with Halliburton, (Class G permafrost cement), WOC 8 hours, Lay down landing joint, install and nipple up diverter system.
MIDNIGHT DEPTH: 46 **OPERATION:** Nipple up diverter **PROGRESS:** 0

DATE: 07-12-89
OPERATIONS SUMMARY: Install flow line and flare line, finish nipple up, drill mouse hole, Rig Accumulator, Press Test, pick up and make up bottom hole assembly, drill out shoe, drill ahead in 444mm hole.
MIDNIGHT DEPTH: 75m **OPERATION:** Drilling **PROGRESS:** 29m

DATE: 08-12-89
OPERATIONS SUMMARY: Drill ahead 444mm hole with surveys, drilling slowed with torque at 140m, drill to 146m, check bottom hole sample, decision to run casing at this point made in consultation with Calgary. Double strap out for wiper trip, pick up monel collar, RIH, circ & cond hole for logging, survey, start out of hole.
MIDNIGHT DEPTH: 146m **OPERATION:** POOH to log. **PROGRESS:** 71m

DATE: 09-12-89
OPERATIONS SUMMARY: Finish out of hole, log with Computalog (Long Spaced Sonic-GRC, from 146m to cond pipe at 45.5m). RIH and cond for csg, POOH for csg, repair csg elevators, run 339.7mm sfc csg, circ csg, cement with Halliburton.
MIDNIGHT DEPTH: 146m **OPERATION:** Cementing Sfc Csg **PROGRESS:** 0

DATE: 10-12-89
OPERATIONS SUMMARY: WOC 11hrs, tear out and lay down landing joint, tear out V-doors and catwalk for access, tear out diverter, screw on csg bowl, install bop stack, nipple up.
MIDNIGHT DEPTH: 146m **OPERATION:** Nippling up BOP **PROGRESS:** 0

DATE: 11-12-89 **DAY:** 11 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Continue to nipple up BOP, repair electrical problem in accumulator.
MIDNIGHT DEPTH: 146m **OPERATION:** Repair Accumulator **PROGRESS:** 0

DATE: 12-12-89 **DAY:** 12 **RIG:** SHEHTAH 1E
OPERATIONS SUMMARY: Begin press test, work on accumulator, RIH, press test, drill out cement.
MIDNIGHT DEPTH: 146m **OPERATION:** Drilling out cement **PROGRESS:** 0

DATE: 13-12-89 **DAY:** 13 **RIG:** SHEHTAH 1E
OPERATIONS SUMMARY: Cond mud for core, POOH for core barrel, RIH, cut core #1, (146-157.4m) cut 11.4m in 7.5hr, jammed off after connection, POOH, recover core, rack back core barrel, RIH to top of rat hole, circ.
MIDNIGHT DEPTH: 157.4m **OPERATION:** Prepare to run Leak off test **PROGRESS:** 11.4m

DATE: 14-12-89 **DAY:** 14 **RIG:** SHEHTAH 1E
OPERATIONS SUMMARY: Run leak off test, ream rat hole, drill ahead in 311mm hole, circ samples at 183m, 187m, 190m, POOH for core barrels at 194m, RIH with core barrels, commence coring at 20:00.
MIDNIGHT DEPTH: 198m **OPERATION:** Coring **PROGRESS:** 40.6m

DATE: 15-12-89 **DAY:** 15 **RIG:** SHEHTAH 1E
OPERATIONS SUMMARY: Cut core #2, POOH, recover core #2, (194-212m, 18m cut, 18m recovered, 17.25hrs), wait on orders 2.75 hrs, make up & RIH with 27m barrel & switch to strata type bit, comence cutting core #3, 4m/average.
MIDNIGHT DEPTH: 222m **OPERATION:** Coring **PROGRESS:** 24m

DATE: 16-12-89 **DAY:** 16 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Continue cutting core #3, (27m in 7.25 hr) circ, POOH, recover core, service barrel, WO orders 1.75 hr, RIH, cut core #4, (27m in 7 hr) circ, POOH, recover core, service barrel and WO orders 1.25 hr, rack back core barrel, make up BHA.
MIDNIGHT DEPTH: 266m **OPERATION:** Make up BHA **PROGRESS:** 44m

DATE: 17-12-89 **DAY:** 17 **RIG:** SHEHTAH 1E
OPERATIONS SUMMARY: Continue to make up BHA, lay down singles and heavy weight pipe, RIH to top of rat hole at 194m, ream rat hole, 4m/hr.
MIDNIGHT DEPTH: 266m(reaming at 243m) **OPERATION:** Reaming rat hole **PROGRESS:** 0

DATE: 18-12-89 **DAY:** 18 **RIG:** SHEHTAH 1E
OPERATIONS SUMMARY: Continue to ream rat hole, run survey at 265m, finish reaming rat hole, drill ahead 311mm hole with 5000daN to control deviation, survey at 283m, drill ahead with 5000daN to control deviation, loss of circulation at 286.5m, mix sawdust pill, full returns established, drill ahead.
MIDNIGHT DEPTH: 297m **OPERATION:** Drilling **PROGRESS:** 31m

DATE: 19-12-89 **DAY:** 19 **RIG:** SHEHTAH 1E
OPERATIONS SUMMARY: Drill ahead fanning with 5000daN and 120rpm to control deviation, increase WOB to 22000daN with 80rpm, continue drilling with 12-15000 and 120-140rpm to 400m. Lost circulation at 378m lost 5m , 383m lost 4m , 397m lost 2.6m .
MIDNIGHT DEPTH: 400m **OPERATION:** Drilling **PROGRESS:** 103m

DATE: 20-12-89 **DAY:** 20 **RIG:** SHEHTAH 1E
OPERATIONS SUMMARY: Drill ahead from 400-509m with 8000-10000daN and 110-140rpm to control deviation. Lost circ at: 403m lost 4m , 408m lost 3m , 440m lost 2m , bypass shaker to maintain LCM mat'l in mud except for brief period to catch sample.
MIDNIGHT DEPTH: 509m **OPERATION:** Drilling 3m/hr **PROGRESS:** 109m

DATE: 21-12-89 **DAY:** 21 **RIG:** SHEHTAH 1E
OPERATIONS SUMMARY: Drill ahead to 534m, survey line broke while attempting to log, circ while decision made to call 534 intermediate casing point, POOH to log, la down 9" collars, rig to and log, Dual Ind GR-SP, CNS-SLD-SGR.
MIDNIGHT DEPTH: 534m **OPERATION:** Logging **PROGRESS:** 25m

DATE: 22-12-89 **DAY:** 22 **RIG:** SHEHTAH 1E
OPERATIONS SUMMARY: Continue logging, DLL-MSFL, BCS-GR-CAL, BCS-SSL-GR-CAL, MEL-GR-CAL (pulled without finishing), SED-GR (run twice). Make up DST tool, RIH with DST #1 (190-205m), rig up to test, pump up packers.
MIDNIGHT DEPTH: 534m **OPERATION:** Pump Packers for DST #1 **PROGRESS:** 0

DATE: 23-12-89 **DAY:** 23 **RIG:** SHEHTAH 1E
OPERATIONS SUMMARY: Continue to pump up packers and hold pretest safety meeting, run DST #1 190-205m, POOH with DST #1, lay down test tools, RIH for clean out trip before running casing, circ, mix LCM pill to control lost circ, POOH for casing, run 244mm intermediate casing.
MIDNIGHT DEPTH: 534m **OPERATION:** Running Casing **PROGRESS:** 0

DATE: 24-12-89 **DAY:** 24 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Continue running casing, landed at 534.4m, circ and cond mud, cement string to surface, CIP: 05:15, lift stack and set slips, nipple up BOP's, pressure test BOP equipment.
MIDNIGHT DEPTH: 534m **OPERATION:** Press Test **PROGRESS:** 0

DATE: 25-12-89 **DAY:** 25 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Pressure test and repair leaks, RIH picking up drill collars, drill cement with water, drill ahead to 538m with water.
MIDNIGHT DEPTH: 538m **OPERATION:** Drilling **PROGRESS:** 4m

DATE: 26-12-89 **DAY:** 26 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Drill ahead in 216mm hole with surveys.
MIDNIGHT DEPTH: 626m **OPERATION:** Drilling **PROGRESS:** 88m

DATE: 27-12-89 **DAY:** 27 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Drill ahead with surveys as req'd, slow drilling 2-2.5m/hr, POOH, make up stabilized BHA, RIH, ream 27m to bottom, drill ahead with 14000daN and 95RPM, drilling 7m/hr.
MIDNIGHT DEPTH: 687m **OPERATION:** Drilling **PROGRESS:** 61m

DATE: 28-12-89 **DAY:** 28 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Drill ahead with surveys, circ samples at drilling breaks at 695m, 706m, 722m and 789m. POOH for core barrel.
MIDNIGHT DEPTH: 789m **OPERATION:** Make up core barrel **PROGRESS:** 102m

DATE: 29-12-89 **DAY:** 29 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Continue to make up core barrel, RIH, circ, cut core #5, core jammed off after 8m, (789-797m), POOH, recover core, service and rack back core barrel, RIH with bit, drill ahead.
MIDNIGHT DEPTH: 844m **OPERATION:** Drilling **PROGRESS:** 55m

DATE: 30-12-89 **DAY:** 30 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Drill ahead with surveys, ROP slowed to 2.5m/hr.
MIDNIGHT DEPTH: 937m **OPERATION:** Drilling **PROGRESS:** 93m

DATE: 31-12-89 **DAY:** 31 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Drill ahead, drilling slowed to 2m/hr, POOH to change bit, RIH with Bit #4 F3, drill ahead, circ sample at drilling breaks in Mount Kindle, (at 968m, 1000m, 1013m, 1027m).
MIDNIGHT DEPTH: 1017m **OPERATION:** Drilling **PROGRESS:** 80m

DATE: 01-01-90 **DAY:** 32 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Drill ahead, circ sample at drilling breaks, (1027m, 1060m & 1075m), circ, POOH for core barrel, pick up core barrel, RIH, circ, cut core #6.
MIDNIGHT DEPTH: 1079m **OPERATION:** Coring **PROGRESS:** 62m

DATE: 02-01-90 **DAY:** 33 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Continue to cut core #6, jammed off at 1092m, POOH and recover core #6, (1075-1092m, cut 17m, recovered 17m), RIH, ream rat hole, drill ahead.
MIDNIGHT DEPTH: 1104m **OPERATION:** Drilling **PROGRESS:** 25m

DATE: 03-01-90 **DAY:** 34 **RIG:** SHEHTAH 1E
K.B.: 115.01m **GRD:** 109.46m
OPERATIONS SUMMARY: Drill ahead to TD at 1120m, circ bottoms up, dummy trip to casing, run back to bottom, circ, POOH to log, rig in loggers and log. (DLL-MSFL-SP-GR, DIL-SP-GR, CNS-SLD-SGR)
MIDNIGHT DEPTH: 1120m **OPERATION:** Logging **PROGRESS:** 16m

DATE: 04-01-90 DAY: 35 RIG: SHEHTAH 1E
K.B.: 115.01M GRD: 109.46M
OPERATIONS SUMMARY: Make up BHA, RIH for clean out trip. Circ. and cond. hole. POOH. RIH with SFT tool. Set and run SFT tool over various intervals. Attempting to get twenty pressures and three samples.
MIDNIGHT DEPTH: 1120M OPERATION: Logging PROGRESS: 0.0M

DATE: 05-01-90 DAY: 36 RIG: SHEHTAH 1E
K.B.: 115.01M GRD: 109.46M
OPERATIONS SUMMARY: Finish running SFT tool. Recover two samples at surface. Rig out loggers. Wait on orders. Rig up test tools for DST #2 and RIH with inflate bypass straddle tool and inflate packers. Run DST #2.
MIDNIGHT DEPTH: 1120M OPERATION: Testing PROGRESS: 0.0M

DATE: 06-01-90 DAY: 37 RIG: SHEHTAH 1E
K.B.: 115.01M GRD: 109.46M
OPERATIONS SUMMARY: Finish running DST #2. POOH and lay down test tools. RIH open ended and lay down DC and HWDP. Circ. and cond. mud. Set DP at 1117m and run abandonment plug #1. Set DP at 902m and run abandonment plug #2.
MIDNIGHT DEPTH: 1120M OPERATION: Abandoning PROGRESS: 0.0M

DATE: 07-01-90 DAY: 38 RIG: SHEHTAH 1E
K.B.: 115.01M GRD: 109.46M
OPERATIONS SUMMARY: Finish running plug #2, circ. bottoms up and tag plug #2. Set DP at 580m and run plug #3. Tag plug #3. Run and set EZ bridge plug at 399m. RIH and tag plug. Set DP at 370m and run plug #4. Cmt. mouse hole. Lay down DP and rig out cementers. Nipple down BOP's, clean mud tanks, and rig down.
MIDNIGHT DEPTH: 1120M OPERATION: Rig Down PROGRESS: 0.0M

DATE: 08-01-90 DAY: 39 RIG: SHEHTAH 1E
K.B.: 115.01M GRD: 109.46M
OPERATIONS SUMMARY: Continue tearing out floor, pre-fabs and mud tanks. Lay down derrick at 1145 hrs. Change liners and service pumps. De-ice and tear out rig and boilers. Rig released at 2400 hrs, 1990-01-08.
MIDNIGHT DEPTH: 1120M OPERATION: Tear Out PROGRESS: 0.0M

APPENDIX 2

COMPOSITE WELL RECORD

APPENDIX 3

SAMPLE DESCRIPTION

CHEVRON MOUNTAIN RIVER 0-18

0-40m No samples caught while drilling. Returns while reaming with string stabilizer:
SILTSTONE: dark brown, very argillaceous, micromicaceous, carbonaceous specks, trace pyritic, non-calcareous, platy, firm.

45-50 SILTSTONE: grey, argillaceous, slightly micaceous, non-calcareous, blocky, fairly hard. Trace shale laminae, grey, silty, micromicaceous.

50-55 SILTSTONE: light to medium grey, argillaceous, increasing mica, black carbonaceous specks throughout. 20% is lighter grey, poorly salt and pepper, slightly coarser siltstone, with very fine grains, quartz, minor mica, slightly argillaceous, hard, tight, minor part grading to silty, very fine grained sandstone. Trace silty shale laminae.

55-60 SHALE: medium grey, silty to very silty, micromicaceous, local with carbonaceous specks, non-calcareous.
SILTSTONE: 40%, as above, argillaceous, micaceous, carbonaceous specked, decrease sandy siltstone to trace.

60-65 SHALE: silty, micromicaceous, carbonaceous specked, with trace brown, silty, dolomitic shale chips possibly concretions.
SILTSTONE: decrease to 10%, argillaceous micromicaceous, carbonaceous specked.

65-70 SHALE: medium grey, carbonaceous specked, carbonaceous rich laminae, slightly micromicaceous, decrease to slightly silty, only 10% silty shale as above.

70-75 SHALE: predominantly as above, slight increase silty shale.
SILTSTONE: 10%, light brownish grey, argillaceous, micromicaceous, carbonaceous specked, trace dolomitic tight.

75-80 SHALE: as above, slightly silty, with 15%, silty shale, trace brown, slightly dolomitic shale.

80-85 SHALE: medium grey, slightly brownish in part, slightly micromicaceous, carbonaceous specked, very slightly silty, becoming trace dolomitic, firm, subplaty.

85-90 SHALE: as above, only minor silty shale, trace small dolomitic concretions.

90-95 SHALE: as above, slight carbonaceous specks.

95-100 SHALE: as above, only trace silty, decreasing carbonaceous specks.

100-105 SHALE: medium grey, brownish grey, trace dolomitic, slight carbonaceous specks, trace silty, subplaty.

105-110 SHALE: as above, part slightly silty to silty, minor brownish chips, dolomitic, silty, silty, hard, possibly concretions.

110-115 SHALE: generally as above, trace crystalline pyrite masses, begin 15% silty shale again, barely visible slow cut.

115-120 SILTSTONE: medium brownish grey, argillaceous, disseminated pyrite, trace dolomitic, blocky, fairly hard, tight, barely visible slow cut.
Trace shale may be all cavings.

120-125 SILTSTONE: brownish grey, slightly coarser than above, sandy in part, disseminated pyrite throughout, argillaceous, trace dolomitic, tight, barely visible slow cut.
SHALE: 10%, grey, silty, disseminated pyrite.

125-130 SILTSTONE: argillaceous, decrease sandy, disseminated pyrite throughout, trace dolomitic. Trace clear crystalline calcite suggests few fractures. Barely visible slow cut.

130-135 SILTSTONE: finer, part grading to very silty shale, argillaceous, disseminated pyrite throughout, trace dolomitic, blocky, firm, tight, barely visible slow cut.
SHALE: 20-30%, silty to very silty, slight disseminated pyrite, slightly micromicaceous.

135-140 LIMESTONE: mottled off white, light brownish, microcrystalline, barely very finely crystalline, trace argillaceous and silty, slight disseminated pyrite, vague relic granular texture, part with vague fossil fragments, bitumen specks, no live stain, tight, barely visible slow cut from crushed sample.
SHALE: brownish grey, disseminated pyrite throughout, slightly silty.
PYRITE: and very pyritic shale, 20%, coarse crystalline, probably thin beds and laminae.

KEE SCARP 140m (-25m)

140-146 LIMESTONE: coarse to very coarse packstone, fine to medium crystalline, clean, limestone fragments, corals, brachiopods, pellets, unidentifiable fossil fragments, bitumen coated throughout, stylolites, matrix is darker, very finely crystalline, bitumen/dead organic specked, trace argillaceous, tight, weak yellow cut, better than above, no streaming.

SURFACE CASING POINT 146m

146-157.4 SEE CORE DESCRIPTION #1

157.4-160 LIMESTONE: mottled light to dark brown, fossil fragments, stromatoporoid and Amphipora floatstone as above, with dark bitumen specked, very fine to fine grainstone matrix, tight, trace scattered dolomite rhombs, trace stylolites and bitumen fracture coatings, spotty very weak cut.

160-165 LIMESTONE: darker, predominantly very finely crystalline, very fine to fine grainstone or packstone, bitumen specked, trace pyrite, slight scattered dolomite rhombs, trace siliceous residue in acid, decrease stromatoporoid fragments, possible corals, minor bitumen coatings and stylolites, tight, no cut.

165-170 LIMESTONE: increasing light brown, microcrystalline, stromatoporoid fragments, part very finely crystalline, soft, off white, part medium brown, microcrystalline to very finely crystalline hard, also 15%, very dark brown, very finely crystalline, bitumen rich, trace pyrite, slight increase scattered dolomite rhombs, still less than 2% of chips, trace silicification, tight, very weak spotty cut. Minor calcite healed microfractures, bitumen coated stylolites.

170-175 LIMESTONE: lighter, predominantly light brown, fossil fragments, stromatoporoid, microfractures throughout fragments, bitumen coating fragments and microfractures, stylolites, minor very fine to fine grainstone matrix, tight, no cut. Only trace dolomitization.

175-180 LIMESTONE: becoming darker, dark brown, predominantly very finely crystalline, vague very fine to fine fossil fragments, blocky, hard, tight, trace crystalline calcite fracture or void filling, few chips with scattered very fine dolomite rhombs, trace silt, bitumen specks, dead organic residue in acid, increasing weak cut. Also lighter limestone as above.

180-183 LIMESTONE: predominantly dark brown as above, very finely crystalline, hard, block, tight, vague fossil grainstone in part, slight increase in scattered dolomite rhombs, trace silicification patches, very weak cut, no streaming.

183-185 LIMESTONE: mottled light-medium-dark brown, very finely crystalline, very fine to fine grainstone, bitumen specks, bitumen coated stylolites, trace silicification, trace scattered very fine dolomite rhombs, tight, barely visible cut.

185-187 LIMESTONE: generally as above, trace dolomitization, trace silicification, barely visible cut.

187-190 LIMESTONE: light-medium-dark brown, very finely crystalline, stromatoporoid, brachiopod, pellets, bitumen specks, trace pyrite, trace very fine dolomite rhombs, rare chips with 20% dolomitization, slight increase silicification, bitumen coatings and stylolites, barely visible slow cut. With 10% very dark matrix, bitumen rich, very finely crystalline.

190-192 LIMESTONE: as above, predominantly light to medium brown, minor dark bitumen rich matrix, no cut, trace dolomitization and silicification.

192-194 LIMESTONE: very finely crystalline, very fine to fine grainstone, bioclastic, larger stromatoporoid and possibly coral fragments, bitumen coated fossil fragments and stylolites, intercrystalline bitumen in grainstone, trace pyrite, trace dolomitization, calcite fracture filling, tight, very weak cut, no streaming.

194-212m SEE CORE DESCRIPTION #2

212-239m SEE CORE DESCRIPTION #3

239-266m SEE CORE DESCRIPTION #4

266-270 LIMESTONE: light to medium brown, very finely crystalline, biofragmental, packstone or grainstone, Amphipora and stromatoporoid, occasional brachiopods in matrix, trace silty, bitumen coated stylolites and fossil fragments, tight, fair cut from bitumen on fossil fragments. With 20% dark brown, microcrystalline to very finely crystalline, very fine packstone, argillaceous, bituminous and silty, tight, weak cut. Minor part limestone grains in bitumen rich, argillaceous and silty matrix grading to calcareous, black, bituminous shale.

270-275 LIMESTONE: light to medium brown, stromatoporoid, Amphipora, ostracod, matrix is darker, very finely crystalline, with very fine to fine fossil fragments, slightly silty, slight disseminated pyrite, black bitumen coatings, bitumen coated stylolites, tight, trace cut.
SHALE: 10%, black, bituminous, calcareous, with very fine fossil fragments throughout, disseminated pyrite, trace silt.

HARE INDIAN 276m (-161m) ?

275-280 SILTSTONE: light grey, very calcareous, slightly argillaceous, pyrite blebs, slight disseminated pyrite, trace fossil fragments, tight.
LIMESTONE: 35%, light grey, very silty, trace argillaceous, vague fine fossil fragments, trace bitumen specks, blocky, hard, tight.
SHALE: trace dark shale is probably all cavings.

280-285 SHALE: light grey, slightly silty to very silty, slightly calcareous, minor grading to siltstone, locally pyritic. Also abundant dark brown shale, very silty, slightly calcareous, very fine fossil fragments, trace bituminous, disseminated pyrite throughout, fairly hard.
LIMESTONE: 40%, light grey, very finely crystalline, silty to very silty, trace argillaceous, few fossil fragments, tight.

285-286.5 This sample is from the last cuttings over the shaker when lost circulation occurred at 286.5m. Shaker bypassed from 286.5-291m to retain sawdust.
SILTSTONE: very light grey, very calcareous, trace argillaceous, trace pyrite, fairly soft, tight.
LIMESTONE: medium brown-brownish grey, very finely crystalline, very silty, trace argillaceous, trace pyrite, few vague fossil fragments, blocky, hard, tight, grading to calcareous siltstone.
SHALE: dark brownish grey, calcareous, very silty, trace disseminated pyrite, trace black bitumen or carbonaceous specks, grading to siltstone.

291-292 LIMESTONE: light grey mottled, very fine to fine pelletoidal packstone, brown, argillaceous rounded to oval pellets, well sorted, in very silty, calcareous, trace argillaceous matrix, grading to siltstone with scattered pellets, tight. Minor darker very argillaceous laminae grading to trace dark, calcareous, silty shale. Trace coarse crystalline calcite, probably from fractures.

292-295 LIMESTONE: medium brown, brownish grey, microcrystalline to very finely crystalline, silty throughout, slightly argillaceous to argillaceous, locally disseminated pyrite, minor with very fine pellets, trace crinoids, blocky, hard, tight, no stain or cut.

295-300 LIMESTONE: very finely crystalline, very silty, argillaceous, disseminated pyrite, crinoids, pellets, tight.
SILTSTONE: 25%, grey, argillaceous, calcareous.

300-305 LIMESTONE: brownish, coarse crinoid packstone, trace fine pellets, disseminated pyrite, part very silty, slightly argillaceous to very argillaceous, trace cut.
SILTSTONE: 15%, grey, argillaceous, calcareous, grading to silty shale.

305-310 LIMESTONE: light to medium brownish grey, silty, slightly argillaceous, pyrite rare pellets, tight.
SILTSTONE: 30%, grey, increasing argillaceous, calcareous, disseminated pyrite.

310-315 LIMESTONE: becoming darker, brownish grey, very silty, argillaceous, very finely crystalline, trace fossil fragments, grading to siltstone.
SILTSTONE: 30%, grey, argillaceous, calcareous, pyrite, grading to silty shale.

315-320 LIMESTONE: very silty, blocky, hard, tight, grading to siltstone.
SILTSTONE: 45%, brownish grey, disseminated pyrite, minor silty shale laminae.

320-325 SILTSTONE: medium brownish grey, calcareous, argillaceous, disseminated pyrite, grading to silty shale in part.
LIMESTONE: 40%, slightly argillaceous to argillaceous, silty.

325-330 SILTSTONE: as above, minor medium grey, silty shale.
LIMESTONE: 40%, very finely crystalline, increasing silt.

330-335 SILTSTONE: increasing calcareous, very calcareous, argillaceous, disseminated pyrite, tight.
LIMESTONE: 20%, very silty, grading to siltstone, blocky, hard, tight.

335-340 SILTSTONE: predominantly medium brownish grey, part lighter.
LIMESTONE: 20%, very silty, argillaceous, grading to siltstone.

340-345 SILTSTONE: brown, grey, calcareous, slightly argillaceous to argillaceous, grading to silty shale in part.
LIMESTONE: 10-15%.

345-350 SILTSTONE: blocky, hard, tight.
LIMESTONE: 10-15%, very silty, grading to siltstone, slightly argillaceous.

350-355 SILTSTONE: light to medium brownish, calcareous, argillaceous.
LIMESTONE: 10%, light brown, very silty, slightly argillaceous, grading to siltstone.

355-360 SILTSTONE: as above.
LIMESTONE: trace amounts, very silty.
SHALE: minor amounts.

360-365 SILTSTONE: calcareous, argillaceous, trace disseminated pyrite, blocky, hard, tight. Part darker brownish grey, very argillaceous.
SHALE: 10-15%, brownish grey, very silty, calcareous.

365-370 SILTSTONE: becoming darker, medium brownish grey, no lighter brown, increasing argillaceous, calcareous, disseminated pyrite, tight.
LIMESTONE: 10%, very finely crystalline, silty, argillaceous, blocky, hard, tight. Fragments of Amphipora with bitumen and weak cut are probably cavings.
SHALE: 5%, very silty, calcareous.

370-375 SILTSTONE: medium brown, increasing argillaceous, calcareous to very calcareous, disseminated pyrite, very tight, blocky, hard.

375-380 SILTSTONE: as above.

380-385 SILTSTONE: very calcareous, argillaceous, blocky, hard, tight, minor light brown, silty limestone, part grading to silty shale.

385-390 SILTSTONE: medium brownish grey, very argillaceous, grading to silty shale, calcareous, thin beds grading to silty limestone.
SHALE: silty, calcareous, dark brown-grey.

390-395 SILTSTONE: medium brownish grey, very argillaceous, grading to silty shale, blocky, hard, tight. Minor grading to silty limestone.
SHALE: as above, 10-15%.

395-400 SILTSTONE: slightly darker, very calcareous, part grading to limestone.
SHALE: 15%, silty, calcareous, dark brown-grey.

400-405 SILTSTONE: medium brown, very calcareous, very argillaceous, trace pyritic, trace bituminous specks, blocky, hard, tight, grading to very silty shale or possibly marlstone.
SHALE: calcareous, silty, 10-15%.

405-410 SILTSTONE: as above, trace disseminated pyrite, bituminous specks, grading to very silty shale and possibly marlstone.
LIMESTONE: very thin beds, very finely crystalline, clean, brownish, slight bitumen specks.

410-415 SILTSTONE: very argillaceous, very calcareous, blocky, hard, tight, grading to silty marlstone in part. Minor very silty shale.

415-420 SILTSTONE: as above.
LIMESTONE: 10%, thin beds, light brown, very finely crystalline, slightly argillaceous, trace fossil fragments, tight.

420-425 SILTSTONE: as above.
LIMESTONE: few fossil fragments.

425-430 SILTSTONE: medium brown, very argillaceous, very calcareous, trace bituminous specks, trace pyrite, grading to very silty marlstone, blocky, hard, tight.

430-435 SILTSTONE: slightly darker.
LIMESTONE: very thin beds, very finely crystalline, silty.

435-440 SILTSTONE: medium to dark brown, slightly finer silt, very argillaceous, very calcareous, grading to silty marlstone, trace bituminous specks and pyrite, blocky, hard, tight.

440-445 SILTSTONE: as above, very argillaceous, very calcareous, grading to very silty marlstone.

445-450 SILTSTONE: slight increase very fine disseminated pyrite.
LIMESTONE: 10-15%, thin beds, silty.

450-455 SILTSTONE: very argillaceous, very calcareous, grading to 10-15% marlstone.
LIMESTONE: thin beds, silty.

455-460 SILTSTONE: as above, medium to dark brown, very calcareous, very argillaceous, grading in part to silty marlstone.
LIMESTONE: very thin beds, very finely crystalline, silty, slightly argillaceous.

460-465 SILTSTONE: medium brown, argillaceous, calcareous, disseminated pyrite, trace bitumen/carbon specks, trace dark shale.
LIMESTONE: light brown, very finely crystalline, silty, slightly argillaceous, fine fossil fragments, grading to siltstone.

465-470 SILTSTONE: medium to dark brown, argillaceous, calcareous, minor marlstone.
LIMESTONE: 20%, lighter, very finely crystalline, silty, slightly argillaceous to argillaceous, tight.
SHALE: 10%, darker, dark brownish grey, slightly calcareous, slightly silty, trace carbonaceous flakes.

470-475 SILTSTONE: as above, very argillaceous, very calcareous, part grading to marlstone.
LIMESTONE: thin beds, silty, slightly argillaceous, tight.

475-480 SILTSTONE: medium brown, very argillaceous, very calcareous, disseminated pyrite, grading to 15% marlstone.
LIMESTONE: lighter brown, silty, slightly argillaceous to argillaceous, tight, grading to very calcareous siltstone.

BLUEFISH 482m (-367m)

480-485 SHALE: black, carbonaceous, also dark brown, carbonaceous plant flakes, very slight disseminated pyrite, trace calcareous, barely visible cut.

485-490 SHALE: black, carbonaceous, disseminated pyrite, barely visible cut.
LIMESTONE: medium brown, microcrystalline, few vague fossil fragments, possibly wackestone, trace ostracods, argillaceous, trace silty, blocky, hard, tight, trace isolated small vugs. Few fractures lined with clear crystalline calcite, bitumen and trace quartz. With 10% finely crystalline clean limestone. Minor lighter brown, softer limestone. Trace grey pyritic chert nodules.

490-495 LIMESTONE: light to medium brown, microcrystalline, slightly argillaceous to very argillaceous, part grading to marlstone, fine fossil fragments, trace ostracods, crinoids, slight disseminated pyrite throughout, tight, no stain or cut.
SHALE: 10%, dark brown-black.

MAHANNI 495m (-380m)

495-500 SHALE: medium grey, dolomitic, trace silty disseminated pyrite, trace pyritic fossil tubes. Also black, carbonaceous shale as above.
LIMESTONE: microcrystalline, slightly argillaceous to argillaceous, part grading to marlstone, trace ostracod and crinoid, trace silty, trace pyrite and bituminous specks.

500-505 SHALE: medium grey, slightly dolomitic, trace silty, subplaty.
LIMESTONE: 30%, light to medium brown, fine fossil fragments, packstone in part, brachiopod, crinoids, ostracods, microcrystalline, variably argillaceous, trace pyrite, tight. Calcite filled microfractures.

505-510 LIMESTONE: predominantly medium brown, also light and dark brown, microcrystalline, slightly argillaceous to argillaceous, fine to medium fossil fragments, small brachiopods, ostracods, slight disseminated pyrite, blocky, hard, tight, no stain, barely visible cut.
SHALE: dark brown, black, may be all cavings?

510-515 LIMESTONE: light-medium-dark brown, microcrystalline, minor very finely crystalline, fine fossil fragments, brachiopods, slightly argillaceous, trace pyrite blebs, tight, minor darker argillaceous and pyritic laminae.
SHALE: 10%, dark brownish grey, may be all cavings?

515-520 LIMESTONE: lighter, predominantly light to medium brown, microcrystalline, ostracods, brachiopods, pellets, wackestone, slightly argillaceous, slight disseminated pyrite, minor darker argillaceous and pyritic laminae, tight, no stain or cut.
SHALE: thin beds, medium to dark brown, slightly calcareous, disseminated pyrite.

520-525 LIMESTONE: light-medium-dark brown as above, microcrystalline, wackestone, brachiopods, ostracods, pellets, possibly stromatoporoid, trace pyrite, trace argillaceous, tight. Increase white, crystalline calcite fracture and possibly vug filling.
SHALE: trace dark shale laminae.

525-530 LIMESTONE: microcrystalline, trace argillaceous, wackestone as above, trace black bitumen specks, tight, no stain or cut, decrease crystalline calcite. Trace dark shale laminae.

530-534 LIMESTONE: light-medium-dark brown, wackestone, brachiopods, pellets, ostracods, spines, trace argillaceous, trace pyrite, tight. Trace dark shale.

TD for INTERMEDIATE CASING

534-540 LIMESTONE: light to medium brown, microcrystalline to very finely crystalline, locally with grey, argillaceous and pyritic pellets, part brownish grey argillaceous and pyritic laminae, tight. White crystalline calcite.
SHALE: 15%, medium brownish grey, slightly dolomitic, trace silty, trace pyritic.

HEADLESS 544m (-429m)

540-545 LIMESTONE: light to medium brown, microcrystalline to very finely crystalline, fossil fragments throughout, brachiopods, possible crinoids, pellets, trace argillaceous and silty or siliceous residue, packstone possibly, pyrite blebs, blocky, tight. White crystalline calcite. Part very fine to fine fossil fragments in dark, argillaceous, silty, bituminous matrix, grading to marlstone.
SHALE: 30%, brownish grey, dolomitic, slightly calcareous, disseminated pyrite, slightly silty.

545-550 LIMESTONE: light to medium brown as above, microcrystalline to very finely crystalline, fossil fragments, pyrite blebs, 5% brownish bituminous, very finely crystalline limestone, probably matrix, possibly packstone, tight, trace cut. 20% soft, white clean, very fine to finely crystalline limestone and calcite fracture filling.
SHALE: 15%, dark bituminous, fossil fragments.

550-555 LIMESTONE: light to medium brown, as above, part very finely crystalline, very fine grains in dark matrix, bituminous, argillaceous, slightly pyritic, trace silty, grading to marlstone, no stain or cut. Crystalline calcite fracture filling. Slickenside surfaces very common in soft limestone.
SHALE: 25%, medium to dark brownish grey, calcareous, silty, disseminated pyrite, bituminous.

555-560 LIMESTONE: light to medium brown, fossil fragments, brachiopods, pellets, packstone in part, part grey argillaceous and pyritic pellets in clean limestone, tight, no stain or cut.
SHALE: dark brownish grey, silty to very silty, calcareous, possible fossil fragments, disseminated pyrite, bituminous, slightly micromicaceous, subplaty.

560-565 SHALE: dark brownish grey calcareous, fossil fragments, silty, disseminated pyrite, micromicaceous, bituminous, grading to marlstone.
LIMESTONE: 40%, very finely crystalline, fossiliferous, packstone, possibly grainstone, grey argillaceous and pyritic pellets, tight, part darker, with increased argillaceous, content grading to marlstone.

565-570 SHALE: as above, grading to marlstone, fossiliferous, bituminous, decreasing silt, disseminated pyrite, micromicaceous, subplaty.
LIMESTONE: decreasing to 20%, clean to trace argillaceous, probably packstone, tight. Common crystalline white calcite.

570-575 LIMESTONE: light to medium brown, fossil fragments, crinoids, brachiopods, trace pyrite blebs, trace bitumen specks, tight, only few argillaceous and pyritic streaks.
SHALE: lighter, light to medium grey, calcareous, slightly silty, trace bitumen specks, decrease pyrite and micromicaceous.

575-580 LIMESTONE: predominantly light brown, clean to trace argillaceous, very fossiliferous, coarse brachiopods, crinoids, grainstone or coarse packstone, pyrite blebs, tight, no stain or cut.
SHALE: medium grey, calcareous, trace silty, subplaty.

580-585 LIMESTONE: very light brown, microcrystalline to very finely crystalline with coarse fossil fragments, brachiopods, crinoids, locally argillaceous and pyritic matrix, minor bitumen coated fragments, tight, no stain or cut.
SHALE: minor amounts, grey, as above.

585-590 LIMESTONE: pellets, part vague fragments, vague fossils, microcrystalline to very finely crystalline matrix with increased bitumen, part grey, pyritic and argillaceous pellets in cleaner limestone, trace dolomitization, tight.
SHALE: brownish grey, silty, disseminated pyrite.

LANDRY 589m (-474m)

590-595 LIMESTONE: light-medium-dark brown, medium to coarse fossil fragments, crinoids, brachiopods, trace ostracods, part with increasingly bituminous matrix, slightly dolomitic, rarely very dolomitic with trace very fine to finely crystalline dolomite with bitumen rimming grain boundaries, occasional quartz crystals, coarse loose pyrite and coarse bitumen suggest poor vuggy porosity, calcite healed fractures, tight, no cut.
SHALE: 30%, medium grey, calcareous, fossil fragments, disseminated pyrite.

595-600 LIMESTONE: fossiliferous, brachiopods crinoids, pellets, in medium grey, argillaceous, very fine disseminated pyrite and blebs throughout, grading to fossiliferous, pyritic shale.
SHALE: medium brownish grey, calcareous, fossil, disseminated pyrite.

600-605 LIMESTONE: medium brown, microcrystalline to very finely crystalline, argillaceous to very argillaceous, pyritic, decreasing fossil debris, grading to marlstone, trace bitumen coated stylolites, blocky, hard, tight.
SHALE: 15%.

605-610 LIMESTONE: predominantly medium brownish grey, microcrystalline, argillaceous to very argillaceous, grading to very pyritic marlstone, minor fragments and fossil debris, dense, blocky, tight. Trace black bitumen coated stylolites and fragments.

610-615 LIMESTONE: medium to dark brown, microcrystalline, minor very finely crystalline, argillaceous to very argillaceous, pyrite blebs, scattered fossil fragments, trace bitumen coated stylolites, tight.
SHALE: 15%, very dark brownish grey, calcareous, pyritic, bituminous.

615-620 LIMESTONE: dark brown very fine to fine pellets in lighter very finely crystalline, sparry calcite, trace argillaceous, trace ostracods, probably pellet grainstone, bitumen specks, trace pyrite. Trace black, bitumen coated stylolites. Trace pyritic shale laminae.

620-625 LIMESTONE: predominantly dark brown, microcrystalline, slightly argillaceous, vague pellets, subrounded clasts and minor fossil fragments in very finely crystalline, sparry cement, bitumen specked, slightly pyritic, tight, no cut. Tight calcite filled fractures. Bitumen coated calcite from fractures or possibly small isolated vugs.

625-630 LIMESTONE: medium to dark brown, packstone, trace argillaceous, poorly sorted pellets and carbonate clasts, few unidentifiable fossil fragments, pyrite blebs, bitumen specks, bitumen coated stylolites in part, tight, no cut.

630-635 LIMESTONE: predominantly dark brownish-grey, microcrystalline, trace argillaceous, very common pellets and clasts, part packstone, part grainstone with clear sparry calcite matrix, bitumen coating some fragments, stylolites, tight, blocky, no stain or cut.

635-640 LIMESTONE: dark brownish grey, very fine to fine pellet packstone and grainstone, blocky, hard, tight, bitumen specks and stylolites, no cut.

640-645 LIMESTONE: dark brown, cryptocrystalline to microcrystalline, pellets, clasts, bitumen specks, stylolites, packstone and grainstone, part sparry cement, tight.

645-650 DOLOMITE: medium to dark brown, microcrystalline, tightly interlocking rhombs, minor patchy barely very finely crystalline, intercrystalline bitumen specks throughout, rare isolated small vugs lined with white dolomite and bitumen, no permeability, tight, blocky, no stain or cut.
LIMESTONE: dark brown, cryptocrystalline to microcrystalline, trace argillaceous, pellets, tight, no dolomitization.

650-652 DOLOMITE: medium to dark brown, microcrystalline to barely very finely crystalline, tightly interlocking rhombs, trace small isolated vugs, no permeability, bitumen specks throughout, no cut.
LIMESTONE: as above, interbedded with dolomite.

652-655 DOLOMITE: microcrystalline, as above, very tightly interlocking rhombs, trace isolated vugs, bitumen specks, tight, no stain or cut.
LIMESTONE: 50%, cryptocrystalline to microcrystalline, as above, tight, no dolomitization.

655-660 LIMESTONE: light-medium-dark brown, microcrystalline to cryptocrystalline, pellets, part dark bitumen specked matrix, minor clear sparry cemented grainstone, trace argillaceous, bitumen coated stylolites, part poorly sucrosic, lighter, bitumen specked, no dolomitization.

660-665 LIMESTONE: dark brown, microcrystalline, trace argillaceous, pellets and clasts locally, poorly sorted, dark bitumen specked matrix, blocky, tight, no dolomitization, no stain or cut.

665-670 LIMESTONE: pellet packstone, dark bitumen rich microcrystalline matrix, locally bitumen coated pellets and fragments, increased bitumen throughout, tight, trace vugs filled with white calcite and trace quartz, increase calcite healed fractures, no stain or cut.

670-675 LIMESTONE: poorly sorted pellet grainstone, larger clasts of light brown cryptocrystalline structureless limestone, part bitumen rich matrix, bitumen coated microfractures, weak breccia texture in part, part clear sparry calcite cement, tight, no shows.

675-680 LIMESTONE: lighter, light to medium brown, cryptocrystalline and microcrystalline, pellet grainstone, clear sparry calcite cement, decreasing bitumen, tight, no stain or cut.
DOLOMITE: 5%, very finely crystalline, light brown, slight remnant limestone patches, intercrystalline bitumen specks, tight.

680-685 LIMESTONE: as above, very common pellets, grainstone, part packstone, bitumen specks, tight, no dolomitization.
DOLOMITE: 20%, light brownish, very finely crystalline, minor finely crystalline, tightly interlocking rhombs, intercrystalline bitumen specks, trace pyrite, slight remnant limestone patches, poor isolated small vugs, lined with white dolomite & bitumen, no intercrystalline porosity, no cut.

ARNICA 686m (-571m) (TVD approx -569m)

685-690 DOLOMITE: part lighter brown, microcrystalline, blocky, hard, tight. With 25-30% recrystallized to very fine to finely crystalline, tightly interlocking rhombs, intercrystalline bitumen, poor small vug porosity, 5% white secondary calcite fracture or vug filling, no intercrystalline porosity, weak fluorescence, no stain or cut.

690-695 DOLOMITE: light to medium brown, very finely crystalline, minor finely crystalline, tightly interlocking rhombs. 10% lighter microcrystalline beds, bitumen specks locally, trace pyrite, few bitumen coated stylolites, poor small vugs lined with white dolomite and bitumen, decrease calcite to trace, no intercrystalline porosity, weak fluorescence, no stain or cut.

695-700 DOLOMITE: light brown, part medium brown, very finely crystalline, part very fine to finely crystalline, tightly interlocking rhombs, poor small vug porosity at best, bitumen lining vugs, intercrystalline bitumen in 30% of sample, tight, no stain or cut.

700-705 DOLOMITE: darker, medium to dark brown, finely crystalline, commonly very fine to finely crystalline, tightly interlocking rhombs, rare streaks with very poor intercrystalline and pin point vugs, very common bitumen, no effective permeability, increase small vugs, white dolomite and bitumen lining vugs.

705-710 DOLOMITE: medium brown, predominantly finely crystalline, part very fine to finely crystalline, trace medium crystalline, increasing small to medium vugs, bitumen coated, mostly tightly interlocking rhombs, locally very poor intercrystalline and pin point porosity, 1-3%, bitumen specked, no effective permeability, minor weak fluorescence, no stain or cut.

710-715 DOLOMITE: medium brown, microcrystalline to very finely crystalline, slight bitumen specks, tight, increasing weak fluorescence, no stain or cut.
LIMESTONE: 50%, medium brown, microcrystalline, vague fragments or pellets, bitumen specks, tight.

715-720 LIMESTONE: medium brown, microcrystalline, part very finely crystalline, vague pellets, bitumen specks, tight.
DOLOMITE: 40%, medium brownish, brownish grey, part microcrystalline with disseminated pyrite, part microcrystalline to very finely crystalline, tightly interlocking rhombs, very slight bitumen, tight.

720-725 DOLOMITE: light brown, very fine to finely crystalline, very clean, minor part with bitumen specks, tight.
LIMESTONE: 30%, medium brown, microcrystalline, mottled fragmental or pelletoidal texture, bitumen specks, dense, tight.

725-730 DOLOMITE: darker, light to medium brown, finely crystalline, very fine to finely crystalline, locally bitumen specked, minor with very fine disseminated pyrite, part with poor pin point and small vug porosity, locally very poor intercrystalline porosity, 2-3% overall, no stain or cut, very poor permeability at best.

730-735 DOLOMITE: darker, medium to dark brown, finely crystalline, part very fine to finely crystalline, tightly interlocking rhombs, very poor pin point and small vug porosity, no intercrystalline porosity, trace pyritic dolomite, weak fluorescence, no stain or cut.

735-740 DOLOMITE: light brown, microcrystalline, patchy recrystallized to very finely crystalline, very slightly silty, trace small vugs, weak fluorescence, tight, minor brecciated texture with microcrystalline matrix with bitumen and disseminated pyrite. Also common, medium to dark brown, very finely crystalline, minor finely crystalline, tightly interlocking, bitumen specked, trace vugs, no shows.
SHALE: dark grey, very pyritic, slightly dolomitic.

740-745 DOLOMITE: light to medium brown, microcrystalline to very finely crystalline, trace vugs, trace bitumen, tight, weak mineral fluorescence in lighter, microcrystalline dolomite.
SHALE: 5%, light grey, very pyritic, slightly dolomitic.

745-750 DOLOMITE: light to medium brown, minor brownish grey, microcrystalline and very finely crystalline, part pyritic, trace argillaceous, scattered small vugs lined with bitumen, white calcite fracture filling, very slight intercrystalline bitumen, tight, part weak fluorescence, no stain or cut.
SHALE: trace amounts, grey, very pyritic.

750-755 DOLOMITE: light to medium brown, part light brownish grey, microcrystalline to very finely crystalline, trace bitumen, locally pyritic, part slightly argillaceous, tight.
SHALE: trace thin beds, very pyritic, may be cavings?

755-760 DOLOMITE: light brown, predominantly microcrystalline, part microcrystalline to very finely crystalline, isolated small vugs, no intercrystalline porosity, trace bitumen and pyrite, trace finely crystalline light brown dolomite with fair pin point and intercrystalline porosity, no stain or cut, weak fluorescence throughout.
SHALE: 2%, light grey, very pyritic, disseminated pyrite throughout.

760-765 DOLOMITE: light to medium brown, very finely crystalline, decreasing microcrystalline dolomite, trace silty and argillaceous, scattered small vugs lined with bitumen, slight intercrystalline bitumen, tight, no stain or cut.

765-770 DOLOMITE: light to medium brown, predominantly very finely crystalline, small vugs, trace pin point porosity, slight bitumen, few bitumen coated stylolites, trace white crystalline calcite fracture filling.
Trace grey, pyritic shale may be all cavings?

770-775 DOLOMITE: light to medium brown, microcrystalline to very finely crystalline, clean to slightly argillaceous in grey, microcrystalline dolomite, small patches of grey argillaceous and pyritic material, part disseminated pyrite and minor very pyritic, trace silt, tight.
Trace grey pyritic shale.

775-780 DOLOMITE: light brown, part medium brown, predominantly very finely crystalline, part microcrystalline, tightly interlocking rhombs, trace pin point vugs, trace bitumen, no stain or cut.
Trace grey, pyritic shale.

780-785 DOLOMITE: light to medium brown, predominantly very finely crystalline, tightly interlocking rhombs, part microcrystalline to very finely crystalline, trace pin point and scattered small vugs with white, finely crystalline dolomite, spotty bitumen, tight. 5% white, crystalline, secondary calcite fracture filling.

785-789 DOLOMITE: light brown, very finely crystalline, part very finely sucrosic around vugs, fair pin point and small vug porosity, poor to fair intercrystalline porosity, 6-8%, fair to streaks good permeability, bitumen coating porosity, no stain or cut. 40% of sample is tight, light brown, very finely crystalline dolomite as above.

789-797m SEE CORE DESCRIPTION #5

797-800 ANHYDRITE: very light brownish, microcrystalline, trace calcareous, also common medium to coarse, clear anhydrite crystals. White, crystalline calcite fracture filling also common.
DOLOMITE: light brown, very finely crystalline, intercrystalline bitumen specks, trace pin point and small vugs, no stain or cut.

FORT NORMAN 798m (-683m) (TVD approx -679.8m)

800-805 ANHYDRITE: light brown, light grey, microcrystalline, dense.
DOLOMITE: 20%, medium to dark brown, microcrystalline to very finely crystalline, bitumen specked, trace vugs, part anhydritic, tight.

805-810 ANHYDRITE: microcrystalline, dense.
DOLOMITE: 35%, light to medium brown, part very finely crystalline to poorly sucrosic, totally cemented with anhydrite, very clean. Also part microcrystalline to very finely crystalline, tightly interlocking rhombs, very slightly bitumen specked, no stain or cut.

810-815 DOLOMITE: light to medium brown, very finely crystalline, tight, part sucrosic with anhydrite cement, no stain or cut.
ANHYDRITE: 20%, grey, brownish grey, microcrystalline.

815-820 DOLOMITE: light to medium brown, microcrystalline, slightly anhydritic, trace with micro-laminations of bitumen, generally only very slight bitumen specks, blocky, tight, anhydrite filled fractures. With 15% very finely crystalline, trace pin point vugs, no stain or cut.
ANHYDRITE: 10%.

820-825 DOLOMITE: medium to dark brown, very finely crystalline, predominantly tightly interlocking rhombs, slight bitumen specks, part with poor to fair pin point and very small vug porosity, poor intercrystalline porosity, 3-5% overall, poor permeability, no stain or cut.

825-830 DOLOMITE: medium to dark brown, very finely crystalline, tightly interlocking rhombs, with streaks of poor pin point and small vug porosity, 2-3%, rarely 6%, no stain or cut. 15% lighter brown, microcrystalline dolomite, vague darker, relic pellets.

830-835 DOLOMITE: microcrystalline to barely very finely crystalline, very light brown, part with darker pellet ghosts, 35% medium brown, very finely crystalline, tightly interlocking rhombs, minor very poor pin point vugs, part slightly bitumen specked, dead organic residue released in acid.
ANHYDRITE: 10%, microcrystalline, dense, light brownish.

835-840 DOLOMITE: microcrystalline to barely very finely crystalline, increasing bitumen specks in very finely crystalline, very slightly argillaceous, trace relic oolitic texture, trace disseminated pyrite, scattered very poor pin point vugs with bitumen, strong dead organic residue released in acid, no stain or cut.
ANHYDRITE: 25%, light brown, cryptocrystalline to microcrystalline.

840-845 ANHYDRITE: light brownish grey, microcrystalline, dense.
DOLOMITE: light to medium brown, microcrystalline to barely very finely crystalline, bitumen specked, slightly pyritic, very slightly argillaceous, tight to very slight pin point vugs, no stain or cut.

845-850 ANHYDRITE: predominantly medium to dark brownish, brownish grey, microcrystalline, part cryptocrystalline, part slightly dolomitic.
DOLOMITE: 10-15%, dark brown, microcrystalline, anhydritic, tight.

850-855 DOLOMITE: dark brown, very finely crystalline, common relic pellet grainstone, dark pellets in clear sparry cement, totally dolomitized, trace anhydritic, clean, trace bitumen specks, poor pin point vugs, 3-4%, minor patches 4-6%, very poor intercrystalline porosity, no stain or cut.
ANHYDRITE: 30%, microcrystalline.

855-860 ANHYDRITE: dolomitic.
DOLOMITE: 20%, very finely crystalline, dark brown, tightly interlocking rhombs, with scattered pin point vugs, poorly sucrosic in part, slight bitumen specks, part pellet grainstone, no stain or cut.

860-865 ANHYDRITE: grey, brownish grey, dolomitic, cryptocrystalline to microcrystalline, dense.

865-870 ANHYDRITE: as above.
DOLOMITE: 25%, medium to dark brown, very finely crystalline, bitumen specked, with trace very poor pin point vugs, no stain or cut.

870-875 DOLOMITE: predominantly dark brown, very finely crystalline, sucrosic in part, locally poor pin point & small vugs, 2-4%, no stain or cut. Also clean, lighter brown dolomite, tight.
ANHYDRITE: 20%.

875-880 DOLOMITE: dark brown, very finely crystalline, tight to trace very poor pin point vugs, bitumen specks, no stain or cut. Also lighter brown, clean, tight, very finely crystalline dolomite.
ANHYDRITE: 20%.

880-885 ANHYDRITE: grey brown, microcrystalline, trace disseminated pyrite, dolomitic.
DOLOMITE: 20%, very finely crystalline, dark brown, tight to trace pin point vugs, no stain or cut.

885-890 ANHYDRITE: dolomitic, microcrystalline.
DOLOMITE: 15%, dark brown, microcrystalline, part very finely crystalline, tight.

890-895 ANHYDRITE: light brownish, microcrystalline, dolomitic, also clear anhydrite crystals.
DOLOMITE: 25%, microcrystalline to very finely crystalline, light brown, anhydritic, tight, no stain or cut.

895-900 ANHYDRITE: light grey, brownish, microcrystalline, dolomitic, also begin white, chalky anhydrite.
DOLOMITE: 10%, microcrystalline and very finely crystalline, dark brown, tight.
SHALE: 10%, grey, anhydritic, dolomitic, disseminated pyrite throughout, platy.

900-905 ANHYDRITE: brown, minor light grey, microcrystalline, dolomitic, with 20% chalky, white anhydrite.
DOLOMITE: 40%, part microcrystalline, light, medium and dark brown, anhydritic, tight, no stain or cut, rare very finely crystalline, Trace crptocrystalline.

905-910 ANHYDRITE: grey, brown, dolomite, white and chalky.
DOLOMITE: 30%, brown, microcrystalline to microsucrosic, minor very finely crystalline, very anhydritic, grading to microsucrosic, dolomitic anhydrite, tight.

910-915 ANHYDRITE: microcrystalline, dolomitic, brownish. Trace darker & argillaceous.
DOLOMITE: 30%, microcrystalline to microsucrosic, anhydritic, minor very finely crystalline, tight.

915-920 ANHYDRITE: microcrystalline, dolomitic, trace grey, argillaceous beds.
DOLOMITE: 40%, begin medium brown, cryptocrystalline, mottled fragmental texture, anhydrite blebs, bitumen microlaminations, very tight, blocky, hard. Decrease microcrystalline to very finely crystalline dolomite.

TATSIETA 920m (-805m) (TVD approx -800.25m)

920-925 DOLOMITE: very fine to finely crystalline, white, creamy, very light grey, very clean, slightly siliceous, trace pyrite, tight, no stain or cut.
SHALE: 10%, grey, disseminated pyrite, dolomitic, blocky.
ANHYDRITE: probably cavings.
DOLOMITE: cryptocrystalline, brown, anhydrite blebs, tight, bitumen coated stylolites.

925-930 DOLOMITE: very light grey, very light brownish, finely crystalline, part fine to medium crystalline, tightly interlocking, very poor vug porosity, no intercrystalline porosity, minor finely sucrosic recrystallization around vugs, no effective porosity, patchy siliceous replacement, milky chert nodules, trace pyrite blebs, no stain or cut. Trace grey, microcrystalline, pyritic and slightly argillaceous dolomite.

930-935 DOLOMITE: very light brownish, predominantly finely crystalline, very clean, part with slight bitumen specks, very poor vugs, slight sucrosic recrystallization around vugs, siliceous locally, no stain or cut, trace streaks with disseminated pyrite and argillaceous material.
Trace greenish, pyritic shale.

935-940 DOLOMITE: light brown, very finely crystalline, tightly interlocking rhombs, very clean, trace pyrite, siliceous replacement throughout, trace vugs with slight bitumen, trace stylolites, no stain or cut. Thin streaks, light grey, microcrystalline, slightly argillaceous.
SHALE: minor amounts, green, pyritic, dolomitic.

940-944 DOLOMITE: slightly darker, light brown, microcrystalline, clean, increasing siliceous, trace pyrite, tight, no stain or cut. Part light grey and slightly argillaceous.
SHALE: 15%, light grey, part waxy, disseminated pyrite, slightly dolomitic.

944-945 DOLOMITE: very light brownish, microcrystalline to very finely crystalline, siliceous replacement throughout, clean, tight, no stain o cut. Also light grey, microcrystalline to very finely crystalline, slightly argillaceous, pyrite blebs, slightly siliceous, trace silt, tight.
SHALE: light green, light grey, disseminated pyrite, dolomitic.

945-947 DOLOMITE: slightly darker, light brown, microcrystalline, occasional very finely crystalline, clean, tight. With 30% light grey, very fine to finely crystalline, tightly interlocking rhombs, argillaceous, silty, disseminated, tight.
SHALE: green, grey, platy, disseminated pyrite, slightly dolomitic.

947-950 DOLOMITE: grey, very finely crystalline to finely crystalline, tightly interlocking rhombs, argillaceous, pyrite blebs, patchy silicification, tight, no stain or cut.
DOLOMITE: brown, microcrystalline to very finely crystalline, very clean, siliceous, tight.
SHALE: 10%, green, pyritic.

MOUNT KINDLE 950m (-835m) (TVD -829.5m)

950-955 DOLOMITE: light brown, minor medium brown, very finely crystalline, clean, locally siliceous, tight.
DOLOMITE: minor amounts, grey, microcrystalline to very finely crystalline, pyrite, slightly argillaceous, tight.
Trace green shale.

955-960 DOLOMITE: darker, light to medium brown, very finely crystalline, minor finely crystalline, very tightly interlocking, trace scattered vugs, siliceous patches, weak fluorescence, no stain or cut.

960-965 DOLOMITE: medium brown, very finely crystalline, tightly interlocking rhombs, trace pyrite, scattered poor vugs and sucrosic recrystallization around vugs, no intercrystalline porosity, slight bitumen specks, barely visible fluorescence, no stain or cut. With 10% light brown, very finely sucrosic, trace silty, tight.

965-970 DOLOMITE: medium brown, very finely crystalline, part finely crystalline, finely sucrosic around scattered vugs with bitumen specks in 10-15% of sample, no intercrystalline porosity, slightly siliceous, very weak fluorescence in part, no stain or cut.

970-975 DOLOMITE: brown, very fine to finely crystalline, tightly interlocking rhombs, clean, slightly siliceous, 30% of sample is poorly very fine to finely sucrosic, probably recrystallization around vugs, poor vuggy porosity, very poor intercrystalline porosity, no stain or cut.

975-980 DOLOMITE: light to medium brown, very fine to finely crystalline, tight, with 35% finely crystalline to poorly sucrosic with bitumen specks, poor pin point vugs and small vugs, very poor intercrystalline porosity 2-4%, no stain or cut.

980-985 DOLOMITE: as above, predominantly tight. With 40% poorly finely sucrosic, bitumen specked throughout, pin point and small vugs, very poor intercrystalline porosity, 3-5%, no stain or cut.

985-990 DOLOMITE: light to medium brown, very finely sucrosic, part very fine to finely crystalline, slightly siliceous, only minor very poor pin point and small vugs, decrease to slight bitumen specks.

990-995 DOLOMITE: light to medium brown, very finely crystalline, tightly interlocking rhombs, decreasing porosity to scattered pin point vugs, trace bitumen specks.

995-1000 DOLOMITE: as above, very finely crystalline, tight, only trace vugs and bitumen, trace pyrite.

1000-1005 DOLOMITE: very fine crystalline, part finely crystalline, blocky, white, fine euhedral dolomite crystals, poor vugs and tight fractures, no stain or cut.

1005-1010 DOLOMITE: as above, slightly siliceous, few scattered vugs, white medium to coarse euhedral dolomite crystals, poor vugs at best, tight fractures, trace bitumen.

1010-1015 DOLOMITE: microcrystalline to very finely crystalline, brown, clean, trace bitumen coated stylolites, tight, only trace vugs with slight bitumen, no stain or cut. Trace crinoid fragments.

1015-1020 DOLOMITE: medium brown, very finely crystalline, 10% very poorly sucrosic, with slight bitumen specks, slightly siliceous, no intercrystalline porosity, slight increase pin point and small vugs, slight increase bitumen, no stain or cut.

1020-1025 DOLOMITE: as above, tight. 20% very light brown, microsucrosic to barely very finely sucrosic, slightly calcareous, very clean, trace silt, tight, softer, trace pin point porosity, very slight bitumen specks, no stain or cut.

1025-1030 DOLOMITE: part light brown, very finely crystalline, tight, part very light brown and sucrosic, 50% darker, bitumen specked, very poorly sucrosic, tight to very poor porosity, 1-2% locally, few pin point and small vugs, no stain or cut. Trace stylolites.

1030-1035 DOLOMITE: medium brown, very finely crystalline, slight increase pin point vugs, part poorly sucrosic, trace 1-2%, bitumen specks, trace euhedral crystals in larger vugs, no stain or cut.

1035-1040 DOLOMITE: very finely crystalline, decreasing microcrystalline, tight. Increasing poorly sucrosic, soft & friable, increase pin point and small vugs, trace quartz crystals in vugs and fractures, slight silicification near fractures, bitumen specks in 25% of sample, no stain or cut.

1040-1045 DOLOMITE: very finely crystalline, poor small vugs, decreasing porosity, slight bitumen specks and stylolites, trace quartz crystals.

1045-1050 DOLOMITE: poor pin point and small vuggy porosity, 1-2%, slightly siliceous, slight bitumen specks, very weak fluorescence, no stain or cut.

1050-1055 DOLOMITE: as above, decrease pin point vugs, poor small vuggy porosity, decrease to trace bitumen specks.

1055-1060 DOLOMITE: very finely crystalline, brown, tightly interlocking rhombs, scattered small vugs, euhedral dolomite and trace quartz crystals in vugs, only trace bitumen, very weak fluorescence.

1060-1065 DOLOMITE: very finely crystalline, tight, only scattered vugs, fine euhedral dolomite and quartz crystals, trace stylolites, only trace bitumen, no stain or cut.

1065-1070 DOLOMITE: very finely crystalline, tight, locally very poor pin point and small vugs, very weak fluorescence, no stain or cut. Trace pyrite blebs.

1070-1075 DOLOMITE: lighter, light to medium brown, becoming coarser, commonly finely crystalline, increasing euhedral white dolomite and quartz crystals in small vugs and fractures, increase poor vuggy porosity, no inter-crystalline porosity trace pyrite blebs, siliceous replacement throughout, mottled brown relic pellet texture common in siliceous chips, weak mineral fluorescence, no stain or cut.

1075-1092m SEE CORE DESCRIPTION #6

1092-1095 DOLOMITE: light to medium brown, very finely crystalline, euhedral crystals in poor vuggy and fracture porosity, pyrite blebs, spotty fluorescence, no stain or cut.

1095-1100 DOLOMITE: medium brown, very finely crystalline, silty residue, trace siliceous replacement, trace quartz crystals, trace anhydrite crystals, very poor small vug and fracture porosity at best, no stain or cut.

1100-1105 DOLOMITE: slighter darker, medium brown, microcrystalline to very finely crystalline, increasing siliceous replacement, blocky, hard, tight, trace pin point vugs.

1105-1110 DOLOMITE: light to medium brown, very finely crystalline, part very finely sucrosic, slightly siliceous, poor porosity, increase vugs, minor part with poor sucrosic porosity, possibly 6% in thin streak, dolomite and anhydrite crystals in vugs, trace bitumen, no stain or cut.

1110-1115 DOLOMITE: predominantly very finely crystalline, tightly interlocking rhombs, blocky, hard, tight, also part very finely sucrosic, sucrosic recrystallization around vugs, poor vuggy porosity locally, spotty very weak fluorescence, no stain or cut.

1115-1120 DOLOMITE: microcrystalline to very finely crystalline, decrease to trace vugs, tight, blocky. Part dark brown, microcrystalline, argillaceous, disseminated pyrite, tight, with trace black bitumen coated partings.

DRILLER'S TD 1120m

APPENDIX 4

CORE ANALYSIS

AGAT Laboratories
Core Services Division

CORE ANALYSIS REPORT

CHEVRON MTN. RIVER 0-18
65-38' X 129-02'
CORE 1: 146.00 - 157.40 m
CORE 2: 194.00 - 212.00 m
CORE 3: 212.00 - 239.00 m
CORE 4: 239.00 - 266.00 m
CORE 5: 789.00 - 797.80 m
CORE 6: 1075.00 - 1092.00 m

Prepared for:

CHEVRON CANADA RESOURCES

RC2637
January 1990

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AGAT LABORATORIES CORE SERVICES

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General Information

General Lithological Description

Sample Handling and Analysis Information

Abbreviations

Core Logs

CORE ANALYSIS DATA
CHEVRON MTN. RIVER

65-38' X 129-02'

COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER 0-18
LOCATION: 65 - 38' X 129 - 02'
FORMATION:
DRILLING FLUID:

AGAT LABORATORIES

W/O No: RC2637
Date: 23-01-90

FINAL CORE ANALYSIS DATA

Sample	Interval (m) Top	Base	Rep Thick (m)	Sample Length (m)	Gas Permeability Kmax (mD)	K90 (mD)	Vertical (mD)	Porosity	Density (kg/m3) Bulk	Grain	Residual Saturation Oil	Water	Remarks
			CORE NO. 1		146.00 - 157.40	(RECEIVED/CUT = 11.40/11.40m	TOTAL BOXES = 11)						
NA	146.00	157.40	11.40	-	-	-	-	-	-	-	-	-	not analyzed by request
			CORE NO. 2		194.00 - 212.00	(RECEIVED/CUT = 18.00/18.00m	TOTAL BOXES = 16)						
SP001P	194.00	194.20	.20	-	.02	-	-	.012	2690	2720	-	-	ls;mudstone;sl anh
NA	194.20	194.49	.29	-	-	-	-	-	-	-	-	-	ls;mudstone
002P	194.49	195.55	1.06	.10	5.19	.05	.01	.013	2680	2720	-	-	ls;mudstone;anh;hfrac
003P	195.55	196.43	.88	.10	.03	.02	<.01	.012	2690	2720	-	-	ls;vfxl
004P	196.43	197.19	.76	.11	<.01	<.01	<.01	.007	2710	2730	-	-	ls;vfxl;sl anh
001	197.19	198.02	.83	.10	.03	.02	<.01	.013	2680	2720	-	-	ls;vfxl
005P	198.02	199.15	1.13	.07	.45	.08	.75	.010	2690	2710	-	-	ls;vfxl;minvfrac
006P	199.15	199.88	.73	.12	.04	.03	.01	.010	2690	2720	-	-	ls;vfxl
007P	199.88	200.20	.32	.12	.06	.04	.01	.011	2700	2730	-	-	ls;vfxl;sl anh
008P	200.20	200.67	.47	.10	.05	.03	.01	.012	2730	2770	-	-	ls;mudstone;anh
009P	200.67	201.00	.33	.11	.04	.04	.01	.011	2700	2740	-	-	ls;mudstone;sl anh
010P	201.00	201.30	.30	.06	.59	.43	.02	.014	2680	2720	-	-	ls;vfxl;hfrac
002	201.30	201.69	.39	.10	.02	.02	<.01	.016	2690	2730	-	-	ls;vfxl;sl anh
011P	201.69	201.98	.29	.10	.03	.03	.01	.018	2690	2740	-	-	ls;vfxl;sl anh
012P	201.98	202.80	.82	.11	.03	.02	<.01	.013	2700	2740	-	-	ls;vfxl;sl anh
013P	202.80	203.78	.98	.07	.34	.08	.03	.017	2670	2710	-	-	ls;vfxl;hfrac
014P	203.78	204.53	.75	.12	.03	.02	<.01	.014	2720	2760	-	-	ls;vfxl;sl anh
003	204.53	204.90	.37	.09	.04	.02	.01	.017	2690	2740	-	-	ls;vfxl;sl anh

COMPANY: CHEVRON CANADA RESOURCES
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AGAT LABORATORIES

W/O No: RC2637
Date: 23-01-90

FINAL CORE ANALYSIS DATA

Sample	Interval (m) Top	Base	Rep Thick (m)	Sample Length (m)	Gas Permeability Kmax (mD)	K90 (mD)	Vertical (mD)	Porosity	Density (kg/m3) Bulk	Grain	Residual Saturation Oil	Water	Remarks
004	204.90	205.50	.60	.10	.02	.02	<.01	.011	2690	2720	-	-	ls;vfxl
005	205.50	206.17	.67	.10	1.33	.49	.06	.012	2680	2710	-	-	ls;vfxl;styl;minhfrac
006	206.17	206.64	.47	.08	.06	.04	.01	.012	2680	2710	-	-	ls;vfxl
007	206.64	206.95	.31	.08	1.80	.91	.31	.011	2680	2710	-	-	ls;vfxl;styl;minh&vfrac
008	206.95	207.17	.22	.08	8.30	1.67	.10	.012	2690	2720	-	-	ls;vfxl;styl;hfrac
009	207.17	207.57	.40	.08	.04	.03	.01	.010	2700	2720	-	-	ls;vfxl
010	207.57	207.77	.20	.09	.05	.04	.01	.012	2690	2720	-	-	ls;vfxl
011	207.77	208.08	.31	.08	.03	.02	.01	.012	2680	2720	-	-	ls;vfxl;styl
012	208.08	208.42	.34	.10	55.8	25.6	2.24	.015	2670	2720	-	-	ls;vfxl;h&vfrac
013	208.42	208.82	.40	.09	.08	.05	.02	.012	2690	2720	-	-	ls;vfxl
014	208.82	209.38	.56	.09	.06	.03	.02	.012	2710	2740	-	-	ls;vfxl;sl anh
015	209.38	210.05	.67	.09	.03	.03	<.01	.012	2680	2720	-	-	ls;vfxl
016	210.05	210.77	.72	.11	.32	.22	.09	.014	2680	2710	-	-	ls;vfxl;styl;minh&vfracs
017	210.77	211.36	.59	.11	.09	.01	.04	.013	2690	2720	-	-	ls;vfxl;minvfrac
018	211.36	211.52	.16	.06	.10	.06	.03	.015	2670	2710	-	-	ls;vfxl;styl;minhfrac
019	211.52	212.00	.48	.09	.07	.02	.12	.012	2690	2730	-	-	ls;vfxl;vfrac
			CORE NO. 3		212.00 -	239.00	(RECEIVED/CUT = 26.65/27.00m	TOTAL BOXES = 26)					
NA	212.00	238.65	26.65	-	-	-	-	-	-	-	-	-	not analyzed by request
LC	238.65	239.00	.35	-	-	-	-	-	-	-	-	-	lost core
			CORE NO. 4		239.00 -	266.00	(RECEIVED/CUT = 27.00/27.00m	TOTAL BOXES = 26)					
NA	239.00	266.00	27.00	-	-	-	-	-	-	-	-	-	not analyzed by request

COMPANY: CHEVRON CANADA RESOURCES
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LOCATION: 65 - 38' X 129 - 02'
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AGAT LABORATORIES

FINAL CORE ANALYSIS DATA

Sample	Interval (m) Top	Base	Rep Thick (m)	Sample Length (m)	Gas Permeability Kmax (mD)	K90 (mD)	Vertical (mD)	Porosity	Density (kg/m3) Bulk	Grain	Residual Saturation Oil	Water	Remarks
			CORE NO. 5		789.00 - 797.80 (RECEIVED/CUT = 8.80/ 8.80m TOTAL BOXES = 8)								
020	789.00	789.57	.57	.13	49.9	41.0	46.5	.130	2490	2860	-	-	dol;vfxl;p-pvug;fracs;calc
021	789.57	790.56	.99	.10	2.91	2.48	1.45	.084	2620	2860	-	-	dol;vfxl;minp-p;fracs;calc
022	790.56	791.28	.72	.10	4.93	.76	1.34	.021	2780	2840	-	-	dol;fxl;fracs;calc
023	791.28	791.69	.41	.10	.19	.18	.08	.030	2760	2840	-	-	dol;fxl;fracs;minp-p;calc
024	791.69	792.23	.54	.10	19.1	5.80	9.01	.023	2780	2840	-	-	dol;fxl;fracs;minvug;styl
025	792.23	793.43	1.20	.10	.35	.17	.19	.018	2790	2840	-	-	dol;fxl;fracs;calc
025A	793.43	794.45	1.02	.10	120. *	14.0	116. *	.006	2840	2850	-	-	dol;fxl;vfracs
026	794.45	795.11	.66	.10	25.4	6.29	5.44	.034	2760	2850	-	-	dol;fxl;fracs;anh;p-p;styl
027	795.11	795.71	.60	.20	17.1	8.02	23.0	.018	2800	2850	-	-	dol;fxl;fracs;calc;anh;styl
028	795.71	795.88	.17	.10	150.	127.	7.38	.059	2690	2860	-	-	dol;fxl;fracs;anh;calc;vug
029	795.88	796.33	.45	.10	2.51	1.33	.09	.018	2800	2850	-	-	dol;fxl;fracs;anh;calc;styl
030	796.33	796.53	.20	.10	819. *	1.14	65.7 *	.022	2790	2860	-	-	dol;fxl;fracs;calc;anh
031	796.53	796.80	.27	.10	.36	.15	8.48	.034	2760	2860	-	-	dol;fxl;fracs;anh;p-p
			CORE NO. 6		1075.00 - 1092.00 (RECEIVED/CUT = 17.00/17.00m TOTAL BOXES = 17)								
032	1075.00	1075.48	.48	.10	1.51	1.28	1.98	.076	2630	2850	-	-	dol;vfxl;fracs;styl;calc
033	1075.48	1076.01	.53	.10	376. *	-	704. *	.043	2730	2850	-	-	dol;vfxl;fracs;calc;anh
034	1076.01	1076.62	.61	.11	12.3	4.64	11.3	.081	2630	2860	-	-	dol;vfxl;fracs;calc;anh
035	1076.62	1078.00	1.38	.11	6.35	4.84	3.50	.092	2600	2860	-	-	dol;vfxl;fracs;styl
036	1078.00	1079.04	1.04	.13	76.4	8.40	23.4	.075	2650	2870	-	-	dol;vfxl;vfracs;minvug
037	1079.04	1079.82	.78	.09	1.65	1.41	.44	.070	2670	2870	-	-	dol;vfxl;fracs;styl

* - Affected by fracture or crack as mentioned in remarks

COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER 0-18
LOCATION: 65 - 38' X 129 - 02'
FORMATION:
DRILLING FLUID:

AGAT LABORATORIES

W/O No: RC2637
Date: 23-01-90

FINAL CORE ANALYSIS DATA

Sample	Interval (m) Top	Base	Rep Thick (m)	Sample Length (m)	Gas Permeability Kmax (mD)	K90 (mD)	Vertical (mD)	Porosity	Density (kg/m3) Bulk	Grain	Residual Saturation Oil	Water	Remarks
038	1079.82	1081.88	2.06	.10	104.	.05	77.5	.029	2780	2860	-	-	dol;vfxl;vfracs;styl;calc
039	1081.88	1082.09	.21	.10	5450. *	<.01	25.0 *	.013	2770	2800	-	-	dol;vfxl;vfrac;tt
NA	1082.09	1082.69	.60	-	-	-	-	-	-	-	-	-	dol;rubble
040	1082.69	1083.71	1.02	.09	.35	.29	.07	.051	2710	2850	-	-	dol;vfxl;fracs;calc;styl
NA	1083.71	1084.39	.68	-	-	-	-	-	-	-	-	-	dol;rubble
040A	1084.39	1085.03	.64	.10	.11	.10	.05	.065	2670	2860	-	-	dol;vfxl;fracs;calc
041	1085.03	1085.55	.52	.10	.10	.07	.05	.057	2700	2860	-	-	dol;vfxl;vfrac;calc
042	1085.55	1085.98	.43	.07	104.	.66	13.8	.078	2630	2850	-	-	dol;vfxl;vfracs
043	1085.98	1086.48	.50	.08	410. *	5.14	319. *	.080	2620	2850	-	-	dol;vfxl;vfrac;anh
044	1086.48	1086.85	.37	.09	3.47	2.29	6.03	.039	2730	2850	-	-	dol;vfxl;fracs;anh;minvug
045	1086.85	1087.44	.59	.11	3390. *	14.8	2460. *	.060	2660	2830	-	-	dol;vfxl;vfrac;calc;anh
046	1087.44	1087.60	.16	.08	456.	25.7	194.	.058	2670	2830	-	-	dol;vfxl;vfracs;anh;minvug
047	1087.60	1088.01	.41	.11	2420. *	-	2480. *	.055	2680	2830	-	-	dol;vfxl;vfrac;anh
048	1088.01	1088.90	.89	.11	308.	137.	262.	.058	2710	2880	-	-	dol;vfxl;fracs;anh
049	1088.90	1089.28	.38	.11	4.87	4.00	3.13	.041	2760	2880	-	-	dol;vfxl;fracs;anh
050	1089.28	1089.72	.44	.08	1.72	1.55	16.1	.032	2790	2880	-	-	dol;vfxl;fracs;anh;minvug
051	1089.72	1090.05	.33	.10	1.31	1.15	.22	.036	2740	2850	-	-	dol;vfxl;fracs;anh;minvug
052	1090.05	1090.27	.22	.08	4.35	.40	5.51	.022	2790	2850	-	-	dol;vfxl;vfrac;p-pvug
053	1090.27	1090.64	.37	.10	4.61	3.94	3.34	.042	2740	2860	-	-	dol;vfxl;fracs;p-pvugs
054	1090.64	1090.94	.30	.12	5.48	5.00	6.88	.044	2730	2850	-	-	dol;vfxl;fracs;p-pvugs
055	1090.94	1091.49	.55	.10	43.2	2.84	6.13	.042	2760	2880	-	-	dol;vfxl;fracs;anh;vug
056	1091.49	1092.00	.51	.11	1.37	.93	.62	.019	2750	2800	-	-	dol;vfxl;fracs;minvug

* - Affected by fracture or crack as mentioned in remarks

COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER 0-18
LOCATION: 65 - 38' X 129 - 02'

AGAT LABORATORIES

W/O No: RC2637
Date: 23-01-90

CALCULATED DATA REPORT

Sample	Interval (m) Top	Base	Rep. Thick. m	Cuml.	Porosity * Rep. Thick. Por-m	Cuml.	Wt. Avg. Porosity (Arith.)	Kmax * Rep. Thick. mD-m	Cuml.	Wt. Avg. Kmax (Arith.)
		CORE NO. 1	146.00 -	157.40	(RECEIVED/CUT = 11.40/11.40m	TOTAL BOXES = 11)				
NA	146.00	157.40	11.40	-	-	-	-	-	-	-
		CORE NO. 2	194.00 -	212.00	(RECEIVED/CUT = 18.00/18.00m	TOTAL BOXES = 16)				
SP001P	194.00	194.20	.20	.20	.002	.002	.012	.004	.004	.020
NA	194.20	194.49	.29	-	-	-	-	-	-	-
002P	194.49	195.55	1.06	1.26	.014	.016	.013	5.501	5.505	4.369
003P	195.55	196.43	.88	2.14	.011	.027	.012	.026	5.532	2.585
004P	196.43	197.19	.76	2.90	.005	.032	.011	.004	5.536	1.909
001	197.19	198.02	.83	3.73	.011	.043	.011	.025	5.561	1.491
005P	198.02	199.15	1.13	4.86	.011	.054	.011	.509	6.069	1.249
006P	199.15	199.88	.73	5.59	.007	.061	.011	.029	6.098	1.091
007P	199.88	200.20	.32	5.91	.004	.065	.011	.019	6.117	1.035
008P	200.20	200.67	.47	6.38	.006	.071	.011	.024	6.141	.963
009P	200.67	201.00	.33	6.71	.004	.074	.011	.013	6.154	.917
010P	201.00	201.30	.30	7.01	.004	.078	.011	.177	6.331	.903
002	201.30	201.69	.39	7.40	.006	.085	.011	.008	6.339	.857
011P	201.69	201.98	.29	7.69	.005	.090	.012	.009	6.348	.825
012P	201.98	202.80	.82	8.51	.011	.101	.012	.025	6.372	.749
013P	202.80	203.78	.98	9.49	.017	.117	.012	.333	6.705	.707
014P	203.78	204.53	.75	10.24	.011	.128	.012	.022	6.728	.657
003	204.53	204.90	.37	10.61	.006	.134	.013	.015	6.743	.636

CALCULATED DATA REPORT

Sample	Interval (m) Top	Base	Rep. Thick. m	Cuml.	Porosity * Rep. Thick. Por-m	Cuml.	Wt. Avg. Porosity (Arith.)	Kmax * Rep. Thick. mD-m	Cuml.	Wt. Avg. Kmax (Arith.)
004	204.90	205.50	.60	11.21	.007	.141	.013	.012	6.755	.603
005	205.50	206.17	.67	11.88	.008	.149	.013	.891	7.646	.644
006	206.17	206.64	.47	12.35	.006	.154	.012	.028	7.674	.621
007	206.64	206.95	.31	12.66	.003	.158	.012	.558	8.232	.650
008	206.95	207.17	.22	12.88	.003	.160	.012	1.826	10.058	.781
009	207.17	207.57	.40	13.28	.004	.164	.012	.016	10.074	.759
010	207.57	207.77	.20	13.48	.002	.167	.012	.010	10.084	.748
011	207.77	208.08	.31	13.79	.004	.170	.012	.009	10.094	.732
012	208.08	208.42	.34	14.13	.005	.176	.012	18.958	29.052	2.056
013	208.42	208.82	.40	14.53	.005	.180	.012	.032	29.084	2.002
014	208.82	209.38	.56	15.09	.007	.187	.012	.034	29.117	1.930
015	209.38	210.05	.67	15.76	.008	.195	.012	.020	29.137	1.849
016	210.05	210.77	.72	16.48	.010	.205	.012	.230	29.368	1.782
017	210.77	211.36	.59	17.07	.008	.213	.012	.053	29.421	1.724
018	211.36	211.52	.16	17.23	.002	.215	.012	.016	29.437	1.708
019	211.52	212.00	.48	17.71	.006	.221	.012	.034	29.471	1.664
		CORE NO. 3	212.00 -	239.00	(RECEIVED/CUT = 26.65/27.00m	TOTAL BOXES = 26)				
NA	212.00	238.65	26.65	-	-	-	-	-	-	-
LC	238.65	239.00	.35	-	-	-	-	-	-	-
		CORE NO. 4	239.00 -	266.00	(RECEIVED/CUT = 27.00/27.00m	TOTAL BOXES = 26)				
NA	239.00	266.00	27.00	-	-	-	-	-	-	-

COMPANY: CHEVRON CANADA RESOURCES
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LOCATION: 65 - 38' X 129 - 02'

AGAT LABORATORIES

W/O No: RC2637
Date: 23-01-90

CALCULATED DATA REPORT

Sample	Interval (m) Top	Base	Rep. Thick. m	Cuml.	Porosity * Rep. Thick. Por-m	Cuml.	Wt. Avg. Porosity (Arith.)	Kmax * Rep. Thick. mD-m	Cuml.	Wt. Avg. Kmax (Arith.)
		CORE NO. 5	789.00 - 797.80	(RECEIVED/CUT = 8.80/ 8.80m	TOTAL BOXES = 8)					
020	789.00	789.57	.57	18.28	.074	.295	.016	28.438	57.908	3.168
021	789.57	790.56	.99	19.27	.083	.378	.020	2.881	60.789	3.155
022	790.56	791.28	.72	19.99	.015	.393	.020	3.550	64.339	3.219
023	791.28	791.69	.41	20.40	.012	.406	.020	.078	64.417	3.158
024	791.69	792.23	.54	20.94	.012	.418	.020	10.293	74.710	3.568
025	792.23	793.43	1.20	22.14	.022	.440	.020	.420	75.130	3.393
025A	793.43	794.45	1.02	23.16	.006	.446	.019	-	-	-
026	794.45	795.11	.66	23.82	.022	.468	.020	16.744	91.873	3.857
027	795.11	795.71	.60	24.42	.011	.479	.020	10.291	102.164	4.184
028	795.71	795.88	.17	24.59	.010	.489	.020	25.531	127.695	5.193
029	795.88	796.33	.45	25.04	.008	.497	.020	1.130	128.825	5.145
030	796.33	796.53	.20	25.24	.004	.502	.020	-	-	-
031	796.53	796.80	.27	25.51	.009	.511	.020	.097	128.922	5.054
		CORE NO. 6	1075.00 - 1092.00	(RECEIVED/CUT = 17.00/17.00m	TOTAL BOXES = 17)					
032	1075.00	1075.48	.48	25.99	.036	.547	.021	.725	129.647	4.988
033	1075.48	1076.01	.53	26.52	.023	.570	.021	-	-	-
034	1076.01	1076.62	.61	27.13	.049	.619	.023	7.485	137.131	5.055
035	1076.62	1078.00	1.38	28.51	.127	.746	.026	8.763	145.895	5.117
036	1078.00	1079.04	1.04	29.55	.078	.824	.028	79.407	225.301	7.624
037	1079.04	1079.82	.78	30.33	.055	.879	.029	1.287	226.589	7.471

COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER 0-18
LOCATION: 65 - 38' X 129 - 02'

AGAT LABORATORIES

W/O No: RC2637
Date: 23-01-90

CALCULATED DATA REPORT

Sample	Interval (m) Top	Base	Rep. Thick. m	Cuml.	Porosity * Rep. Thick. Por-m	Cuml.	Wt. Avg. Porosity (Arith.)	Kmax * Rep. Thick. mD-m	Cuml.	Wt. Avg. Kmax (Arith.)
038	1079.82	1081.88	2.06	32.39	.060	.939	.029	214.460	441.049	13.617
039	1081.88	1082.09	.21	32.60	.003	.942	.029	-	-	-
NA	1082.09	1082.69	.60	-	-	-	-	-	-	-
040	1082.69	1083.71	1.02	33.62	.052	.994	.030	.357	441.406	13.129
NA	1083.71	1084.39	.68	-	-	-	-	-	-	-
040A	1084.39	1085.03	.64	34.26	.042	1.035	.030	.070	441.476	12.886
041	1085.03	1085.55	.52	34.78	.030	1.065	.031	.052	441.528	12.695
042	1085.55	1085.98	.43	35.21	.034	1.098	.031	44.812	486.340	13.813
043	1085.98	1086.48	.50	35.71	.040	1.138	.032	-	-	-
044	1086.48	1086.85	.37	36.08	.014	1.153	.032	1.284	487.624	13.515
045	1086.85	1087.44	.59	36.67	.035	1.188	.032	-	-	-
046	1087.44	1087.60	.16	36.83	.009	1.197	.033	72.993	560.617	15.222
047	1087.60	1088.01	.41	37.24	.023	1.220	.033	-	-	-
048	1088.01	1088.90	.89	38.13	.052	1.272	.033	273.982	834.600	21.888
049	1088.90	1089.28	.38	38.51	.015	1.287	.033	1.850	836.450	21.720
050	1089.28	1089.72	.44	38.95	.014	1.301	.033	.757	837.207	21.494
051	1089.72	1090.05	.33	39.28	.012	1.313	.033	.432	837.639	21.325
052	1090.05	1090.27	.22	39.50	.005	1.318	.033	.956	838.595	21.230
053	1090.27	1090.64	.37	39.87	.016	1.334	.033	1.706	840.301	21.076
054	1090.64	1090.94	.30	40.17	.013	1.347	.034	1.644	841.946	20.960
055	1090.94	1091.49	.55	40.72	.023	1.370	.034	23.746	865.692	21.260
056	1091.49	1092.00	.51	41.23	.010	1.379	.033	.699	866.390	21.014

COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER 0-18
LOCATION: 65 - 38' X 129 - 02'

AGAT LABORATORIES

W/O No: RC2637
Date: 23-01-90

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

GROUPING BY POROSITY RANGES

Porosity Range	Samples		Metres		Wt. Avg.	Wt. Avg. Kmax		Frequency %	
	In Rng	Cuml.	In Rng	Cuml.	Porosity (Arith)	Arith	Geom	In Rng	Cuml.
0.000-0.0199	37	37	20.47	20.47	.013	2.052	.153	54.20	54.20
0.020-0.0399	10	47	6.02	26.49	.029	41.304	11.303	15.94	70.14
0.040-0.0599	9	56	4.36	30.85	.050	92.172	6.883	11.54	81.68
0.060-0.0799	5	61	3.37	34.22	.072	37.478	5.399	8.92	90.60
0.080-0.0999	3	64	2.98	37.20	.087	6.419	5.607	7.89	98.49
0.100-0.1199	0	64	.00	37.20	.000	.000	.000	.00	98.49
0.120-0.1399	1	65	.57	37.77	.130	49.890	49.890	1.51	100.00

COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER 0-18
LOCATION: 65 - 38' X 129 - 02'

AGAT LABORATORIES

W/O No: RC2637
Date: 23-01-90

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

GROUPING BY PERMEABILITY RANGES

Permeability Range	Samples		Metres		Wt. Avg.	Wt. Avg. Kmax		Frequency %	
	In Rng	Cuml.	In Rng	Cuml.	Porosity (Arith)	Arith	Geom	In Rng	Cuml.
0.000-0.009	1	1	.76	.76	.007	.001	.005	2.01	2.01
0.010-0.019	0	1	.00	.76	.000	.000	.000	.00	2.01
0.020-0.039	10	11	5.74	6.50	.013	.028	.028	15.20	17.21
0.040-0.079	10	21	4.33	10.83	.012	.051	.050	11.46	28.67
0.080-0.159	5	26	2.31	13.14	.037	.097	.096	6.12	34.79
0.160-0.319	1	27	.41	13.55	.030	.190	.190	1.09	35.87
0.320-0.639	7	34	5.62	19.17	.022	.378	.373	14.88	50.75
0.640-1.249	0	34	.00	19.17	.000	.000	.000	.00	50.75
1.250-2.499	7	41	3.52	22.69	.039	1.520	1.510	9.32	60.07
2.500-4.999	7	48	3.50	26.19	.045	3.816	3.691	9.27	69.34
5.000-9.999	4	52	2.96	29.15	.053	5.991	5.937	7.84	77.18
10.000-19.999	3	55	1.75	30.90	.042	16.038	15.766	4.63	81.81
20.000-39.999	1	56	.66	31.56	.034	25.370	25.370	1.75	83.56
40.000-79.999	4	60	2.50	34.06	.072	60.220	58.568	6.62	90.18
80.000-159.999	3	63	2.66	36.72	.039	107.075	106.597	7.04	97.22
160.000-319.999	1	64	.89	37.61	.058	307.840	307.840	2.36	99.58
320.000-639.999	1	65	.16	37.77	.058	456.460	456.460	.42	100.00

COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER 0-18
LOCATION: 65 - 38' X 129 - 02'

AGAT LABORATORIES

W/O No: RC2637
Date: 23-01-90

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

POROSITY-METRES OF STORAGE CAPACITY LOST FOR SELECTED POROSITY CUT OFF

Porosity Cut Off	Metres		Capacity Lost		Capacity Remaining		Wt. Avg. Arith	
	Lost	Remaining	Por-Metres	%	Por-Metres	%	Mean	Median
0.000	.00	41.23	.000	.00	1.379	100.00	.033	
0.020	21.70	19.53	.280	20.30	1.099	79.70	.056	
0.040	27.92	13.31	.461	33.41	.919	66.59	.069	
0.060	33.81	7.42	.762	55.21	.618	44.79	.083	
0.080	37.68	3.55	1.045	75.82	.334	24.18	.094	
0.100	40.66	.57	1.305	94.63	.074	5.37	.130	
0.120	40.66	.57	1.305	94.63	.074	5.37	.130	
0.140	41.23	.00	1.379	100.00	.000	.00	.000	

Total Storage Capacity in Porosity-Metres = 1.379

COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER 0-18
LOCATION: 65 - 38' X 129 - 02'

AGAT LABORATORIES

W/O No: RC2637
Date: 23-01-90

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

MILLIDARCY-METRES OF FLOW CAPACITY LOST FOR SELECTED PERMEABILITY CUT OFF

Permeability Cut Off	Metres		Capacity Lost		Capacity Remaining		Wt. Avg. Geom.	
	Lost	Remaining	mD-Metres	%	mD-Metres	%	Mean	Median
0.000	.00	37.77	.000	.00	866.387	100.00	.940	.617
0.010	.76	37.01	.001	.00	866.387	100.00	1.047	1.274
0.020	1.95	35.82	.025	.00	866.363	100.00	1.047	1.274
0.040	8.33	29.44	.234	.03	866.153	99.97	2.042	2.240
0.080	11.23	26.54	.414	.05	865.973	99.95	3.706	3.438
0.160	13.14	24.63	.606	.07	865.781	99.93	5.220	4.322
0.320	13.55	24.22	.684	.08	865.704	99.92	5.521	4.501
0.640	19.17	18.60	2.807	.32	863.580	99.68	12.465	8.527
1.250	19.17	18.60	2.807	.32	863.580	99.68	12.465	8.527
2.500	22.69	15.08	8.156	.94	858.231	99.06	20.404	15.337
5.000	26.19	11.58	21.513	2.48	844.874	97.52	34.210	44.938
10.000	29.15	8.62	39.248	4.53	827.139	95.47	62.423	67.737
20.000	30.90	6.87	67.316	7.77	799.071	92.23	88.631	85.942
40.000	31.56	6.21	84.060	9.70	782.328	90.30	101.233	93.659
80.000	34.06	3.71	234.609	27.08	631.779	72.92	146.378	
160.000	36.72	1.05	519.412	59.95	346.976	40.05	326.888	
320.000	37.61	.16	793.394	91.57	72.993	8.43	456.585	
640.000	37.77	.00	866.387	100.00	.000	.00	.000	

Total Flow Capacity in Millidarcy-Metres (Arithmetic) = 866.387

COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER 0-18
LOCATION: 65 - 38' X 129 - 02'

AGAT LABORATORIES

W/O No: RC2637
Date: 23-01-90

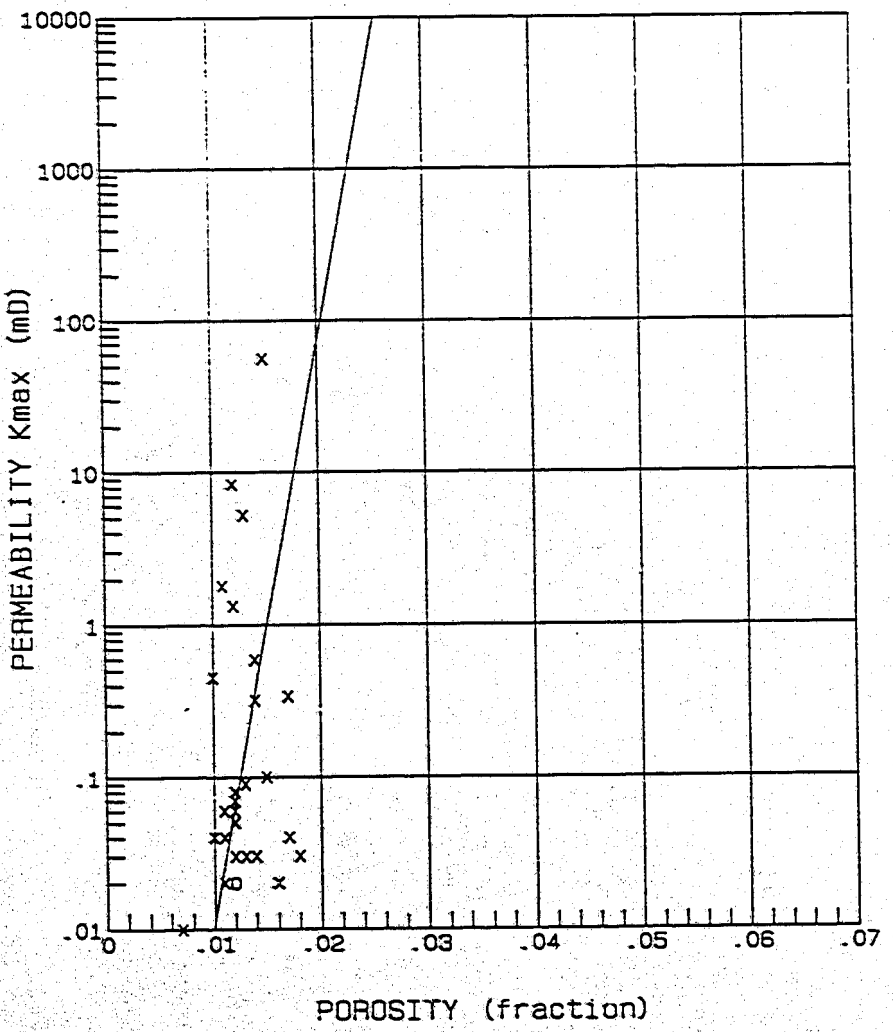
SUMMARY OF CORE DATA REPORT

		PERMEABILITY RANGES, MILLIDARCY						
	Total	100.00 +	10.00 - 99.99	1.00 - 9.99	0.50 - 0.99	0.10 - 0.49	0.01 - 0.09	< 0.01
Thickness (m)	37.01	3.71	4.91	9.98	.30	7.05	11.06	.00
Fraction of analyzed core		.100	.133	.270	.008	.190	.299	.00
Porosity thickness (por-m)	1.240	.164	.275	.452	.004	.207	.138	.00
Permeability thickness (mD-m)	866.39	631.78	195.36	36.44	.18	2.16	.47	-
Wt. average Porosity	.034	.044	.056	.045	.014	.029	.012	.00
Wt. average Permeability	23.41	170.30	39.79	3.65	.59	.31	.04	-
Wt. average Residual Oil	.000	.000	.000	.000	.000	.000	.000	.00
Wt. average Residual Water	.000	.000	.000	.000	.000	.000	.000	.00

Wt. average (geom.) Kmax., mD for All Samples = 1.05
Wt. average (harm.) Kmax., mD for All Samples = .11

COMPANY: CHEVRON CANADA RESOURCES	FIGURE: 1
LOCATION: 65 - 38' X 129 - 02'	W/O NO: RC2637
INTERVAL: 146.00- 266.00	DATE: 23-01-90
FORMATION: KEE SCARP	

POROSITY - PERMEABILITY (Kmax) CORRELATION



x - FULL DIAMETER o - SMALL PLUG

NOTE: Samples are not weighted

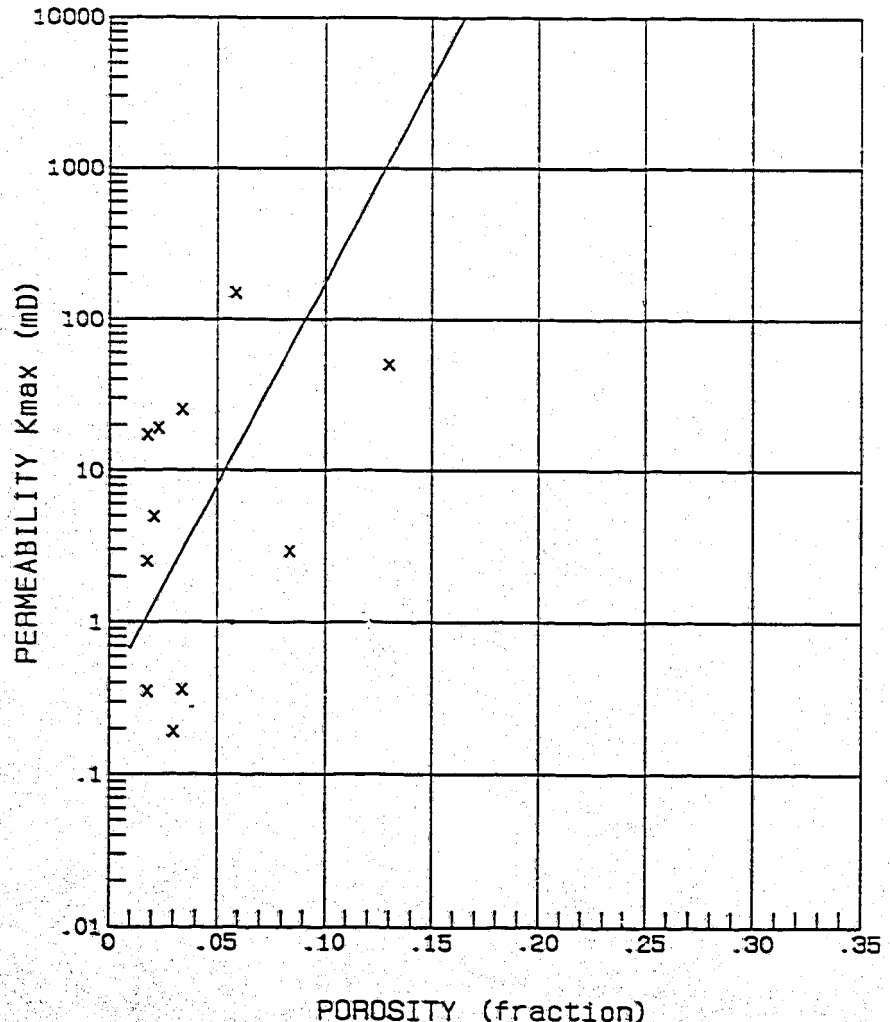
Equation: Log (Kmax) = -5.79 + 382.09 * Porosity

Correlation Coefficient: r = .154

AGAT

COMPANY: CHEVRON CANADA RESOURCES	FIGURE: 2
LOCATION: 55 - 39' X 129 - 02'	W/O NO: RC2637
INTERVAL: 789.00- 796.80	DATE: 23-01-90
FORMATION: ARNICA	

POROSITY - PERMEABILITY (Kmax) CORRELATION



x - FULL DIAMETER o - SMALL PLUG

NOTE: Samples are not weighted

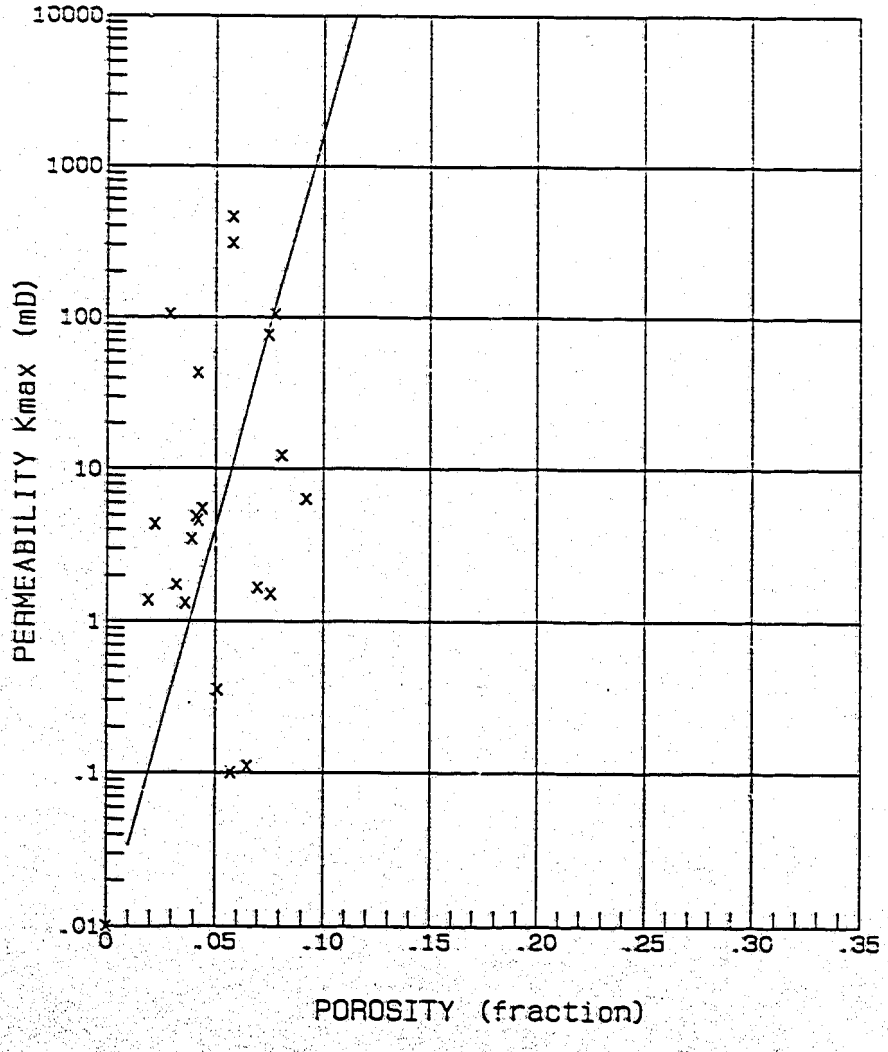
Equation: Log (Kmax) = -.44 + 26.89 * Porosity

Correlation Coefficient: r = .398

AGAT

COMPANY: CHEVRON CANADA RESOURCES	FIGURE: 3
LOCATION: 55 - 38' X 129 - 02'	W/O NO: RC2537
INTERVAL: 1075.00-1092.00	DATE: 23-01-90
FORMATION: MOUNT KINDLE	

POROSITY - PERMEABILITY (Kmax) CORRELATION



x - FULL DIAMETER o - SMALL PLUG

NOTE: Samples are not weighted

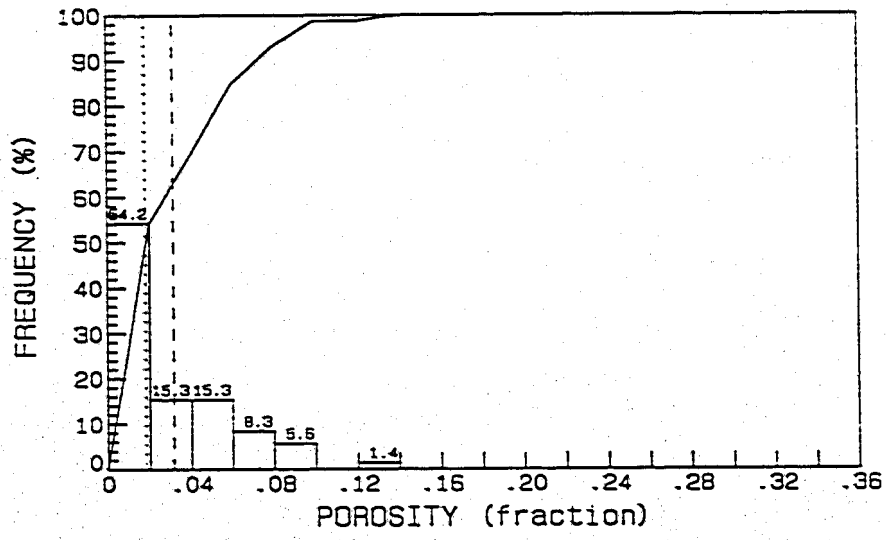
Equation: Log (Kmax) = -1.99 + 52.16 * Porosity

Correlation Coefficient: r = .837

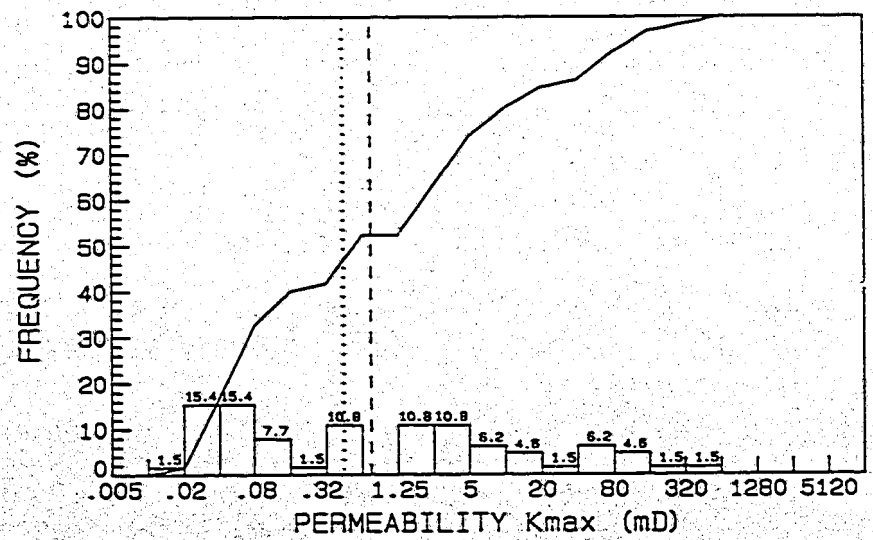
AGAT

COMPANY: CHEVRON CANADA RESOURCES	FIGURE: 4
LOCATION: 65 - 38' X 129 - 02'	W/O NO: RC2637
INTERVAL: 194.00-212.00	DATE: 23-01-90
FORMATION:	

POROSITY FREQUENCY DISTRIBUTION



PERMEABILITY Kmax FREQUENCY DISTRIBUTION



Arith. Mean Porosity	POROSITY	Arith. Mean: .032
Geom. Mean Permeability		Median: .018
Cumulative Frequency %	PERMEABILITY	Geom. Mean: .76
Median		Median: .45

AGAT

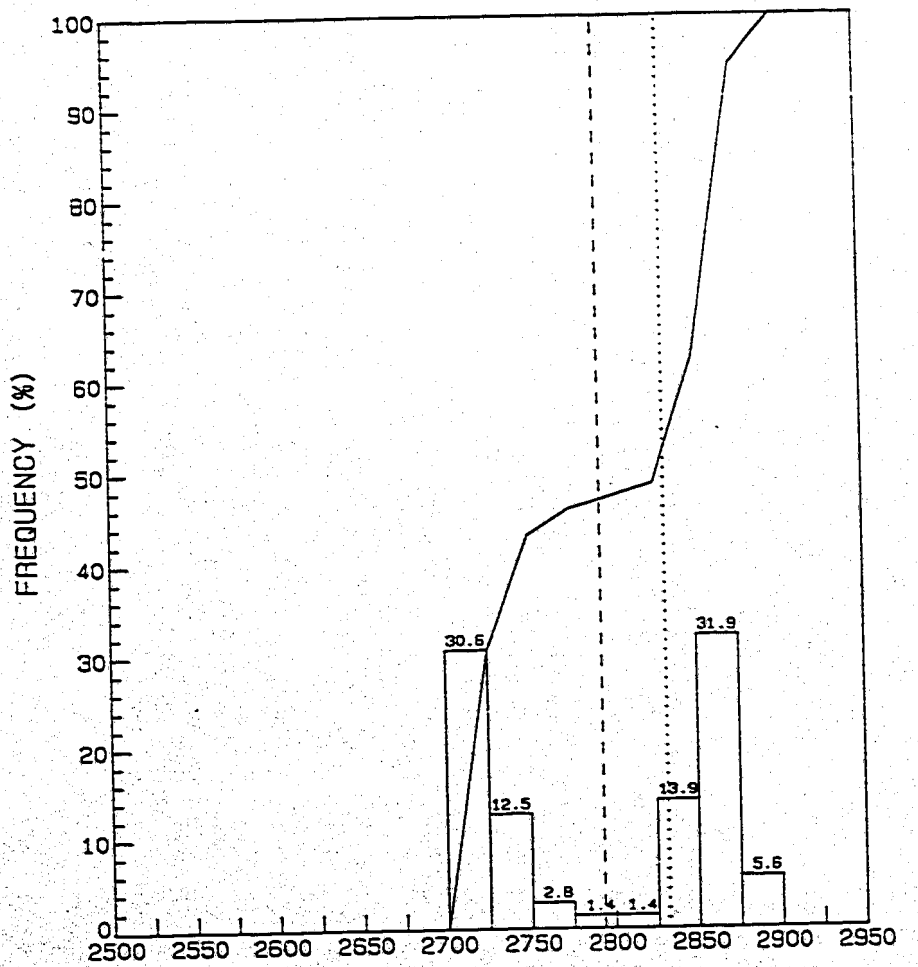
COMPANY: CHEVRON CANADA RESOURCES FIGURE: 5

LOCATION: 65 - 38' X 129 - 02' W/O NO: RC2637

INTERVAL: 194.00-212.00 DATE: 23-01-90

FORMATION:

GRAIN DENSITY FREQUENCY DISTRIBUTION



Arithmetic Mean - - - - Wt. Avg. Arith. Mean: 2793

Median .....

Cumulative Frequency % ——— Grain Density Median: 2832

AGAT

GENERAL LITHOLOGICAL DESCRIPTIONS

GENERAL LITHOLOGICAL DESCRIPTIONS

Well: CHEVRON MTN. RIVER 0-18
Location: 65-38' X 129-02'
Job No: RC2637

Formation: KEE SCARP
Cored Interval: 1) 146.00-157.40 m
2) 194.00-212.00 m

Recovery: 1) 11.40 m
2) 18.00 m

CORE	DEPTH INTERVAL	CORE ANALYSIS	LITHOLOGY	REMARKS
1	146.00-147.70		Limestone	Creamy brown, very fine crystalline grainstone composed of amphipora with lesser amount of tabular stromatooporoids; argillaceous stylolites present. No visible porosity; no fluorescence.
1	147.70-157.40		Limestone	Creamy brown, very fine crystalline grainstone composed mainly of tabular stromatoporoids; massive stroms and corals are present; dolomitized; argillaceous stylolites common. Low porosity; no fluorescence.
2	194.00-195.55	SP1P 002P	Mudstone	Yellowish grey, blocky, calcareous mudstone (microcrystalline limestone); fractured; fractures filled with anhydrite; tight. No visible porosity, some fluorescence at the top.
2	195.55-212.00	003P-014P 001-019	Limestone	Brownish grey, very fine crystalline limestone; fragmented; bioclasts mostly between intraclasts very common (amphipora); stylolites abundant; fractures filled with anhydrite common; calcareous mudstone at 200.20-201.00 m; tight. No visible porosity; some patchy fluorescence.

GENERAL LITHOLOGICAL DESCRIPTIONS

Well: CHEVRON MTN. RIVER 0-18
Location: 65-38' X 129-02'
Job No: RC2637

Formation: KEE SCARP
Cored Interval: 3) 212.00-239.00 m
4) 239.00-266.00 m

Recovery: 3) 26.65 m
4) 27.00 m

CORE	DEPTH INTERVAL	CORE ANALYSIS	LITHOLOGY	REMARKS
3	212.00-214.38	N/A	Limestone	Dark grey, fine crystalline limestone; fractured at the top; amphipora abundant; dolomitized. Low visible porosity; no fluorescence.
3	214.38-217.82	N/A	Limestone	Grey to creamy grey, very fine crystalline limestone; fragmented; stromatoporoids abundant; amphipora held in slightly argillaceous motrix between intraclasts and stromatoporoids; dolomitized. No visible porosity; no fluorescence.
3	217.82-220.00	N/A	Limestone	Dark grey, very fine crystalline limestone; fragmented; amphipora rich limestone interbedded with tight fragmented limestone. No visible porosity; no fluorescence.
3	220.00-226.65	N/A	Limestone	Grey to creamy grey, very fine crystalline dolomite; fractures and cracks abundant; argillaceous matrix between intraclasts; stromatoporoid abundant; amphipora present. No visible porosity; no fluorescence.
3	226.65-228.70		Limestone	Grey to light grey, very fine crystalline limestone; fragmented; amphipora held in slightly argillaceous matrix between intraclasts; dolomitized; coarse crystalline calcite filling vugs. No visible porosity; no fluorescence.
3	228.70-232.08		Limestone	Creamy grey, very fine crystalline limestone; stylolites abundant; amphipora present. No visible porosity; no fluorescence.

GENERAL LITHOLOGICAL DESCRIPTIONS

Well: CHEVRON MTN. RIVER 0-18
Location: 65-38' X 129-02'
Job No: RC2637

Formation: KEE SCARP
Cored Interval: 3) 212.00-239.00 m
4) 239.00-266.00 m

Recovery: 3) 26.65 m
4) 27.00 m

CORE	DEPTH INTERVAL	CORE ANALYSIS	LITHOLOGY	REMARKS
3	232.08-233.55		Limestone	Dark grey, fine crystalline, amphipora rich limestone; stylolites present. No visible porosity; no fluorescence.
3	233.55-237.00		Limestone	Creamy, fine crystalline grainstone composed mainly of massive stromatoporoids. No visible porosity; no fluorescence.
3	237.00-239.00		Limestone	Grey to dark grey, very fine limestone; dolomitized amphipora, branching and tabular stroms; rare corals; tight. No visible porosity; no fluorescence.
4	239.00-241.40		Limestone	Brownish grey, very fine crystalline wackestone to packstone, composed of amphipora; tabular and massive stromatoporoids; vertical fractures and stylolites present; dolomitized. No visible porosity; no fluorescence.
4	241.40-254.04		Limestone	Dark grey, very fine crystalline limestone; crinoid rich beds and laminae present; amphipora, tabular and massive stromatoporoids present; rare corals; some bivalves at base; dolomitized. No visible porosity; no fluorescence.

GENERAL LITHOLOGICAL DESCRIPTIONS

Well: CHEVRON MTN. RIVER 0-18
Location: 65-38 ' X 129-02'
Job No: RC2637

Formation: 5) ARNICA
6) MOUNT KINDLE
Cored Interval: 5) 789.00- 797.80 m
6) 1075.00-1092.00 m

Recovery: 5) 8.80 m
6) 17.00 m

CORE	DEPTH INTERVAL	CORE ANALYSIS	LITHOLOGY	REMARKS
5	789.00-790.56		Dolomite	Dark grey, very fine crystalline dolomite; fractures filled with coarse crystalline anhydrite and calcite; low and high amplitude stylolites present. Some pin-point vuggy porosity; no fluorescence.
5	790.56-797.80		Dolomite	Grey to light grey, fine crystalline dolomite; stylolites and fractures filled with anhydrite and calcite common; partially, penetrative fractures common; cracks present; rubble zone at base. Low visible porosity; no fluorescence.
6	1075.00-1079.04		Dolomite	Grey, very fine crystalline dolomite; algal origin at the top; fractures and cracks very common; some fractures filled with coarse crystalline anhydrite and calcite; low amplitude stylolites common; rubble zone at 1078.11 - 1078.63 m. Low visible porosity; no fluorescence.
6	1079.04-1085.98		Dolomite	Grey, very fine crystalline dolomite; laminated; low amplitude stylolites common; fractures present; calcite and anhydrite filling fractures at the top; rubble zone at 1082.09 m. Low visible porosity; no fluorescence.
6	1085.98-1092.00		Dolomite	Grey, very fine crystalline dolomite; mottled fabric; cracks and fractures common; rubble zone at 1088.43 - 1088.93 m; some fractures filled with anhydrite; vugs filled with anhydrite common; irregularly distributed vugs present. Low to fair visible porosity; no fluorescence.

SAMPLE HANDLING

AGAT LABORATORIES CORE SERVICES

SAMPLE HANDLING AND ANALYSIS INFORMATION

Company: CHEVRON CANADA RESOURCES
Well: CHEVRON MTN. RIVER 0-18
Location: 65-38' X 129-02'
Field:

Coring Equipment:
Coring Fluid:
Core Diameter: .10 m
Total Cored: 109.20 m
Total Recovered: 108.85 m

Job Number: RC2637
Date: January 25, 1990

HANDLING

Core Transported in:	Boxes
Cutting Solution:	Water
Cleaning solvent:	Toluene
Extraction:	CO2-Toluene
Cleaning Time:	48 Hours
Drying Equipment:	Convectional Oven
Drying Time:	48 Hours at 108°C

ANALYSIS

Grain volume measured by Boyle's Law using helium
Bulk volume measured by calipering on right-cylindrical samples
Bulk volume measured by archimedes principle using H_2O on non-cylindrical samples
Permeability measured on .10 m full diameter samples
Permeability measured on 38 mm diameter drilled plugs
Full diameter core sandblasted before Kh measurements

REMARKS

Slabbed the core
Boxed the slabs
One floppy diskette

ABBREVIATIONS

COMMON ABBREVIATIONS

abnt	Abundant	c	Coarse (ly)	euhed	Euhedral
abv	Above	calc	Calcite (areous)		
Alg	Algae (al)	carb	Carbonaceous		
alt	Altered (ing)	cbl	Cobble (64-256 mm)	f	Fine (ly)
amor	Amorphous	Ceph	Cephalopod	fau	Fauna
Amph	Amphipora	cgl	Conglomerate	Fe	Iron-Ferruginous
ang	Angular	chk	Chalk (y)	Fe-mag	Fero-magnesian
anhy	Anhydrite (ic)	chlor	Chlorite	fenst	Fenestral
app	Appear	cht	Chert	fis	Fissile
apr	Apparent	chty	Cherty	fl	fill (ed)
aprox	Approximate (ly)	cl	Clastic	fld	Feldspar (thic)
arg	Argillaceous	cln	Clean	flk	Flake
ark	Arkose (ic)	clr	Clear	flky	Flaky
asph	Asphalt (ic)	cly	Clay (ey)	flor	Fluorescence
apha	Aphanitic	cmt	Cement (ed)	flt	Fault (ed)
		col	Color (ed)	fltg	Floating
bcm	Become (ing)	com	Common	Foram	Foraminifera
bd	Bed	coq	Coquina	fos	Fossil (iferous)
bdd	Bedded	Cor	Coral	fr	Fair
bdg	Bedding	crbnt	Carbonate	frac	Fracture (ed)
Belm	Belmnites	Crin	Crinoid (al)	frag	Fragment (al)
bent	Bentonite (ic)	crm	Cream	fri	Friable
bf	Buff	crpxl	Cryptocrystalline	frmwk	Framework
biocl	Bioclastic	ctc	Contact	fros	Frosted
bioturb	Bioturbated				
bit	Bitumen (inous)				
bl	Blue (ish)	deb	Debris	g	Good
blk	Black	decr	Decrease (ing)	Gast	Gastropod
blky	Blocky	desi	Desiccation	gl	Glass (y)
bnd	Band (ed)	dism	Disseminated	glau	Glauconite (ic)
Brac	Brachiopod	dk	Dark (er)	gn	Green
brec	Breccia (ted)	dns	Dense (er)	gr	Grain (ed)
bri	Bright	dol	Dolomite (ic)	gran	Granular
brit	Brittle	drsy	Druse (y)	grd	Grade (ed)
brn	Brown	dtrl	Detrital (us)	grdg	Grading
Bry	Bryozoa			grnl	Granule (2-4 mm)
bulb	Bulbous			gy	Gray
bur	Burrowed	elg	Elongate	gyp	Gypsum (iferous)

COMMON ABBREVIATIONS (CONTINUED)

hd	Hard
hfrac	Horizontal Fracture
hi	High
hrtl	Horizontal
hvy	Heavy
hydc	Hydrocarbon
ig	Igneous
imbed	Imbedded
imp	Impression
incl	Included (sion)
incr	Increase (ing)
indst	Indistinct
intbd	Interbedded
intcl	Intraclast (s)
intfrag	Interfragmental
intgran	Intergranular
intlam	Interlaminated
intr	Intrusion (ive)
intv	Interval
intxl	Intercrystalline
ireg	Irregular
ird	Iridescent
intrsk	Intraskeletal
kao	Kaolin
lam	Laminated
lchd	Leached
len	Lentil (cular)
lith	Lithographic
lmy	Limy
lrg	Large (er)
ls	Limestone
lse	Loose
lstr	Lustre
lt	Light (er)
m	Medium
mar	Maroon
mas	Massive
mat	Material,matter
mica	Mica (ceous)
mic	Micro
mky	Milky
mnr	Minor
mnrl	Mineral (ized)
mnut	Minute
Mol	Mollusca
mot	Mottled
mrly	Marly
mtx	Matrix
n	No,none,non
nod	Nodule
num	Numerous
o	Oil
occ	Occasional
od	Odor
ool	Oolite (ic)
op	Opaque
org	Organic
orng	Orange
orth	Orthoclase
Ost	Ostracod
ovgth	Overgrowth
ox	Oxidized
P	Preliminary (as suffix)
pbl	Pebble (4-64 mm)
pel	Pellet
perm	Permeability
pet	Petroleum (iferous)
phos	Phosphate (ic)
pk	Pink
plag	Plagioclase
Plcy	Pelecypod
pl	Plant
plty	Platy
por	Porous (sity)
pos	Possible (ility)
p-p	Pin point
pred	Predominant (ly)
prim	Primary
prob	Probable (ly)
prom	Prominent (ly)
pt	Part (ly)
ptch	Patch (es)
ptg	Parting
purp	Purple
pyr	Pyrite (ic)(ized)
pyrbit	Pyrobitumen
qtz	Quartz
qtzc	Quartzitic
qtzs	Quartzose
rd	Round (ed)
repl	Replaced (ing)(ment)
rexl	Recrystallized
rmn	Remains (nant)
rr	Rare
rsns	Resinous
rthy	Earthy
s	Small
sa	Salt (y)
S	Sulphur
s&p	Salt & pepper

COMMON ABBREVIATIONS (CONTINUED)

sat	Saturated
sb	Sub
sc	Scales
scat	Scattered
sd	Sand (1/16 - 2 mm)
sdy	Sandy
sec	Secondary
sed	Sediment (ary)
sft	Soft
sh	Shale
shad	Shadow
shy	Shaly
sid	Siderite (ic)
sil	Silica (eous)
sks	Slickensided
sl	Slight (ly)
sln	Solution
slt	Silt
sltst	Siltstone
slty	Silty
sm	Smooth
SP	Small Plug (as prefix)
sp	Spot (ted)(ty)
spec	Speck (led)
spl	Sample
srt	Sort (ed)(ing)
strg	Stringer
Strom	Stromatoporoid
stromlt	Stromatolite
struc	Structure
styl	Stylolite (ic)
suc	Sucrosic
sug	Sugary
surf	Surface
sz	Size
sup	Supported
tab	Tabular
tex	Texture
Tham	Thamnopora
thk	Thick
thn	Thin
thru	Throughout
tr	Trace
trnsl	Translucent
trnsp	Transparent
tt	Tight
tub	Tubular
uncons	Unconsolidated
unident	Unidentifiable
up	Upper
v	Very
v frac	Very fractured
var	Variable
vcol	Varicolored
vfrac	Vertical Fracture
vgt	Varigated
vn	Vein
vrtl	Vertical
vug	Vug (gy)(ular)
/	With
w	Well
wh	White
wk	Weak
wthrd	Weathered
wtr	Water
wvy	Wavy
wxy	Waxy
xbd	Cross-bedded
xbdg	Cross-bedding
xl	Crystal (line)
xlam	Cross-laminated
yel	Yellow
zn	Zone
*	Broken core
>10000	Permeability over 10000 mD
<0.01	Permeabilty less than 0.01 mD
CC	Cracked Core
Dr	Drilled
LC	Lost Core
RU	Rubble
mD	milliDarcy

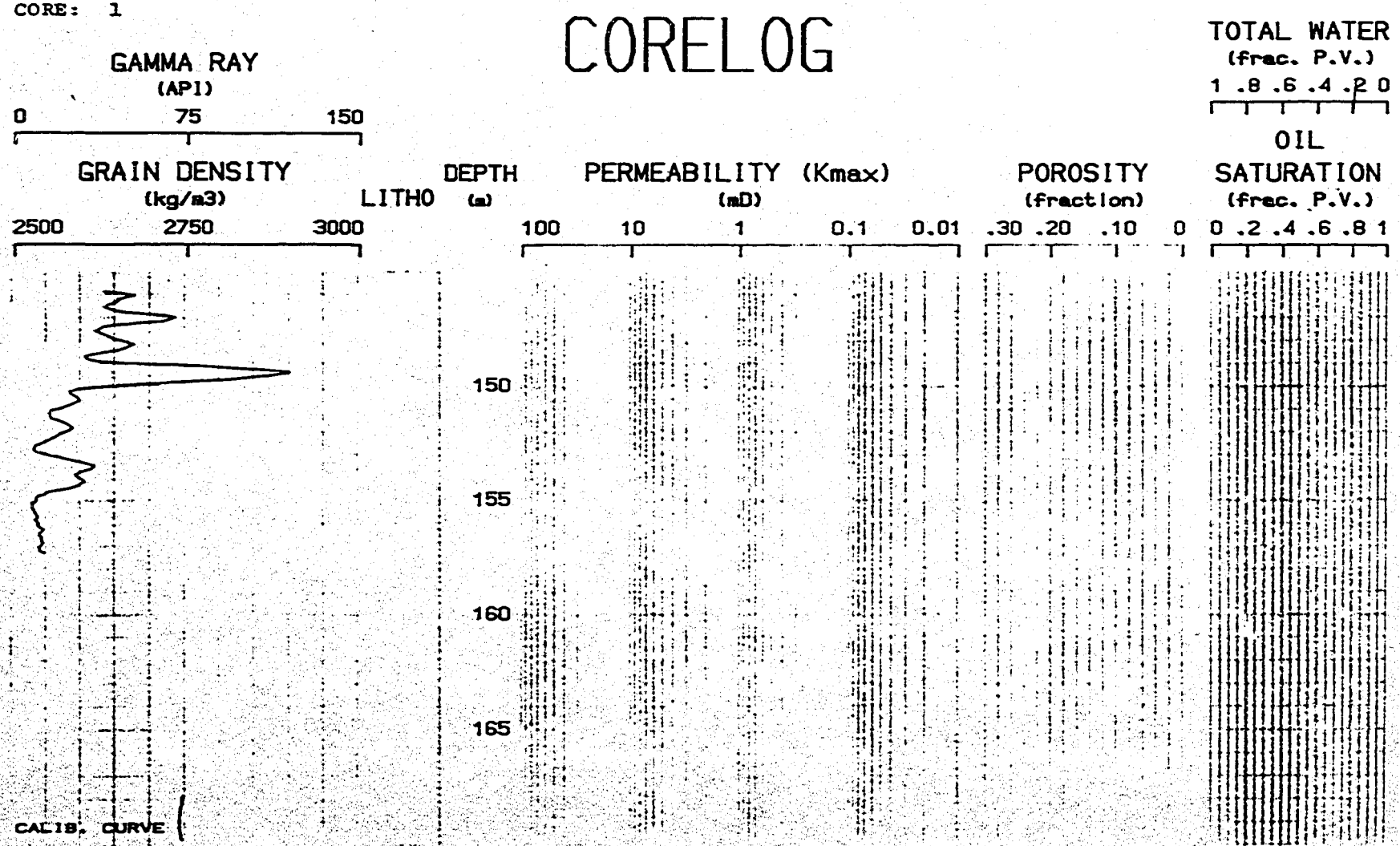
CORE LOG

COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER O-18
LOCATION: 65 - 38' X 129 - 02'
FIELD:
FORMATION(S):
W/O: RC2637
CORE: 1

AGAT Labs

RECOVERY: 98.85 m
CORED INTERVAL: 146.00-157.40
DRLG. FLD.:
ELEVATION: KB:
GRD:

CORELOG

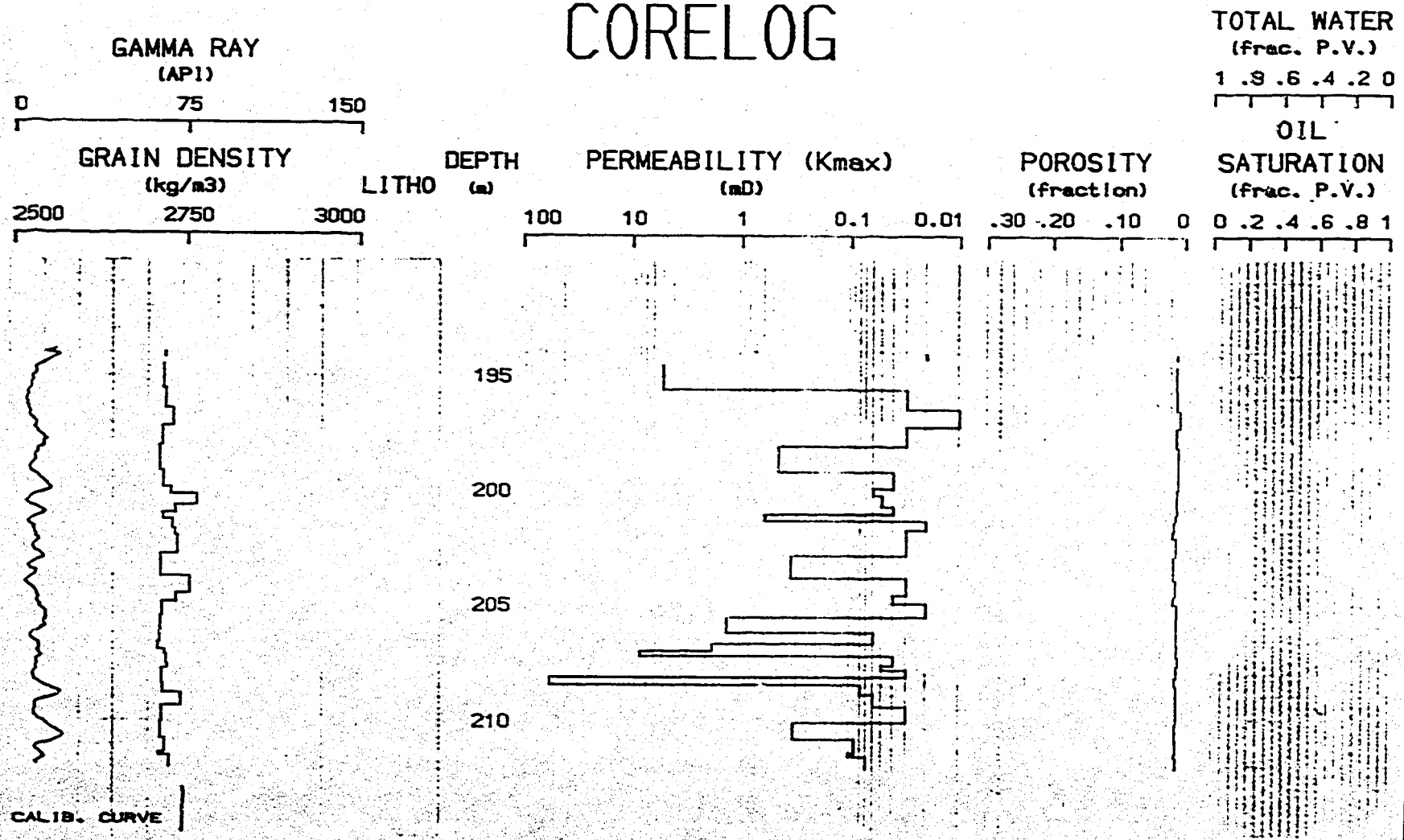


COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER O-18
LOCATION: 65 - 38' X 129 - 02'
FIELD:
FORMATION(S):
W/O: RC2637
CORE: 2

AGAT Labs

RECOVERY: 98.85 m
CORED INTERVAL: 194.00-212.00
DRLG. FLD.:
ELEVATION: KB:
GRD:

CORELOG



CORES: 3&4

GRD:

CORELOG

GAMMA RAY
(API)
0 75 150

GRAIN DENSITY
(kg/m3)
2500 2750 3000

DEPTH
LITHO (metres)

PERMEABILITY (Kmax)
(mD)
100 10 1 0.1 0.01

POROSITY
(fraction)
.30 .20 .10 0

TOTAL WATER
(frac. P.V.)
1 .8 .6 .4 .2 0

OIL SATURATION
(frac. P.V.)
0 .2 .4 .6 .8 1

215
220
225
230
235
240
245
250
255
260
265
270

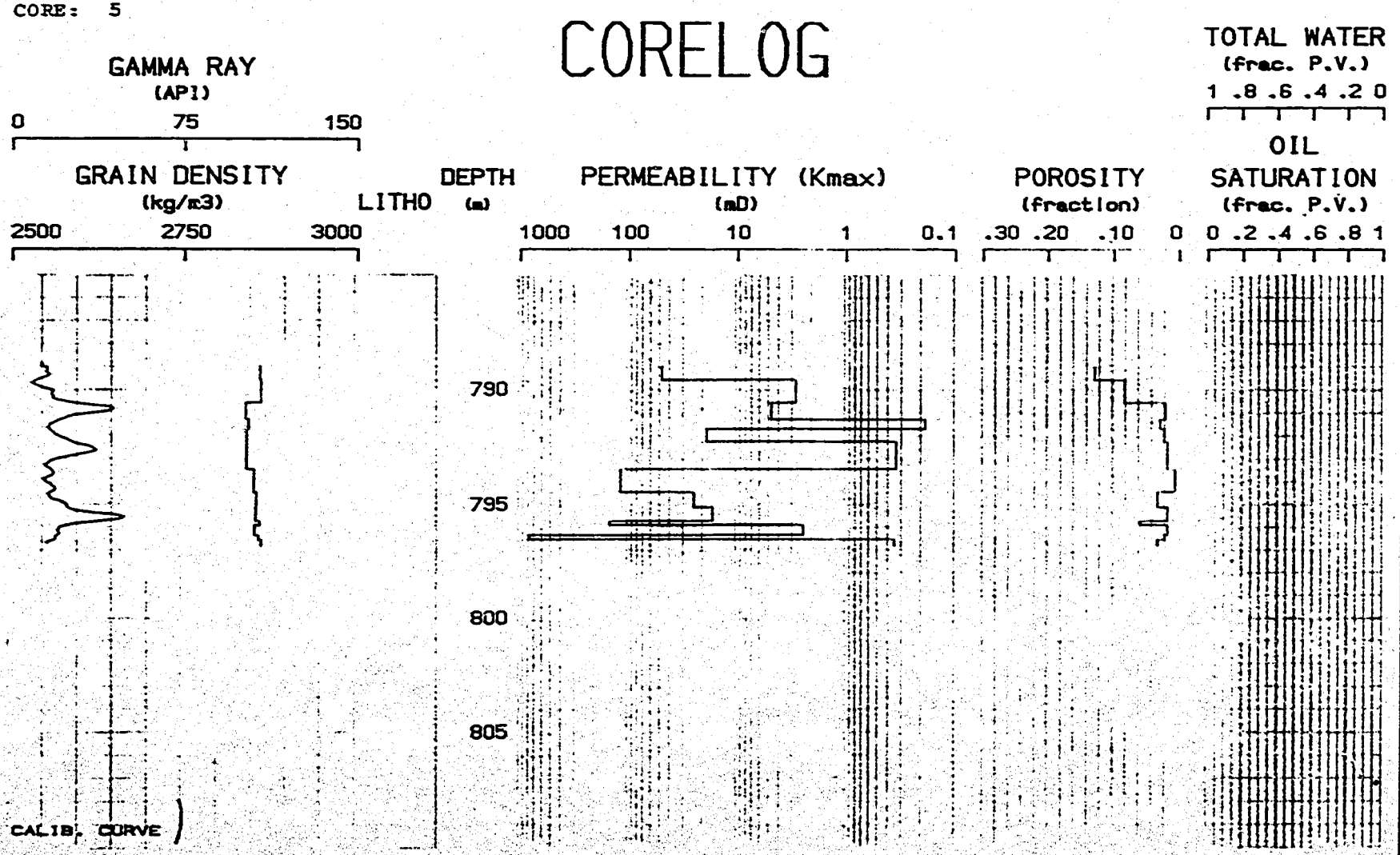
CALIB. CURVE

COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER O-18
LOCATION: 65 - 38' X 129 - 02'
FIELD:
FORMATION(S):
W/O: RC2637
CORE: 5

AGAT Labs

RECOVERY: 98.85 m
CORED INTERVAL: 789.00-797.80
DRLG. FLD.:
ELEVATION: KB:
GRD:

CORELOG

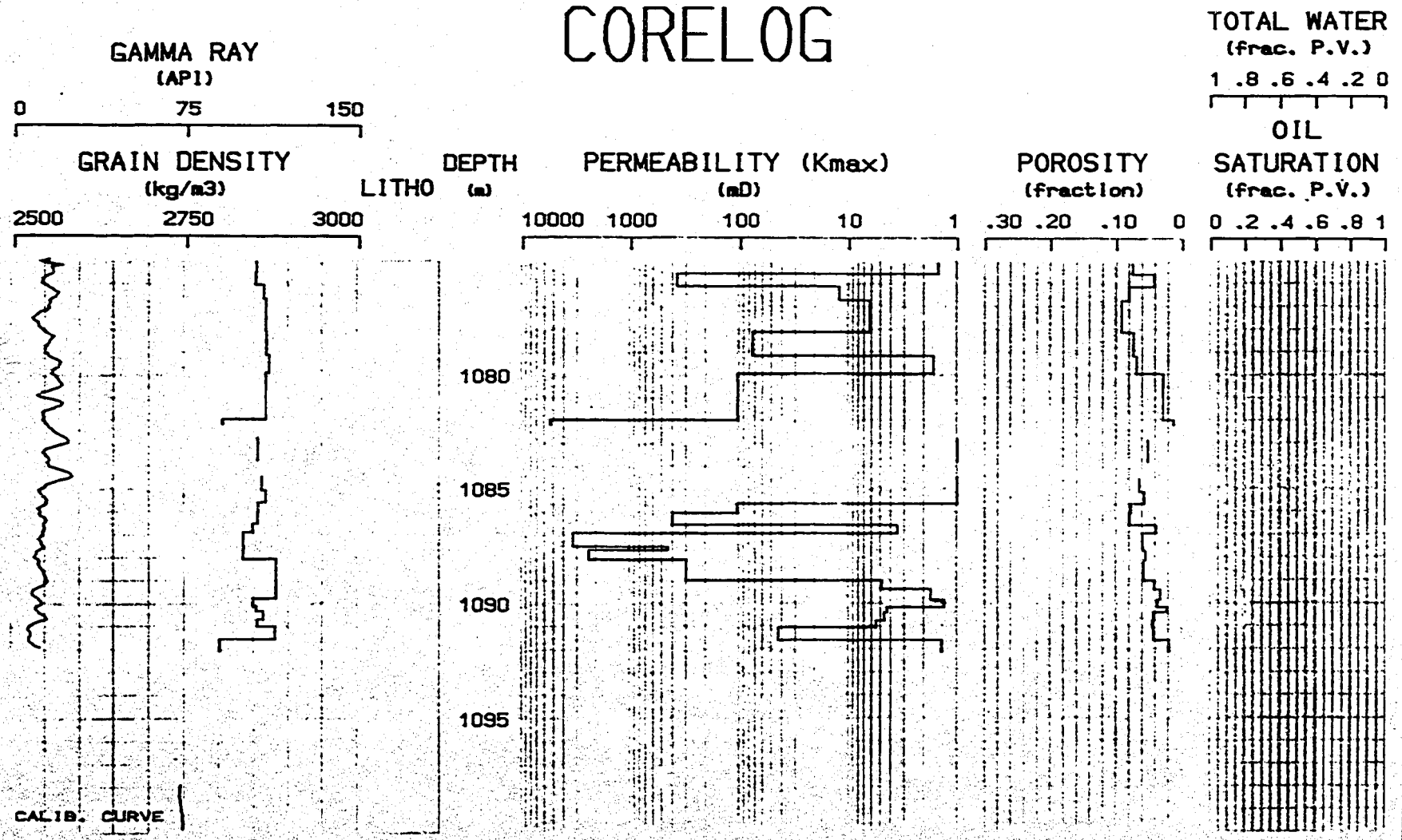


COMPANY: CHEVRON CANADA RESOURCES
WELL: CHEVRON MTN. RIVER O-18
LOCATION: 65 - 38' X 129 - 02'
FIELD:
FORMATION(S):
W/O: RC2637
CORE: 6

AGAT Labs

RECOVERY: 98.85 m
CORED INTERVAL: 1075.00-1092.00
DRLG. FLD.:
ELEVATION: KB:
GRD:

CORELOG



CHEVRON MOUNTAIN RIVER 0-18

CORE #1 KEE SCARP
INTERVAL: 146-157.4m (-31 to -42.4m)
CUT: 11.4m
RECOVERED: 11.4m (100%)

CORING TIMES:

146m/23,7,5,4,4/7,4,6,5,5/6,7,8,7,7/4,6,5,5,5/7,5,6,7,5/151m
151m/6,6,6,5,5/6,6,7,7,5/7,7,7,7,6/6,6,5,7,10/7,7,6,9,10/156m
156m/12,8,10,9,10/10,10/157.4m

146.00-147.45 (1.45m) LIMESTONE: packed Amphipora floatstone, mottled light to dark brown, light brown Amphipora with 2-3mm X-sec, dense, cryptocrystalline, no dolomitization, no intrafossil porosity. Matrix is dark brown, very fine to finely crystalline, packstone or possibly grainstone, fine to medium fossil debris throughout, pellets, Amphipora and coral, bitumen rich, difficult to interpret texture with dark bitumen coatings throughout, very slightly silty, **very tight.** Top has remnant fragments of microcrystalline to very finely crystalline wackestone mixed with Amphipora floatstone in thin stylolitic brecciated zone. Base has decreasing Amphipora, occasional corals and grades into grainstone below. Occasional small fractures are filled with clear crystalline calcite and trace pyrite, rarely clear calcite fills primary "shelter type" voids. Bitumen coated stylolites and minor stylolitic brecciation locally. Spotty weak cut and fluorescence from bitumen coated contacts between fossil fragments and matrix, strong hydrocarbon odour from fresh break.

147.45-148.00 (0.55m) LIMESTONE: medium brown, very finely crystalline, fine grainstone, pellets and fine to medium fossil fragments, scattered Amphipora, possibly coral, stromatoporoid fragments at base, grading to stromatoporoid rich limestone below, trace silty, less intergranular bitumen than in Amphipora limestone above, bitumen coated stylolites, **very tight,** dense, hard. One tight, subvertical fracture, filled with crystalline calcite runs through this interval. Trace weak cut and fluorescence from bitumen.

148.00-150.40 (2.40m) LIMESTONE: packed tabular stromatoporoid floatstone, stromatoporoid are light brown, cryptocrystalline, dense, no intrafossil porosity. Matrix comprises 20-30% of interval, dark brown, very fine to fine crystalline, fine pellet grainstone or packstone, with scattered fine to medium fossil fragments, bitumen and dead organic residue left in acid, no silt, no dolomitization, **very tight.** Base is mixed stromatoporoid and Amphipora, trace corals. Tabular stromatoporoid are oriented horizontal to 30 dips. Very tight bitumen coated microfractures cut the stromatoporoid and are usually lost in the matrix. Spotty weak fluorescence and cut from bitumen in microfractures, stylolites and stromatoporoid boundaries. Less than 1% clear crystalline calcite filling small primary "shelter type" voids.

150.40-151.70 (1.30m) LIMESTONE: floatstone, packed stromatoporoid, coral and possibly Amphipora fragments, in very fine crystalline, grainstone matrix as above, less matrix than above. This interval has turbulent jumbled texture much of it with stylolitic brecciation, orientations in fragments up to 50 to horizontal, bitumen coated stylolitic sutures throughout, bitumen coats most fossil fragment boundaries, spotty weak fluorescence and cut from bitumen coatings, hydrocarbon odour from fresh break. **Very tight.** One thin band of grainstone with stromatoporoid fragments.

151.70-153.50 LIMESTONE: large tabular stromatoporoid floatstone, with solitary corals
(1.80m) common and locally possibly Amphipora, cryptocrystalline, increase matrix, medium brown, very finely crystalline grainstone matrix as above, bitumen and dead organic residue in acid, decrease bitumen coated stylolites, trace weak spotty cut and fluorescence from bitumen at fragments boundaries, **very tight.**

153.50-156.90 LIMESTONE: floatstone, mixed stromatoporoid, solitary corals, locally
(3.40m) Amphipora. Generally smaller, tabular stromatoporoid than above, with increase in corals. Vague subhorizontal layering. Matrix is dark grainstone with bitumen as above, **very tight,** spotty weak cut and fluorescence from microfractures and fossil fragment boundaries coated with bitumen, calcite filling occasional small "shelter type" primary voids.

156.90-157.40 LIMESTONE: this interval consists of broken pieces of core with a
(0.50m) subvertical fracture lined with crystalline calcite. Amphipora, coral and stromatoporoid floatstone, darker than rest of core, very dark brown, increase in ratio of matrix to fragments, matrix is very finely crystalline, fine grainstone? very rich in bitumen, difficult to interpret texture, **very tight,** slight increase in weak spotty cut.

End of core. Jammed off at fracture.

CORE #2 KEE SCARP
INTERVAL: 194-212m (-79 to -97m)
CUT: 18m
RECOVERED: 18m (100%)

CORING TIMES:
194m/20,26,11,10,8/8,8,8,8,8/7,7,9,10,8/10,8,8,8,8/8,7,8,8,8,/199m
199m/9,9,9,8,9/9,9,9,9,10/9,8,8,8,8/8,9,10,12,15/12,11,16,12,13/204m
204m/13,17,12,13,13/11,11,13,16,13/11,11,9,12,9/13,14,17,13,12/208m
208m/12,13,13,12,11/13,12,12,11,10/10,12,11,10,12/18,12,11,14,13/212m

194.00-195.50 (1.50m) LIMESTONE: medium brown, microcrystalline to very finely crystalline, vague pellets and subrounded grains, recrystallized packstone possibly, 1/4mm spheres with light coloured external halo may be algae, trace very small thin shelled bivalves, tight microfractures healed with calcite, trace to slight dolomitization, scattered very fine rhombs, trace bitumen, dead organic residue and trace siliceous residue in acid, **very tight**, dense. Occasional stylolitic sutures (5-8 per m) with several cm amplitude. Trace cut from bitumen on stylolites. Thin 20cm bed near top and several small bands of very dark brown, very finely crystalline, very dolomitic limestone, bitumen rich, disseminated pyrite, trace silty, tight, trace weak cut. Dolomitization may be from solutions associated with stylolitic breaks.

195.50-198.75 (3.25m) LIMESTONE: medium to dark brown, very finely crystalline, very fine to fine grainstone, pellets, algae possibly, Amphipora fragments, trace brachiopods, trace ostracod? bitumen specked, trace silt or silicification, trace pyrite, slightly dolomitic to minor very dolomitic in darker bitumen rich bands, **very tight.** Grading to Amphipora floatstone with grainstone matrix, Amphipora to 5mm X-section. Very tight calcite filled microfractures, also tight bitumen coated microfractures. Bitumen coated stylolites about 5 per m, trace weak cut from bitumen.

198.75-199.70 (0.95m) LIMESTONE: medium to dark brown, very finely crystalline, very fine to fine grainstone or packstone, pellets, algae, slight bitumen specked, only trace dolomite rhombs, Amphipora fragments common, few fragments of cryptocrystalline, cabbage like stromatoporoids, occasional solitary corals, possibly burrows, **very tight**, dense, trace weak cut.

199.70-200.20 (0.50m) LIMESTONE: dark brown, very fine to fine grainstone, pellets, algae, with floating Amphipora fragments, bitumen specks, disseminated pyrite, only very slight dolomitization, bitumen coated stylolites throughout, weak cut from bitumen, **very tight.**

200.20-201.25 (1.05m) LIMESTONE: light brown, microcrystalline to very finely crystalline, difficult to interpret origin, very fine to fine biofragmental, possibly packstone, pellets and algae, trace Amphipora, begin patchy dolomitization, 5-10% very fine dolomite rhombs common with small patches to 30% dolomitized, dolomitization appears to be associated with micro-fractures healed with calcite and trace dolomite, bitumen coated stylolites, **very tight**, spotty very weak fluorescence and barely visible cut. Small band with Amphipora common.

201.25-202.30 (1.05m) LIMESTONE: Amphipora and in part detached stromatoporoid floatstone. Matrix is very fine to fine dolomitic grainstone, or possibly packstone, 20-40% dolomitization, very fine to barely fine dolomite rhombs, bitumen specked, **very tight**, trace weak spotty cut. Part with stylolitic brecciation, black bitumen coatings.

202.30-204.40 LIMESTONE: dark brown, microcrystalline to very finely crystalline, very
(2.10m) fine to fine grainstone or packstone, only trace dolomitization, very dense, **very tight.** Few bands with detached cabbage stromatoporoid fragments and Amphipora, bitumen coated stylolites, wispy stylolites locally, trace weak cut.

204.40-205.20 LIMESTONE: Amphipora floatstone, with very fine to fine grained
(0.80m) dolomitic grainstone matrix, 10-40% dolomitization, **very tight,** trace bitumen, barely visible cut.

205.20-207.25 LIMESTONE: very fine to fine packstone or grainstone, microcrystalline
(2.05m) to very finely crystalline, with thin Amphipora floatstone bands, minor bands with stromatoporoid fragments and trace coral, very slight dolomitization in matrix, **very tight.** Bitumen coated stylolites at 5-8 per m. Trace weak cut from bitumen.

207.25-207.75 LIMESTONE: microcrystalline, medium brown, difficult to interpret
(0.50m) texture, wackestone or possibly packstone, very fine to fine fossil fragments, pellets, algae, trace small brachiopods, bioturbated possibly, few small stromatoporoid fragments, dense, **very tight,** trace dolomite rhombs, trace weak cut from bitumen coated stylolites and tight fractures.

207.75-210.75 LIMESTONE: cabbage stromatoporoid (2-5cm) floatstone with small
(3.00m) Amphipora very common, cryptocrystalline and microcrystalline, light brown fossil fragments, no intrafossil porosity or dolomitization. Much less matrix than other beds, very fine to fine fossil fragments, pellets, algae, Amphipora common, very finely crystalline, very fine to fine packstone, bitumen specks, generally only slightly dolomitic, **very tight.** Part is dolomitic to very dolomitic, darker and bitumen rich. Slight increase weak cut. Black bitumen coated stylolites increase at base. Lower 1.35m and top 0.55m is mostly stromatoporoid fragments, middle part is mixed Amphipora and stromatoporoids.

210.75-212.00 LIMESTONE: medium brown, microcrystalline to very finely crystalline,
(1.25m) packstone, possibly wackestone, very fine to fine round pellets, possibly algae, Amphipora floatstone bands, predominantly very small Amphipora, less than 2mm, **very tight,** only trace dolomitization. Wispy stylolites locally, some stylolitic brecciation near top, spotty weak cut from bitumen.

CHEVRON MOUNTAIN RIVER 0-18

CORE #3 KEE SCARP
INTERVAL: 212-239m (-97 TO -124m)
CUT: 27m
RECOVERED: 27m (100%)

CORING TIMES:

212m/4,3,4,3,3/3,3,4,4,2/2,2,3,3,2/3,3,3,3,2/3,3,3,3,3/2,3,3,3,3/218m
218m/3,4,5,4,3/4,3,4,3,3/2,2,3,3,2/3,3,3,3,3/3,3,3,3,2/3,3,3,3,3/224m
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230m/3,2,2,2,3/3,3,2,2,3/3,2,3,3,3/2,3,3,2,3/3,3,3,3,3/3,3,3,4,3/236m
236m/3,3,4,4,3/4,3,3,5,3/4,4,3,3,3/239m

212.00-214.45 LIMESTONE: Amphipora floatstone, with dark brown, very finely
(2.45m) crystalline, very fine to fine packstone matrix, pellets, trace ostracod and brachiopod, locally few stromatoporoid fragments, bitumen specked, slightly dolomitic, scattered very fine rhombs, occasionally very dolomitic in darker, bitumen rich matrix, **tight**. Thin bands with wispy black stylolites, bitumen coated stylolitic partings, microfractures, trace cut.

214.45-216.60 LIMESTONE: predominantly stromatoporoid floatstone, locally Amphipora
(2.15m) rich, matrix is dark brown, very finely crystalline, very fine to fine packstone, possibly grainstone, slight scattered dolomite rhombs, locally increase dolomitization in small patches, trace pyrite, **tight**. Minor wispy stylolites. Trace cut from bitumen.

216.60-221.20 LIMESTONE: predominantly packed Amphipora floatstone, Amphipora to
(4.60m) several mm, locally detached cabbage stromatoporoid, matrix is medium to dark brown, very finely crystalline, very fine to fine packstone, bitumen specks, trace pyrite, slight dolomitization, **tight**. Locally Amphipora packed in black bitumen, probably a stylolitization effect. Bitumen coated microfractures, tight bitumen coated fracture at 25 to core axis, trace cut from bitumen.

221.20-221.70 LIMESTONE: packed cabbage stromatoporoid floatstone, with Amphipora rich
(0.50m) matrix, very finely crystalline, bitumen rich matrix common, very slightly dolomitic, trace silicification, **tight**, trace cut from bitumen.

221.70-225.00 LIMESTONE: medium to dark brown, very finely crystalline, very fine
(3.30m) packstone, vague spheres may be algae, fragments of Amphipora, solitary coral and stromatoporoid, **tight**. Small discontinuous fractures filled with white calcite, round blebs of clear calcite probably replaced fossils, slight dolomitization, scattered very fine dolomite rhombs, trace siliceous residue. Black bitumen coated stylolitic partings, locally stylolitic contacts between stromatoporoid and packstone. Trace weak cut from bitumen.

225.00-227.00 LIMESTONE: packed stromatoporoid and Amphipora floatstone, cabbage
(2.00m) stromatoporoid, dark brown matrix, very finely crystalline, packstone or grainstone, slight dolomitization throughout matrix, minor part 20-30% dolomitized. Tight microfractures in fossil fragments, black stylolites common, locally stylolitic brecciation, trace cut from bitumen lining fractures and stylolites.

227.00-228.10 LIMESTONE: light to medium brown, grainstone and Amphipora grainstone,
(1.10m) very fine to coarse grains, pellets, brachiopods, Amphipora, trace algae, Amphipora, minor stromatoporoid, microcrystalline, dense, **tight**, cryptocrystalline in part. Small discontinuous calcite filled fractures, primary "shelter type" voids and blebs filled with crystalline calcite. Black bitumen coated stylolites common, occasional wispy stylolites, tight microfractures, one prominent fracture orientation at 20-30 to core axis. Trace cut.

228.10-231.30 LIMESTONE: light to medium brown, cryptocrystalline to microcrystalline,
(3.20m) vague very fine to fine wackestone or packstone, part grading to very finely crystalline grainstone, vague pellets and algae, Amphipora locally, occasional stromatoporoid layers, trace dolomitization in grainstone bands, dense, **tight.** Small discontinuous fractures filled with white calcite, blebs of clear calcite throughout, stylolitic fragment boundaries common, bitumen coated stylolites and microfractures, trace weak cut from bitumen.

231.30-234.00 LIMESTONE: packed Amphipora floatstone, Amphipora to several mm, very
(2.70m) finely crystalline matrix, very fine to fine grainstone, slight dolomitization, very fine rhombs, **tight.** Bitumen coated stylolites, black bitumen/carbon coated fracture at 60 to core axis. Trace weak cut from bitumen.

234.00-237.55 LIMESTONE: stromatoporoid mound, light brown, microcrystalline, no
(3.55m) packstone or grainstone matrix, primary voids filled with crystalline white calcite, also calcite filled microfractures, much less than bitumen above, trace poorly developed stylolites, orientations from horizontal to 35 dips, **tight,** trace weak cut on microfractures.

237.55-239.00 LIMESTONE: grainstone, medium to dark brown, very finely crystalline,
(1.45m) very fine to fine grainstone, possibly packstone, pellets, algae? slight dolomitization, Amphipora and few large stromatoporoid fragments, locally thin tabular stromatoporoid debris, trace coral, **tight.** Bitumen coated tight microfractures in fossil fragments, few stylolites, trace weak cut.

CHEVRON MOUNTAIN RIVER 0-18

CORE #4 KEE SCARP
INTERVAL: 239-266m (-124 TO -151m)
CUT: 27m
RECOVERED: 26.25m (97%)

CORING TIMES:

239m/5,2,3,4,4/3,3,3,2,4/3,3,3,2,3/3,2,3,3,3/3,3,3,2,2/2,2,1,3,2/245m
245m/2,3,3,2,2/3,3,3,3,3/3,2,2,3,3/2,2,2,3,3/2,3,2,3,3/3/4,3,3,3/251m
251m/2,3,3,3,3/2,3,4,2,2/3,3,3,4,3/3,4,3,4,3/3,3,3,3,3/3/3,3,3,3,4/257m
257m/4,3,3,3,3/3/3,3,4,4,3/4,5,4,4,3/5,4,3,4,4/4,4,4,5,3/3,3,2,2,3/263m
263m/2,3,3,2,1/2,1,2,1,1/1,1,1,1,1/266m

239.00-240.70 (1.70m) LIMESTONE: floatstone, Amphipora, detached and broken tabular stromatoporoid, cabbage like stromatoporoid, with very finely crystalline matrix, dark brown, very fine to fine packstone, very fine dolomite rhombs scattered throughout, 5-15% dolomitization in part, bitumen specked, trace pyrite, **tight.** Black bitumen coated stylolitic partings. tight bitumen coated microfractures locally, trace weak cut, locally Amphipora with fair cut.

240.70-241.35 (0.65m) LIMESTONE: dark brown, microcrystalline, wackestone, vague very fine to fine grains, pellets? trace possibly algae, locally floating Amphipora fragments, only trace very fine dolomite rhombs, dead organic residue in acid, trace argillaceous, **very tight.** Tight calcite filled small fractures.

241.35-252.60 (11.25m) LIMESTONE: very dark brown, black bands, microcrystalline, predominantly wackestone, very fine to part fine grains, less than 10% larger fossil fragments, Amphipora, trace brachiopods, locally small crinoids in black bitumen rich bands to 10cm, rare large stromatoporoid fragments, trace argillaceous to argillaceous, trace silty, very slight dolomite rhombs scattered through much of interval, dead organic residue left in acid, part grading to marlstone and minor bitumen rich, platy, brittle shale. Minor part with barely visible cut. Occasional calcite filled tight fractures.

252.60-253.70 (1.10m) LIMESTONE: Amphipora grainstone or packstone, Amphipora content increasing to base, several large cabbage stromatoporoid fragments, minor algal or tabular stromatoporoid laminae, very finely crystalline matrix, very fine to fine fossil grains, occasional medium pellets and fossil fragments, brachiopods, algae, **tight,** locally wispy stylolites, trace very weak cut.

253.70-263.40 (9.70m) LIMESTONE: coarse floatstone, large Amphipora (0.5-1cm X-sec), cabbage like stromatoporoid and tabular stromatoporoid all very common, locally small brachiopods and crinoids in matrix, possibly bryozoan, matrix is very finely crystalline, dark brown, very fine to medium packstone or possibly grainstone, slightly dolomitic throughout, locally very dolomitic, sucroic mosaic of 40-60% very fine dolomite rhombs, partial selective replacement of some Amphipora, no intrafossil or matrix porosity associated with dolomitization, **tight.** Near top is 0.75m bed of Amphipora floatstone. Several black bitumen coated stylolites, minor wispy stylolitization, locally bitumen coated tight micro-fractures cutting across fossil fragments, trace cut from bitumen. Base becomes darker, bitumen rich, Amphipora float, badly broken core at contact with shale below.

263.40-266.00 (2.6m) SHALE: dark brown, part black, top is very calcareous, few very large Amphipora fragments, very fine to fine limestone grains give laminated texture, marlstone in part, bitumen rich, micromicaceous appearance from abundant bitumen or carbon, very slightly dolomitic, slightly silty. Lower part is black, silty, trace calcareous, bituminous/carbonaceous, platy, brittle, fossil fragments locally, crinoids, Amphipora, trace pyrite.

CHEVRON MOUNTAIN RIVER 0-18

CORE #5 ARNICA
INTERVAL: 789-797m (-674 TO -682m)
CUT: 8m
RECOVERED: 8m

CORING TIMES:
789m/4,4,3,4,3/4,5,4,4,4/3,4,4,4,4/4,4,4,4,4/793m
793m/5,4,4,4,4/4,4,3,5,4/4,3,5,5,2/5,4,4,4,-/797m

789.00-789.55 DOLOMITE: light to medium brown, darker at base, very finely
(0.55m) crystalline, with very fine to finely sucrosic around vugs, clean, trace siliceous residue, **fair to good pin point and small vug porosity, poor to fair intercrystalline porosity, 7-11% overall, fair to good permeability,** bitumen coating porosity, slight intercrystalline porosity, no stain or cut. Sub-vertical fractures healed with white, crystalline calcite.

789.55-790.05 DOLOMITE: dark brown, barely very finely crystalline, **fair pin point**
(0.50m) **vuggy porosity, 4-6%,** no intercrystalline porosity, slight intercrystalline bitumen, bitumen coating vugs, no stain or cut. Sub-vertical fractures and associated solution breccia totally healed with calcite. Trace bitumen coated partings.

790.05-791.05 DOLOMITE: medium brown, very finely crystalline, tightly interlocking
(1.0m) rhombs, dark brown near black, bitumen coated stylolites, tight, **scattered isolated pin point and small vugs, no effective porosity** or permeability, no stain or cut, intercrystalline bitumen specks. Lower 50cm has vague irregular banding in broken and rotated breccia fragments, matrix to large fragments is very finely crystalline dolomite, same as in fragments, minor white calcite cemented solution breccia. Tight sub-vertical fractures, also calcite healed thin fractures. Base is graphitic looking, very thin dark grey shale laminae, with slickensides, warped and extruded around a breccia fragment.

791.05-792.00 DOLOMITE: light brown, very finely crystalline, tightly interlocking
(0.95m) rhombs, decreasing bitumen specks to trace, **very tight to trace pin point vugs, with vague thin bands of very poor pin point to small vug porosity,** no effective permeability, no stain or cut. Locally fracture and solution breccia with calcite and minor quartz cement. Few bitumen coated stylolites and tight fractures.

792.00-793.10 DOLOMITE: light to medium brown, very finely crystalline and barely very
(1.10m) finely crystalline, thinly horizontal banding, **tight to trace pin point vugs with thin bands of very poor pin point porosity,** no effective permeability, slight intercrystalline bitumen, few small stylolites, no stain or cut.

793.10-796.80 DOLOMITE: medium to dark brown, very finely crystalline, tightly
(3.70m) interlocking rhombs, **trace scattered pin point vugs,** subvertical network of discontinuous, bitumen coated fractures with **poor fracture porosity and spotty dissolution vugs along fractures,** partial calcite healing of fractures. Lower part of interval has solution brecciation with calcite cement, minor small patches of good dissolution porosity associated with brecciation. No live stain or cut. Shale band (1cm) at 795.55m, dark grey, pyritic, slightly dolomitic, with slickensides.

796.80-797.00 DOLOMITE: dark brown-black banded, microcrystalline, bitumen/
(0.20m) carbonaceous rich layers, slightly calcareous, trace anhydritic, fine solution brecciation within some layers, coarse secondary dolomite crystals in layers may be after fossils, **tight,** no stain or cut. Banding is at 85-90 to core axis.

CHEVRON MOUNTAIN RIVER 0-18

CORE #6 MOUNT KINDLE
INTERVAL: 1075-1092m
CUT: 17m
RECOVERED: 17m

CORING TIMES:
1075m/7,5,6,7,6/7,6,6,7,6/6,6,7,7,8/89,9,10,11/9,11,10,11,9/8,6,8,7,7/1081m
1081m/7,6,6,7,6/7,8,6,7,6/8,8,8,8,9/5,5,6,6,6/7,8,8,7,7/7,7,7,5,20/1087m
1087m/10,12,10,9,8/7,8,9,8,11/9,13,17,20,10/16,14,13,12,6/5,7,7,13,14/1092m

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1075.00-1079.10 DOLOMITE: light to medium brown, microcrystalline to very finely
(4.10m) crystalline, very slight silt or siliceous residue, trace argillaceous, **generally tight to trace pin point vugs,** fractures commonly vertical to 30 to core axis with **very poor fracture porosity, slight patchy recrystallization and small dissolution vugs along discontinuous fractures, very small patches fair porosity associated with fractures,** no intercrystalline porosity. Bitumen specks in porosity, locally small stylolites with bitumen, faint laminations or banding from bitumen specks, trace pyrite blebs, no stain or cut. Several sections of badly broken core recovered.

1079.10-1085.40 DOLOMITE: light brown, microcrystalline to barely very finely
(6.30m) crystalline, very poorly sucrosic, very homogeneous, massive bedded, mostly without fractures, dense, **tight.** Slightly silty and trace argillaceous, only trace bitumen specks and faint laminations, few stylolites, rare pin point vugs, no stain or cut.

1085.40-1087.10 DOLOMITE: medium brown, very finely crystalline, very finely sucrosic,
(1.70m) clean, only trace silt, **very poor sucrosic and pin point vuggy porosity, 2-3%,** trace bitumen specks throughout, slow precipitation of salt crystals on core surface shows very poor permeability at best, several tight fractures at 30 to core axis. No stain or cut.

1087.10-1089.50 DOLOMITE: medium brown, microcrystalline, no intercrystalline
(2.40m) porosity, very common network of tight fractures, roughly parallel with the core axis, fracture breccia in places, fractures and breccia filled with white coarse crystalline anhydrite and calcite, with bitumen coatings and pyrite blebs, **poor fracture porosity overall, some fine recrystallization along fractures with small vugs,** no stain or cut. Bitumen coated stylolites, few very pyritic stylolites.

1089.50-1092.00 DOLOMITE: medium brown, very finely crystalline, mottled, vague
(2.50m) fragmental texture with bitumen highlighting fragments, trace solitary corals, very common fractures at vertical to 30 to core axis with **dissolution vugs and fracture porosity,** fine sucrosic recrystallization around fractures locally, **very poor pin point vugs, few larger vugs,** no intercrystalline porosity, **possibly 5% porosity overall, mostly fractures,** very difficult to interpret porosity as it is very variable. Spotty siliceous replacement, tight vertical fractures with anhydrite, calcite and quartz filling, common patches of coarse crystalline anhydrite from solution brecciation and vug filling. Several stylolites and dark laminations with bitumen and locally pyrite. No stain or cut.

Core jammed off at 1092m

APPENDIX 5

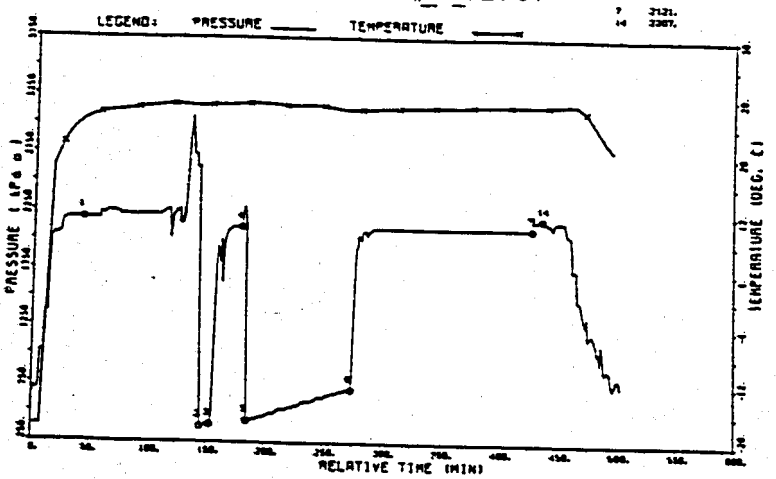
TESTING RESULTS

CHEVRON MOUNTAIN RIVER
400/ 82.000 / 042.007 /00
DST#01
190.00m to 205.00m
KEE SCARP

TEST DATE: 89/12/22

DEPTH: 193.00m

RECORDER # 001767



	PRESSURE kPa(a)
1) Initial Hydro :	2190.
2) 1st Flow Start:	379.
3) 1st Flow End :	397.
4) END 1st Shutin:	2121.
5) 2nd Flow Start:	431.
6) 2nd Flow End :	707.
7) END 2nd Shutin:	2121.
14) Final Hydro. :	2207.

TEST TIMES (MIN)	
1st FLOW :	8.0
SHUTIN:	26.0
2nd FLOW :	88.0
SHUTIN:	154.0

RECOVERY DATA

TOTAL FLUID RECOVERY CONSISTED OF 30.00 M OF DRILLING MUD. NO GAS TO SURFACE.

REMARKS AND TEST SUMMARY

Test results indicate a mechanically successful test. Bottom hole pressures and the shape of the shut-in curves suggest HIGH PERMEABILITY within the interval tested. The pressure fluctuations during the first minutes of the initial shut-in and final shut-in are caused by jars bleeding off.
The initial shut-in and final shut-in stabilized at 2 121.00 kPa(a), therefore no extrapolations were performed.

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PAGE 1	PAGE 2	PAGE 3	PAGE 4
General Data	Tool Sequence	PRESSURE -TIME	Plot Summary
Blow Description	Recorder Summary	LISTING	Reservoir Calculations
Liquid Recovery	Mud and Hole Data		-Parameters used
Gas Measurements			-Results

********** RECORDER PAGES & FIGURES **********

BAKER OIL TOOLS CANADA
DST#01 REPORT

Well name : CHEVRON MOUNTAIN RIVER
Location : 400/ 82.000 / 042.007 /00
Interval : 190.00m to 205.00m
Test Date : 89/12/22
Test Type : INFLATE STRADDLE
Formation : KEE SCARP

K.B.Elevation : 115.01m
Grd.Elevation : 109.46m
TD @ test Date: 534.00m
Ticket Number : 80707
Unit Number :

Started in hole at : 2130 hrs
Tool opened at : 0055 hrs
Reverse circulated?: NO
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 : ANDERSON K
Testers : HALLIGAN J

5 REPORTS(S) TO: JIM CHARLESTON
Company:

BLOW DESCRIPTION

PREFLOW: Weak air blow, steady throughout. No gas to surface.
FINAL FLOW: Weak air blow decreasing to very weak air blow in 25 minutes, steady throughout. No gas to surface.

TOTAL LIQUID RECOVERY : 30.00m

For DST# 1 through DST# 1

3 Fluid Samples
Sent to: GEO TECH

Field Est. Salinity :250.0g/m3

Btm. Hole Sampler #: 192
Sent to: GEO TECH

30.00m DRILLING MUD.

GAS MEASUREMENTS

No Gas Measurements

DST=01
CHEVRON MOUNTAIN RIVER
190.00m to 205.00m

TOOL SEQUENCE

SUB	LENGTH (m)
PUMP OUT SUB	.40
CROSS OVER SUB	.40
BAR STOP SUB	.30
HYDRAULIC TOOL	1.50
BTM HOLE SAMPLER	1.03
INSIDE RECORDER	1.38
HYDRAULIC JARS	2.22
SAFETY JOINT	.65
INFLATE PUMP	2.38
SCREEN	1.16
TOP INFLATE PACKER	1.78
PACKER STICK DOWN	.82
PORTED COMB SUB	.35
OUTSIDE RECORDER	2.06
SPACING	1.16
CROSS OVER SUB	.40
DRILL COLLARS	9.31
CROSS OVER SUB	.40
PACKER STICK UP	.50
BTM INFLATE PACKER	1.90
SPACING	.61
INSIDE RECORDER	1.38
PERFORATIONS	.61
BELLY SPRING	2.00
******** TOOL TOTAL	34.70

DRILL COLLARS
ID= 73.0mm: 84.32
ID= :

DRILL PIPE
OD=114.3mm: 95.61
OD= :

COLLAR-PIPE TOTAL 179.93

STICK UP ABOVE TABLE : 3.13
TOOL ABOVE INTERVAL : 13.20
TOTAL INTERVAL : 15.00
BOTTOM CHOKE SIZE: 25.40 mm

RECORDER SUMMARY

1) NUMBER : 001767 ELECTRONIC GAUGE.
TYPE : DMRB
LOCATION: OUTSIDE
RANGE: 34500.00kPa(a)
DEPTH : 193.00m

2) NUMBER : 001785 ELECTRONIC GAUGE.
TYPE : DMRB
LOCATION: OUTSIDE
RANGE: 68900.00kPa(a)
DEPTH : 193.00m

3) NUMBER : 014156
TYPE : K-3
LOCATION: OUTSIDE
RANGE: 13700.00kPa
DEPTH : 193.00m

4) NUMBER : 021162 ABOVE INTERVAL.
TYPE : K-3
LOCATION: INSIDE
RANGE: 21900.00kPa
DEPTH : 180.00m

5) NUMBER : 021347 BELOW INTERVAL.
TYPE : K-3
LOCATION: INSIDE
RANGE: 22000.00kPa
DEPTH : 208.00m

MUD AND HOLE DATA

Calipered Hole Size @ Test Depth: 311.00mm Water Loss : 10.4cc/s
Hole Condition at Test Time : FAIR Filter Cake:
Hole Conditioned Prior to Test? : NO
Mud Weight : 1090.0 kg/m3 Main Hole Size: 311.00mm
Mud Type : GEL KELZAN
Viscosity : 59.0s/l Temperature @193.00m = 26.8C

DST=01
CHEVRON MOUNTAIN RIVER
190.00 m to 205.00 m

Location: 400/ 82.000 / 042.007 /00
Test Type: INFLATE STRADDLE
Formation: KEE SCARP

Recorder Number: 001767
Recorder Depth: 193.00 m
Subsea Depth: -77.99 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
1	INITIAL HYDROSTATIC			2190	
2	START OF 1st FLOW	0.0		379	
		1.0		379	
		2.0		379	
		3.0		379	
		4.0		397	
		5.0		397	
		6.0		397	
3	END OF 1st FLOW	8.0		397	
	1st SHUTIN PERIOD	0.0		397	
		1.0	17	414	9.0000
		2.0	138	535	5.0000
		3.0	552	948	3.6667
		4.0	931	1328	3.0000
		5.0	1379	1776	2.6000
		6.0	1569	1966	2.3333
		8.0	1414	1810	2.0000
		9.0	1621	2017	1.8889
		10.0	1241	1638	1.8000
		11.0	1500	1897	1.7273
		12.0	1621	2017	1.6667
		13.0	1655	2052	1.6154
		14.0	1690	2086	1.5714
		16.0	1707	2103	1.5000
		17.0	1707	2103	1.4706
		18.0	1724	2121	1.4444
		19.0	1724	2121	1.4211
		20.0	1724	2121	1.4000
		21.0	1724	2121	1.3810
		22.0	1724	2121	1.3636
		24.0	1724	2121	1.3333
		25.0	1724	2121	1.3200

* VALUES USED FOR EXTRAPOLATIONS

DST=01
CHEVRON MOUNTAIN RIVER
190.00 m to 205.00 m

Location: 400/ 82.000 / 042.007 /00
Test Type: INFLATE STRADDLE
Formation: KEE SCARP

Recorder Number: 001767
Recorder Depth: 193.00 m
Subsea Depth: -77.99 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
4	END OF 1st SHUTIN	26.0	1724	2121	1.3077
5	START OF 2nd FLOW	0.0		431	
		2.0		431	
		4.0		431	
		6.0		448	
		9.0		448	
		11.0		466	
		13.0		466	
		16.0		483	
		18.0		483	
		20.0		500	
		22.0		500	
		25.0		517	
		27.0		535	
		29.0		535	
		32.0		535	
		34.0		535	
		36.0		552	
		38.0		552	
		41.0		569	
		43.0		569	
		45.0		569	
		48.0		603	
		50.0		603	
		52.0		603	
		54.0		603	
		57.0		621	
		59.0		621	
		61.0		638	
		64.0		638	
		66.0		638	
		68.0		655	
		70.0		655	
		73.0		672	

* VALUES USED FOR EXTRAPOLATIONS

DST=01
CHEVRON MOUNTAIN RIVER
190.00 m to 205.00 m

Location: 400/ 82.000 / 042.007 /00
Test Type: INFLATE STRADDLE
Formation: KEE SCARP

Recorder Number: 001767
Recorder Depth: 193.00 m
Subsea Depth: -77.99 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		75.0		672	
		77.0		690	
		80.0		690	
		82.0		707	
		84.0		707	
		86.0		707	
6	END OF 2nd FLOW	88.0		707	
	2nd SHUTIN PERIOD	0.0		707	
		2.0	517	1224	49.0000
		4.0	1241	1948	25.0000
		6.0	1362	2069	17.0000
		9.0	1379	2086	11.6667
		11.0	1397	2103	9.7273
		13.0	1345	2052	8.3846
		16.0	1397	2103	7.0000
		18.0	1414	2121	6.3333
		20.0	1414	2121	5.8000
		22.0	1414	2121	5.3636
		25.0	1414	2121	4.8400
		27.0	1414	2121	4.5556
		29.0	1414	2121	4.3103
		32.0	1414	2121	4.0000
		34.0	1414	2121	3.8235
		36.0	1414	2121	3.6667
		38.0	1414	2121	3.5263
		41.0	1414	2121	3.3415
		43.0	1414	2121	3.2326
		45.0	1414	2121	3.1333
		48.0	1414	2121	3.0000
		50.0	1414	2121	2.9200
		52.0	1414	2121	2.8462
		54.0	1414	2121	2.7778
		57.0	1414	2121	2.6842
		59.0	1414	2121	2.6271

* VALUES USED FOR EXTRAPOLATIONS

DST=01
CHEVRON MOUNTAIN RIVER
190.00 m to 205.00 m

Location: 400/ 82.000 / 042.007 /00
Test Type: INFLATE STRADDLE
Formation: KEE SCARP

Recorder Number: 001767
Recorder Depth: 193.00 m
Subsea Depth: -77.99 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		61.0	1414	2121	2.5738
		64.0	1414	2121	2.5000
		66.0	1414	2121	2.4545
		68.0	1414	2121	2.4118
		70.0	1414	2121	2.3714
		73.0	1414	2121	2.3151
		75.0	1414	2121	2.2800
		77.0	1414	2121	2.2468
		80.0	1414	2121	2.2000
		82.0	1414	2121	2.1707
		84.0	1414	2121	2.1429
		86.0	1414	2121	2.1163
		89.0	1414	2121	2.0787
		91.0	1414	2121	2.0549
		93.0	1414	2121	2.0323
		96.0	1414	2121	2.0000
		98.0	1414	2121	1.9796
		100.0	1414	2121	1.9600
		102.0	1414	2121	1.9412
		105.0	1414	2121	1.9143
		107.0	1414	2121	1.8972
		109.0	1414	2121	1.8807
		112.0	1414	2121	1.8571
		114.0	1414	2121	1.8421
		116.0	1414	2121	1.8276
		118.0	1414	2121	1.8136
		121.0	1414	2121	1.7934
		123.0	1414	2121	1.7805
		125.0	1414	2121	1.7680
		128.0	1414	2121	1.7500
		130.0	1414	2121	1.7385
		132.0	1414	2121	1.7273
		134.0	1414	2121	1.7164
		137.0	1414	2121	1.7007
		139.0	1414	2121	1.6906
		141.0	1414	2121	1.6809

* VALUES USED FOR EXTRAPOLATIONS

DST#01
CHEVRON MOUNTAIN RIVER
190.00 m to 205.00 m

Location: 400/ 82.000 / 042.007 /00
Test Type: INFLATE STRADDLE
Formation: KEE SCARP

Recorder Number: 001767
Recorder Depth: 193.00 m
Subsea Depth: -77.99 m

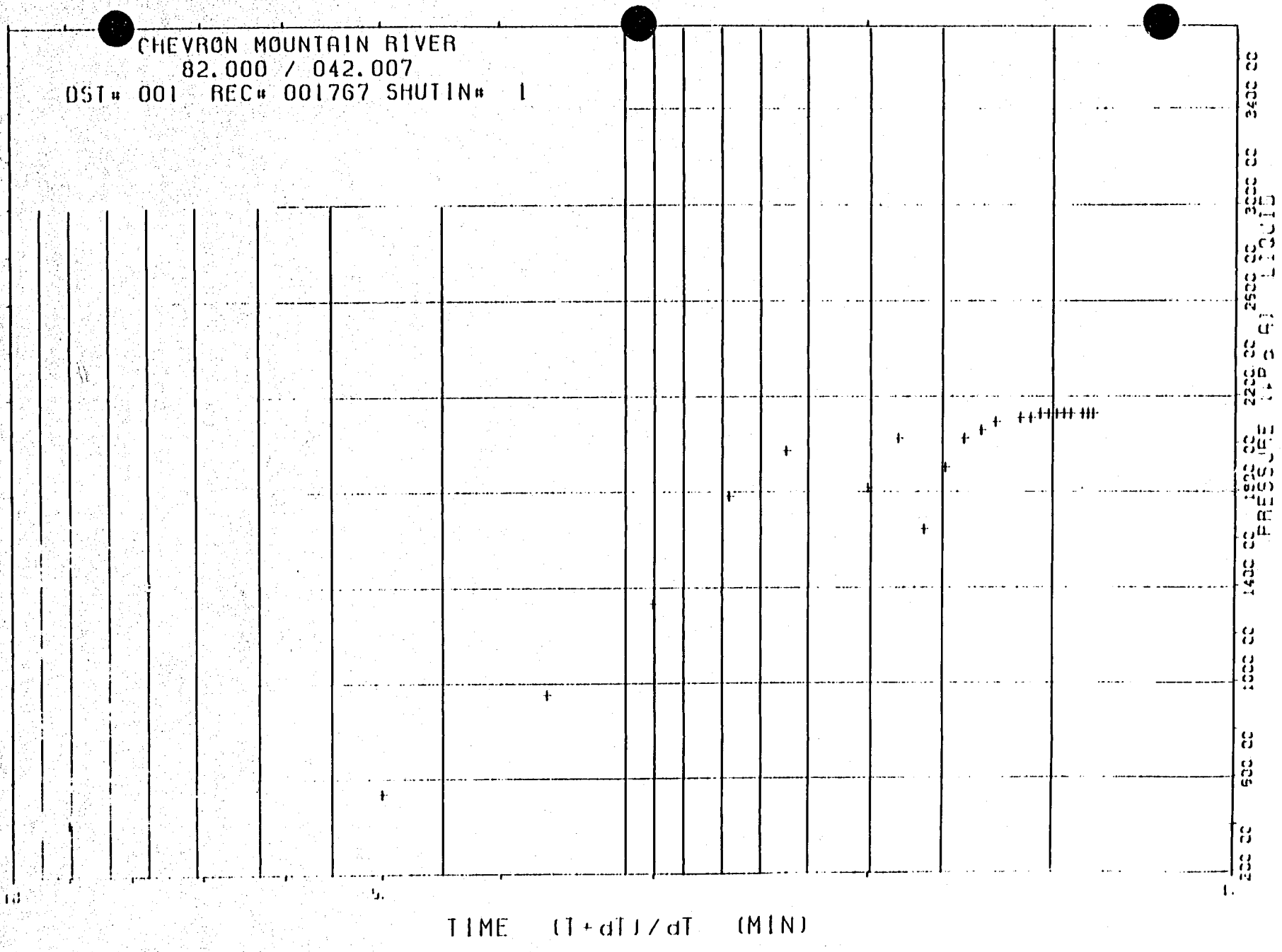
TIME-PRESSURE LISTING

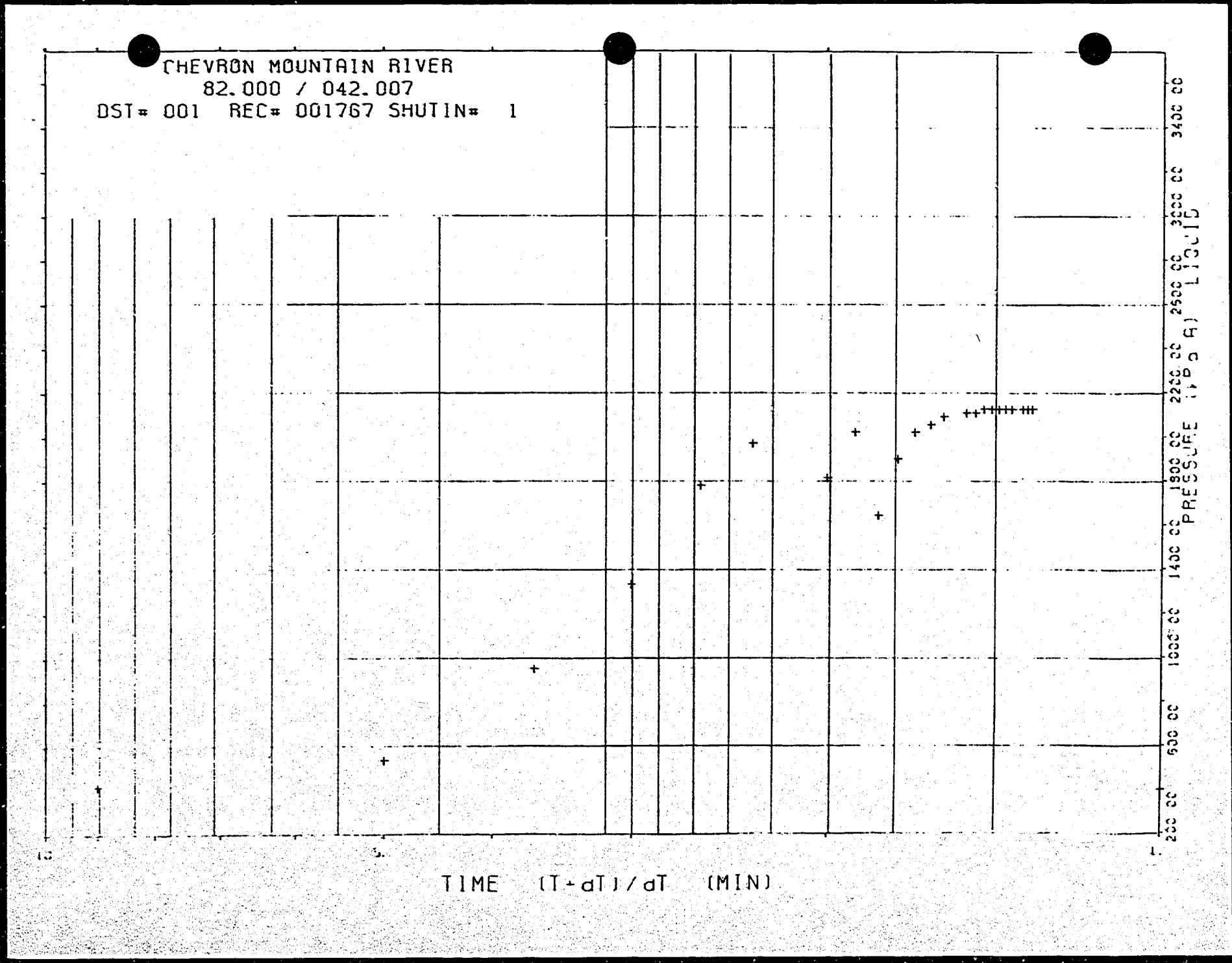
CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		144.0	1414	2121	1.6667
		146.0	1414	2121	1.6575
		148.0	1414	2121	1.6486
		150.0	1414	2121	1.6400
		153.0	1414	2121	1.6275
7	END OF 2nd SHUTIN	154.0	1414	2121	1.6234
14	FINAL HYDROSTATIC			2207	

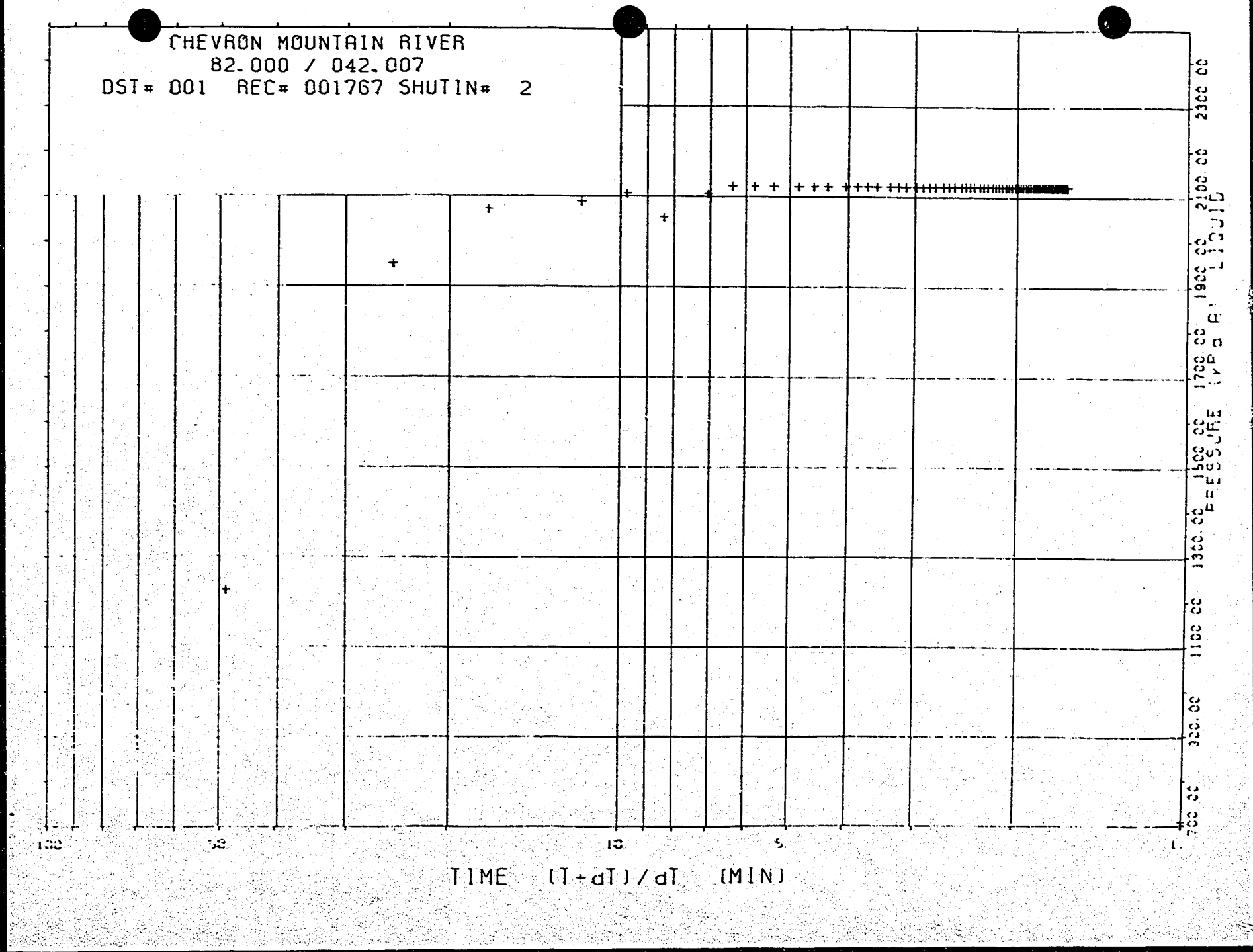
* VALUES USED FOR EXTRAPOLATIONS

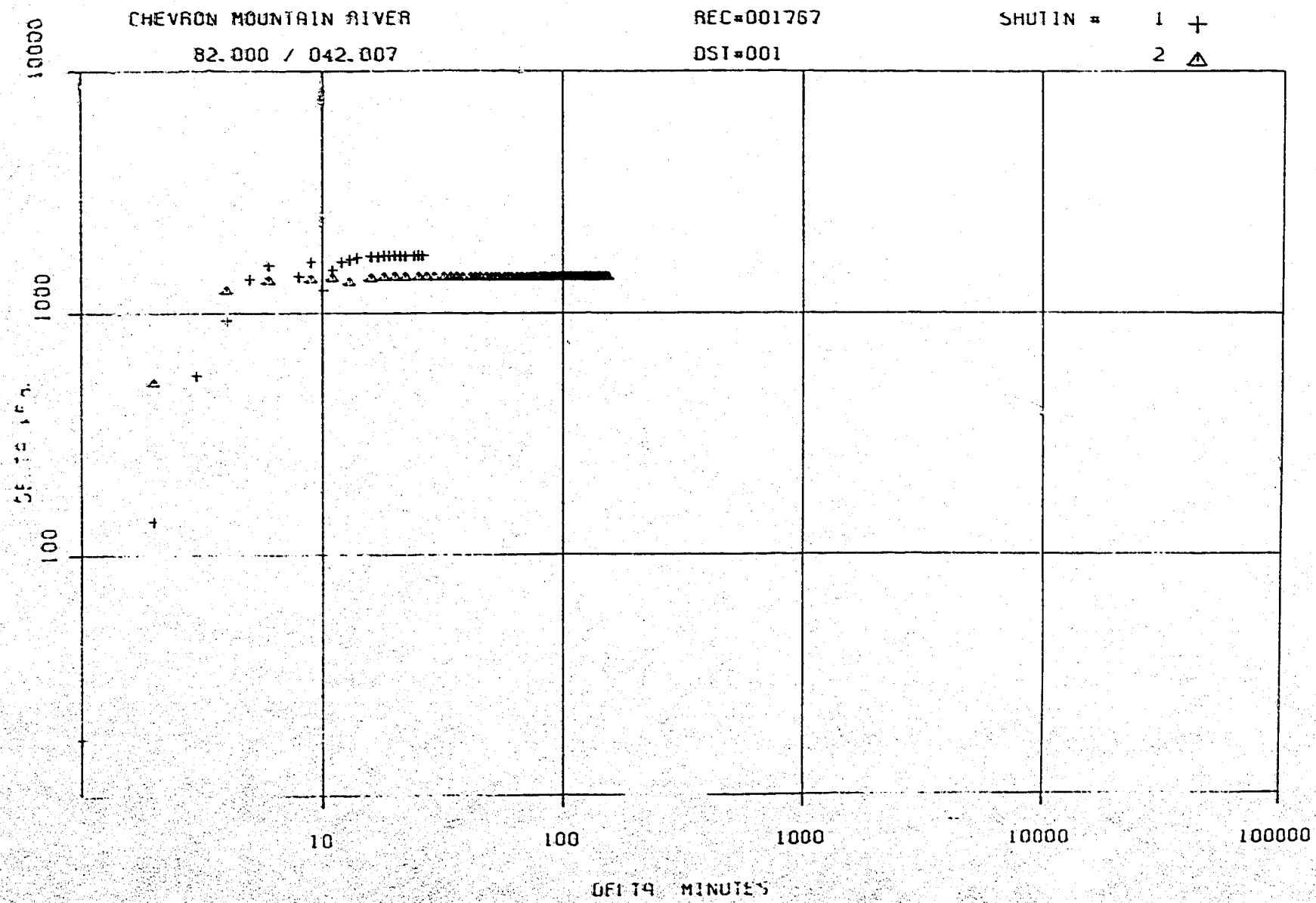
1st SHUT-IN
HORNER EXTRAPOLATION .00 kPa(a)
HORNER SLOPE .00000 kPa/cycle

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


CHEVRON MOUNTAIN RIVER
82.000 / 042.007
DST# 001 REC# 001767 SHUTIN# 1
TIME (T+dT)/dT (MIN)


CHEVRON MOUNTAIN RIVER
82.000 / 042.007
DST# 001 REC# 001767 SHUTIN# 1
PRESSURE (PSIA) LIQUID
TIME (T+dT)/dT (MIN)

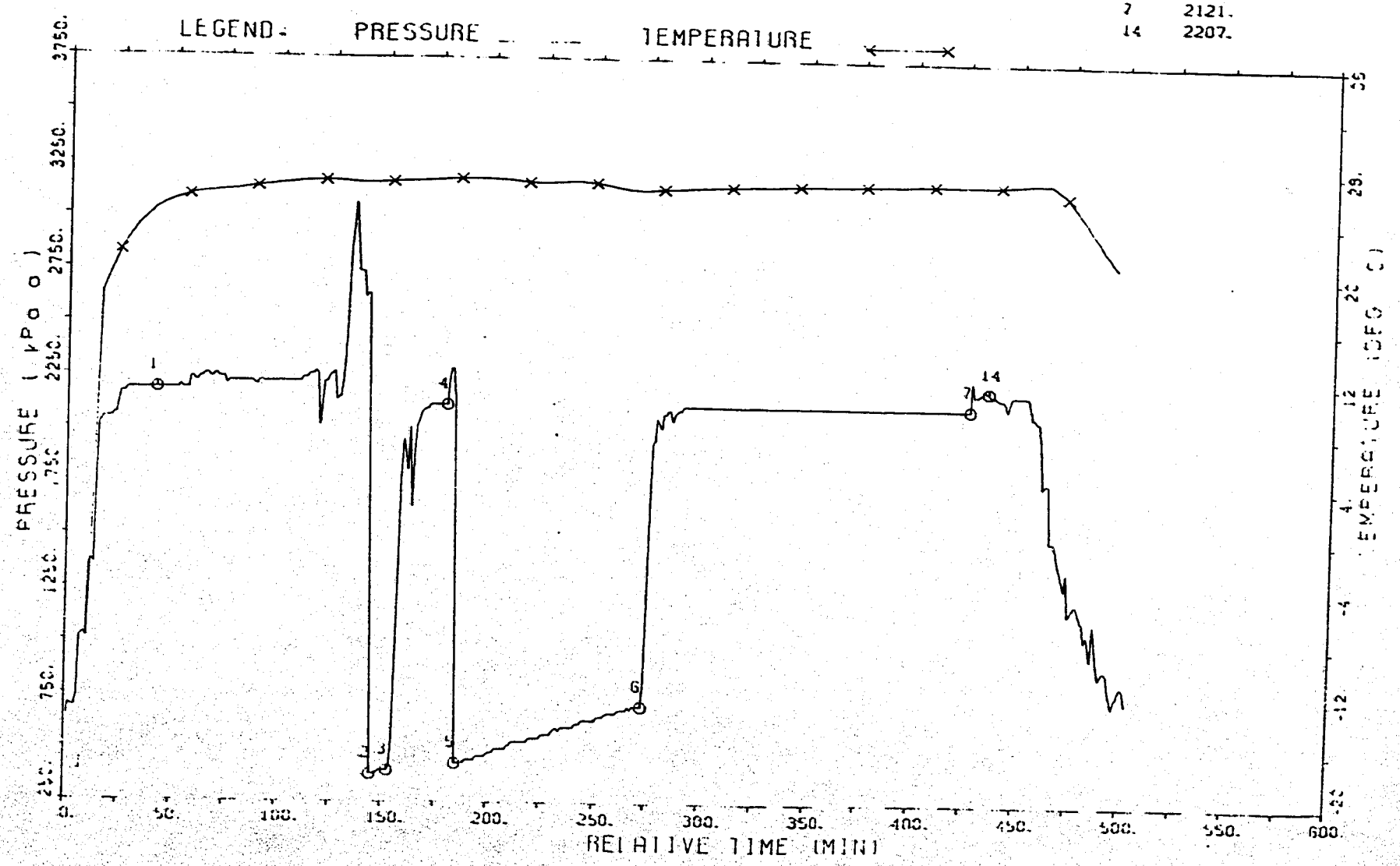

CHEVRON MOUNTAIN RIVER
82.000 / 042.007
DST# 001 REC# 001767 SHUTIN# 2
TIME (T+dT)/dT (MIN)


CHEVRON MOUNTAIN RIVER
82.000 / 042.007
REC=001767
DST=001
SHUTIN = 1 +
2 △
10000
1000
100
10
100
1000
10000
100000
DELTA MINUTES

CHEVRON MOUNTAIN RIVER
82.000/42.007 DST #1
ELECTRONIC GAUGE #1767

LEGEND: ⊙

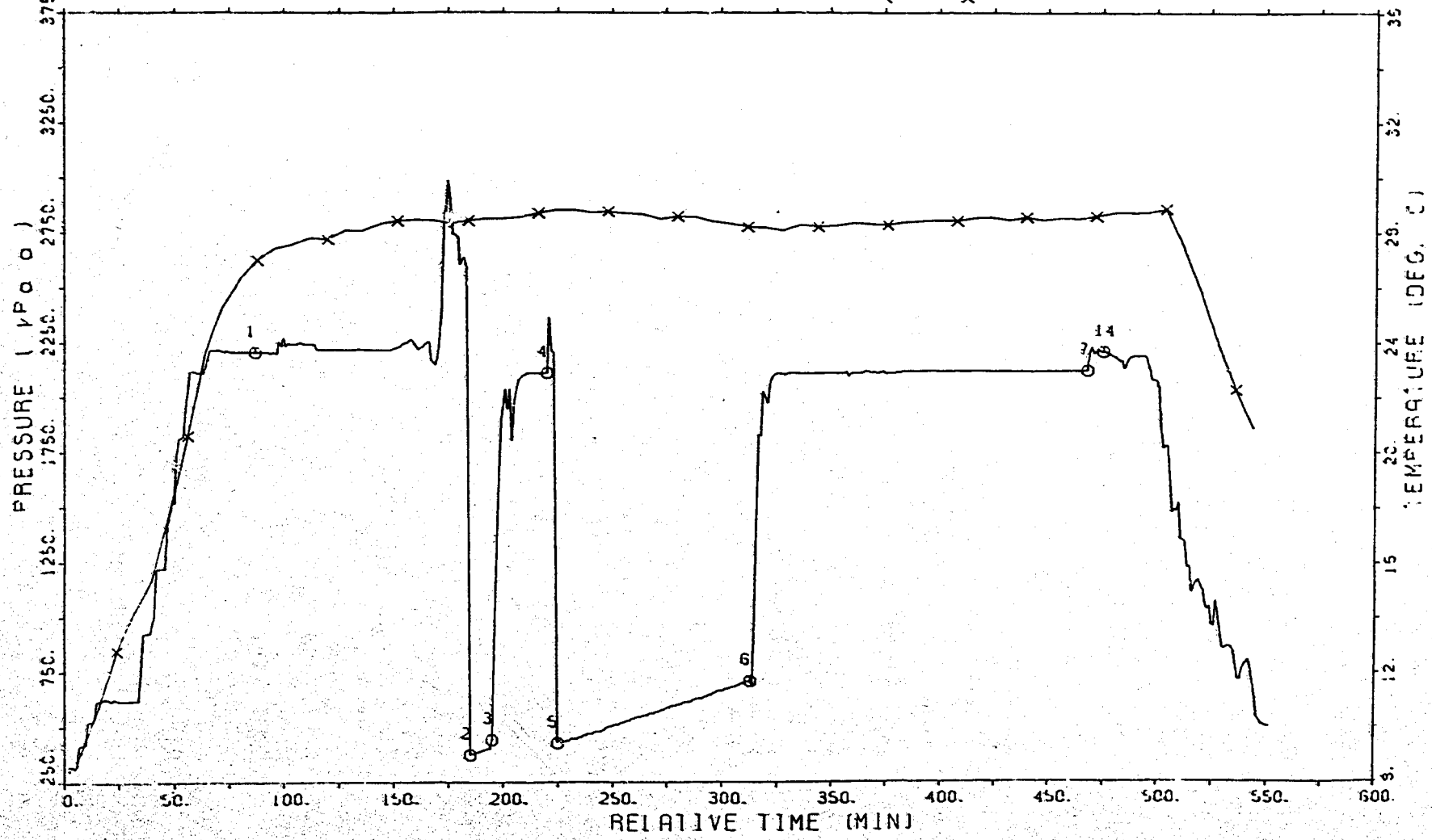
1	=	2130. kPa(a)
2		379.
3		397.
4		2121.
5		431.
6		707.
7		2121.
14		2207.



CHEVRON MOUNTAIN RIVER
82.000/42.007 DST #1
ELECTRONIC GAUGE #1785

LEGEND: PRESSURE _____ TEMPERATURE ←——→

LEGEND - ⊙ 1 - 2207. (a)
2 371.
3 440.
4 2112.
5 422.
6 707.
7 2121.
14 2207.

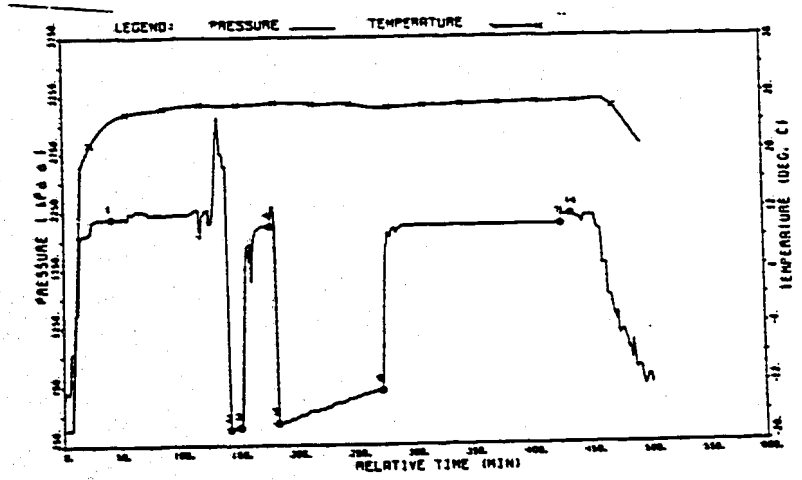


DST#01
CHEVRON MOUNTAIN RIVER
190.00m to 205.00m

RESSURE RECORDER NUMBER : 001767

DEPTH : 193.00m LOCATION : OUTSIDE
TYPE : DMRB CAPACITY : 34500.00kPa(a)

***** TEMPERATURE AT RECORDER DEPTH = 26.8 C



	PRESSURE kPa(a)
1) Initial Hydro :	2190.
2) 1st Flow Start:	379.
3) 1st Flow End :	397.
4) END 1st Shutin:	2121.
5) 2nd Flow Start:	431.
6) 2nd Flow End :	707.
7) END 2nd Shutin:	2121.
14) Final Hydro. :	2207.

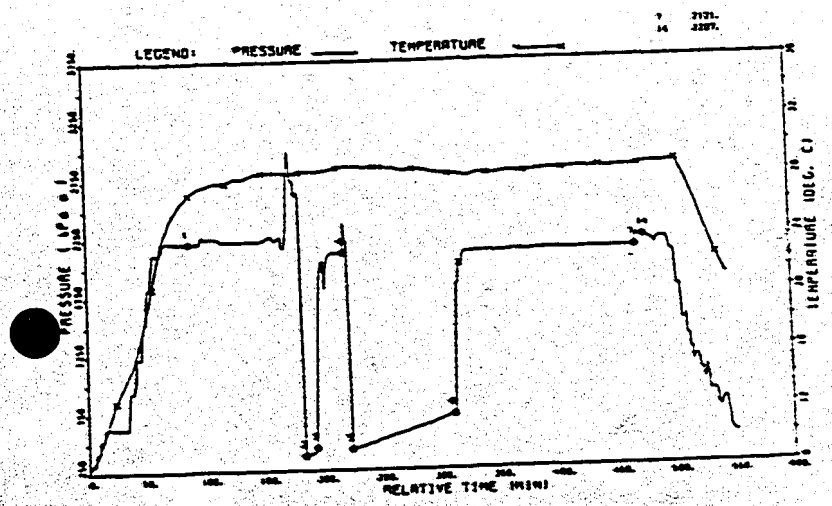
ELECTRONIC GAUGE.

TEST TIMES (MIN)
1st FLOW : 8.0
SHUTIN: 26.0
2nd FLOW : 88.0
SHUTIN: 154.0

RESSURE RECORDER NUMBER : 001785

DEPTH : 193.00m LOCATION : OUTSIDE
TYPE : DMRB CAPACITY : 68900.00kPa(a)

***** TEMPERATURE AT RECORDER DEPTH = 24.8 C



	PRESSURE kPa(a)
1) Initial Hydro :	2207.
2) 1st Flow Start:	371.
3) 1st Flow End :	440.
4) END 1st Shutin:	2112.
5) 2nd Flow Start:	422.
6) 2nd Flow End :	707.
7) END 2nd Shutin:	2121.
14) Final Hydro. :	2207.

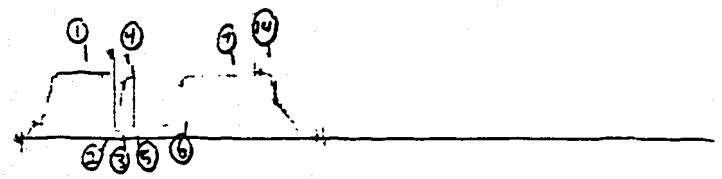
ELECTRONIC GAUGE.

DST#01
CHEVRON MOUNTAIN RIVER
190.00m to 205.00m

RESSURE RECORDER NUMBER : 014156

DEPTH : 193.00m
TYPE : K-3
LOCATION : OUTSIDE
CAPACITY : 13700.00 kPa

	PRESSURE kPa
1) Initial Hydro :	2108.
2) 1st Flow Start:	402.
3) 1st Flow End :	344.
4) END 1st Shutin:	1986.
5) 2nd Flow Start:	417.
6) 2nd Flow End :	574.
7) END 2nd Shutin:	1989.
14) Final Hydro. :	2090.



TEST TIMES (MIN)

1st FLOW :	8.0
SHUTIN:	26.0
2nd FLOW :	88.0
SHUTIN:	154.0

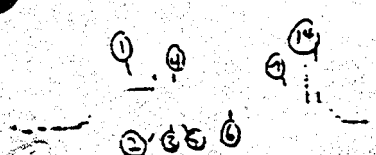
RESSURE RECORDER NUMBER : 021162

DEPTH : 180.00m
TYPE : K-3
LOCATION : INSIDE
CAPACITY : 21900.00 kPa

	PRESSURE kPa
1) Initial Hydro :	2023.
2) 1st Flow Start:	352.
3) 1st Flow End :	301.
4) END 1st Shutin:	1865.
5) 2nd Flow Start:	392.
6) 2nd Flow End :	499.
7) END 2nd Shutin:	1882.
14) Final Hydro. :	1999.

Above Interval

ABOVE INTERVAL.



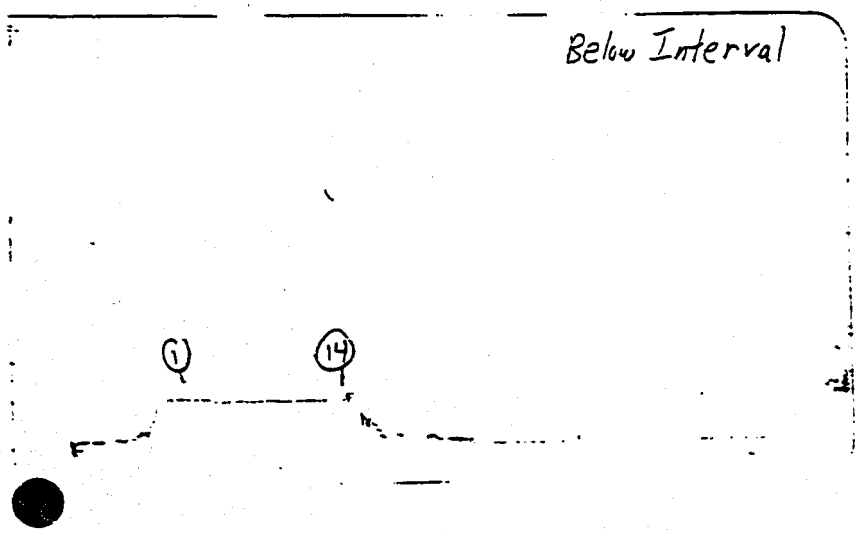
DST #01
CHEVRON MOUNTAIN RIVER
190.00m to 205.00m

RESSURE RECORDER NUMBER : 021347

[redacted]TH : 208.00m
TYPE : K-3

LOCATION : INSIDE
CAPACITY : 22000.00 kPa

	PRESSURE kPa
1) Initial Hydro	: 2154.
14) Final Hydro.	: 2047.



BELOW INTERVAL.

TEST TIMES (MIN)

1st FLOW	:	8.0
SHUTIN:		26.0
2nd FLOW	:	88.0
SHUTIN:		154.0

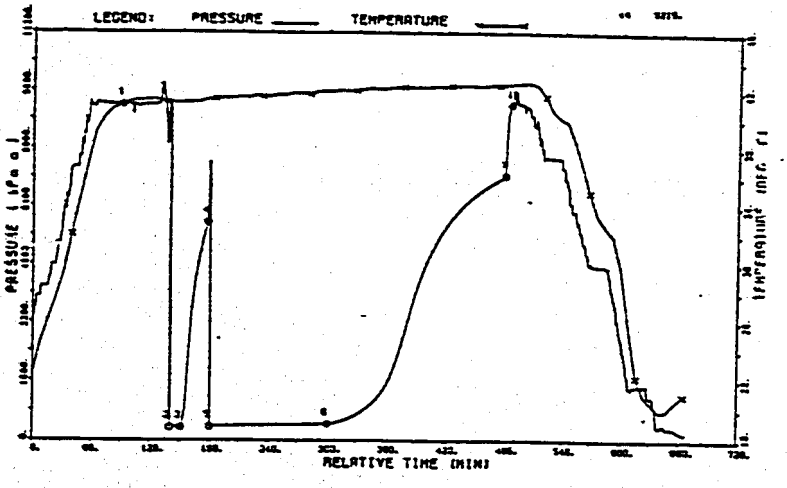
REF#:C-70-999-80707-66

TEST DATE: 90/01/05

CHEVRON MOUNTAIN RIVER
400/ 82.000 / 042.007 /00
DST#02
848.00m to 856.00m
FORT NORMAN

DEPTH: 851.00m

RECORDER # 001767



	PRESSURE kPa(a)
1) Initial Hydro :	9216.
2) 1st Flow Start:	328.
3) 1st Flow End :	336.
4) END 1st Shutin:	5948.
5) 2nd Flow Start:	353.
6) 2nd Flow End :	422.
7) END 2nd Shutin:	7250.
14) Final Hydro. :	9216.

TEST TIMES (MIN)	
1st FLOW :	10.0
SHUTIN:	27.0
2nd FLOW :	120.0
SHUTIN:	178.0

RECOVERY DATA

TOTAL FLUID RECOVERY CONSISTED OF 12 METERS OF DRILLING FLUID. NO GAS TO SURFACE.

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. The salinity was determined by the mud man using titration.

TABLE OF CONTENTS

PAGE 1	PAGE 2	PAGE 3	PAGE 4
General Data	Tool Sequence	PRESSURE	Plot Summary
Blow Description	Recorder Summary	-TIME	Reservoir Calculations
Liquid Recovery	Mud and Hole Data	LISTING	-Parameters used
Gas Measurements			-Results

********** RECORDER PAGES & FIGURES **********

BAKER OIL TOOLS CANADA
DST#02 REPORT

Well name : CHEVRON MOUNTAIN RIVER
Location : 400/ 82.000 / 042.007 /00
Interval : 848.00m to 856.00m
Test Date : 90/01/05
Test Type : INFLATE STRADDLE
Formation : FORT NORMAN

K.B.Elevation : 112.00m
Grd.Elevation : 106.70m
TD @ test Date: 1120.00m
Ticket Number : 80957
Unit Number :

Started in hole at : 1800 hrs
Tool opened at : 2121 hrs
Reverse circulated?: NO
Contractor & Rig No: SHEHTAH #1E
Baker#2 : 1 of 1 on the same trip.

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

Company Rep : UCHYTIL R
Testers : FORBES G

5 REPORTS(S) TO: JIM CHARLESTON
Company:

BLOW DESCRIPTION

PREFLOW: Very weak air blow, steady throughout. No gas to surface.
FINAL FLOW: Very weak air blow decreasing slightly throughout. No gas to surface.

TOTAL LIQUID RECOVERY : 12.00m

For DST# 2 through DST# 2

8 Fluid Samples
Sent to: GEO TECH

Field Est. Salinity :400.0g/m3

Btm. Hole Sampler #: 53
Sent to: DRAINED ON LOCATION

12.00m DRILLING FLUID.

GAS MEASUREMENTS

No Gas Measurements

DST#02
CHEVRON MOUNTAIN RIVER
848.00m to 856.00m

TOOL SEQUENCE

SUB	LENGTH (m)
PUMP OUT SUB	.40
CROSS OVER SUB	.30
RECORDER CARRIER	1.38
HYDRAULIC TOOL	1.50
BTM HOLE SAMPLER	1.03
RECORDER CARRIER	1.38
HYDRAULIC JARS	2.22
SAFETY JOINT	.65
INFLATE PUMP	2.28
SCREEN	1.16
TOP INFLATE PACKER	1.78
PACKER STICK DOWN	.82
PORT SUB	.30
RECORDER CARRIER	2.06
SPACING	4.40
PACKER STICK UP	.42
BTM INFLATE PACKER	1.90
RECORDER CARRIER	2.65
PERFORATIONS	.61
BELLY SPRING	2.00
******** TOOL TOTAL	29.24
DRILL COLLARS ID= 73.0mm:	84.37
ID= :	
DRILL PIPE OD=114.3mm:	759.31
OD= :	
COLLAR-PIPE TOTAL	843.68

STICK UP ABOVE TABLE : 9.76
TOOL ABOVE INTERVAL : 14.08
TOTAL INTERVAL : 8.00
BOTTOM CHOKE SIZE: 25.40 mm

RECORDER SUMMARY

1) NUMBER : 001767 ELECTRONIC GAUGE.
TYPE : DMRB
LOCATION: OUTSIDE
RANGE: 34500.00kPa(a)
DEPTH : 851.00m

2) NUMBER : 001785 ELECTRONIC GAUGE.
TYPE : DMRB
LOCATION: OUTSIDE
RANGE: 68900.00kPa(a)
DEPTH : 851.00m

3) NUMBER : 014156
TYPE : K-3
LOCATION: OUTSIDE
RANGE: 13700.00kPa
DEPTH : 851.00m

4) NUMBER : 021150 ABOVE HYDRAULIC TOOL.
TYPE : K-3
LOCATION: INSIDE
RANGE: 20500.00kPa
DEPTH : 835.00m

5) NUMBER : 021162 ABOVE INTERVAL.
TYPE : K-3
LOCATION: INSIDE
RANGE: 21900.00kPa
DEPTH : 840.00m

6) NUMBER : 021347 BELOW INTERVAL.
TYPE : K-3
LOCATION: INSIDE
CAPACITY: 22000.00kPa
DEPTH : 860.00m

MUD AND HOLE DATA

Calipered Hole Size @ Test Depth: 210.00mm
Hole Condition at Test Time : GOOD
Hole Conditioned Prior to Test? : NO
Mud Weight : 1070.0 kg/m3
Mud Type : GEL KELZAN
Viscosity : 58.0s/l
Water Loss : 9.8cc/s
Filter Cake: 1.5 mm
Main Hole Size: 215.00mm
Temperature @851.00m = 42.3C

DST#02
CHEVRON MOUNTAIN RIVER
848.00 m to 856.00 m

Location: 400/ 82.000 / 042.007 /00
Test Type: INFLATE STRADDLE
Formation: FORT NORMAN

Recorder Number: 001767
Recorder Depth: 851.00 m
Subsea Depth: -739.00 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
1	INITIAL HYDROSTATIC			9216	
2	START OF 1st FLOW	0.0		328	
		1.0		328	
		2.0		328	
		4.0		328	
		5.0		336	
		6.0		336	
		7.0		336	
		8.0		336	
		9.0		336	
3	END OF 1st FLOW	10.0		336	
	1st SHUTIN PERIOD	0.0		336	
		2.0	155	491	6.0000
		3.0	293	629	4.3333
		4.0	500	836	3.5000
		5.0	819	1155	3.0000
		6.0	1241	1578	2.6667
		7.0	1698	2035	2.4286
		8.0	2129	2466	2.2500
		10.0	2854	3190	2.0000
		11.0	3147	3483	1.9091
		12.0	3405	3741	1.8333
		13.0	3638	3974	1.7692
		14.0	3854	4190	1.7143
		15.0	4052	4388	1.6667
		16.0	4233	4569	1.6250
		18.0	4560	4897	1.5556
		19.0	4707	5043	1.5263
		20.0	4828	5164	1.5000
		21.0	4966	5302	1.4762
		22.0	5095	5431	1.4545
		23.0	5207	5543	1.4348

* VALUES USED FOR EXTRAPOLATIONS

DST#02
CHEVRON MOUNTAIN RIVER
848.00 m to 856.00 m

Location: 400/ 82.000 / 042.007 /00
Test Type: INFLATE STRADDLE
Formation: FORT NORMAN

Recorder Number: 001767
Recorder Depth: 851.00 m
Subsea Depth: -739.00 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		24.0	5328	5664	1.4167
		26.0	5517	5853	1.3846
4	END OF 1st SHUTIN	27.0	5612	5948	1.3704
5	START OF 2nd FLOW	0.0		353	
		2.0		362	
		5.0		362	
		7.0		362	
		9.0		362	
		12.0		362	
		14.0		362	
		16.0		371	
		18.0		371	
		21.0		371	
		23.0		371	
		25.0		371	
		28.0		371	
		30.0		379	
		32.0		379	
		34.0		379	
		37.0		379	
		39.0		379	
		41.0		388	
		44.0		388	
		46.0		388	
		48.0		388	
		50.0		388	
		53.0		397	
		55.0		388	
		57.0		388	
		60.0		397	
		62.0		397	
		64.		397	
		66.0		397	
		69.0		397	

* VALUES USED FOR EXTRAPOLATIONS

DST#02
CHEVRON MOUNTAIN RIVER
848.00 m to 856.00 m

Location: 400/ 82.000 / 042.007 /00
Test Type: INFLATE STRADDLE
Formation: FORT NORMAN

Recorder Number: 001767
Recorder Depth: 851.00 m
Subsea Depth: -739.00 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		71.0		405	
		73.0		405	
		76.0		405	
		78.0		405	
		80.0		405	
		82.0		405	
		85.0		405	
		87.0		405	
		89.0		405	
		92.0		405	
		94.0		414	
		96.0		414	
		98.0		414	
		101.0		414	
		103.0		422	
		105.0		414	
		108.0		414	
		110.0		422	
		112.0		422	
		114.0		422	
		117.0		422	
		119.0		422	
6	END OF 2nd FLOW	120.0		422	
	2nd SHUTIN PERIOD	0.0		422	
		4.0	9	431	33.5000
		7.0	26	448	19.5714
		10.0	52	474	14.0000
		14.0	86	509	10.2857
		17.0	112	535	8.6471
		21.0	155	578	7.1905
		24.0	181	603	6.4167
		28.0	233	655	5.6429
		31.0	276	698	5.1935
		34.0	328	750	4.8235

* VALUES USED FOR EXTRAPOLATIONS

DST#02
CHEVRON MOUNTAIN RIVER
848.00 m to 856.00 m

Location: 400/ 82.000 / 042.007 /00
Test Type: INFLATE STRADDLE
Formation: FORT NORMAN

Recorder Number: 001767
Recorder Depth: 851.00 m
Subsea Depth: -739.00 m

TIME-PRESSURE LISTING

CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		38.0	397	819	4.4211
		41.0	457	879	4.1707
		45.0	552	974	3.8889
		48.0	629	1052	3.7083
		52.0	759	1181	3.5000
		55.0	871	1293	3.3636
		58.0	1000	1422	3.2414
		62.0	1207	1629	3.0968
		65.0	1388	1810	3.0000
		69.0	1672	2095	2.8841
		72.0	1922	2345	2.8056
		76.0	2302	2724	2.7105
		79.0	2595	3017	2.6456
		82.0	2897	3319	2.5854
		86.0	3302	3724	2.5116
		89.0	3586	4009	2.4607
		93.0	3905	4328	2.3978
		96.0	4138	4560	2.3542
		100.0	4431	4853	2.3000
		103.0	4621	5043	2.2621
		106.0	4785	5207	2.2264
		110.0	5000	5422	2.1818
		113.0	5155	5578	2.1504
		117.0	5336	5759	2.1111
		120.0	5466	5888	2.0833
		124.0	5612	6035	2.0484
		127.0	5716	6138	2.0236
		130.0	5810	6233	2.0000
		134.0	5931	6353	1.9701
		137.0	6017	6440	1.9489
		141.0	6121	6543	1.9220
		144.0	6198	6621	1.9028
		148.0	6293	6716	1.8784
		151.0	6362	6785	1.8609
		154.0	6414	6836	1.8442
		158.0	6500	6922	1.8228

* VALUES USED FOR EXTRAPOLATIONS

DST#02
CHEVRON MOUNTAIN RIVER
848.00 m to 856.00 m

Location: 400/ 82.000 / 042.007 /00
Test Type: INFLATE STRADDLE
Formation: FORT NORMAN

Recorder Number: 001767
Recorder Depth: 851.00 m
Subsea Depth: -739.00 m

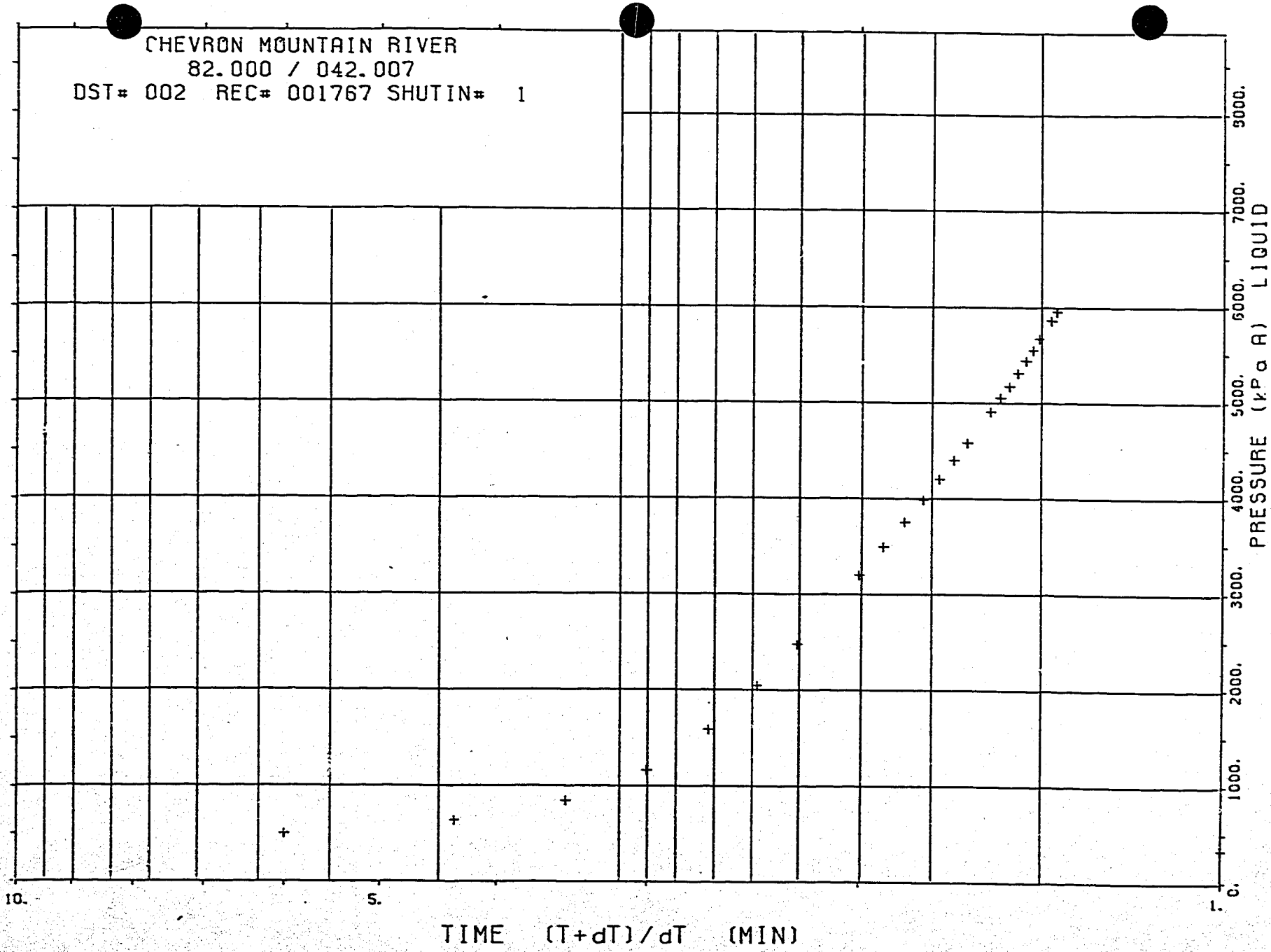
TIME-PRESSURE LISTING

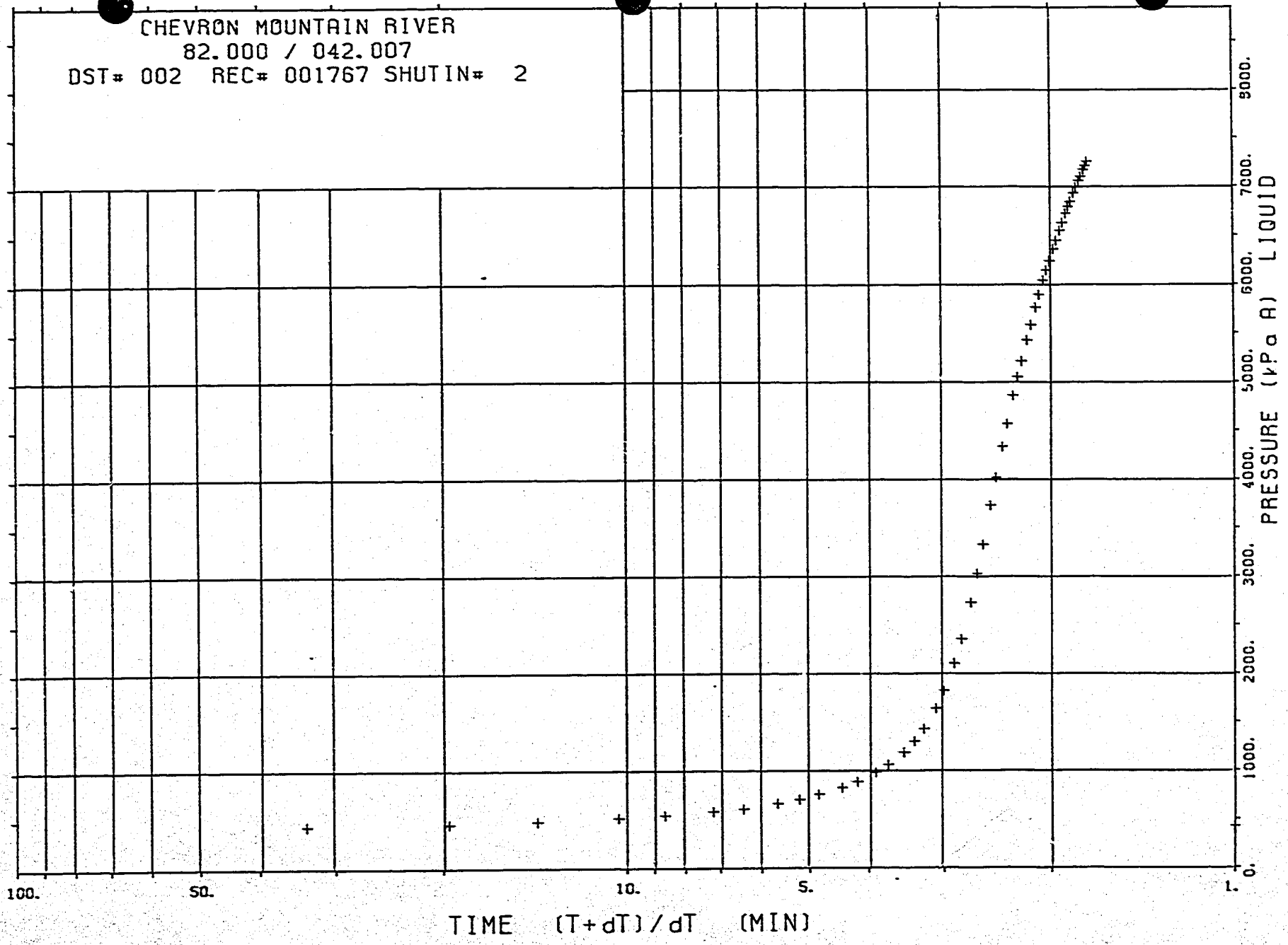
CHART LABEL	COMMENTS	TIME MIN.	DELTA P kPa	PRESSURE kPa(a)	(T+dt)/dt ABSCISSA
		161.0	6560	6983	1.8075
		165.0	6629	7052	1.7879
		168.0	6672	7095	1.7738
		172.0	6741	7164	1.7558
		175.0	6785	7207	1.7429
7	END OF 2nd SHUTIN	178.0	6828	7250	1.7303
14	FINAL HYDROSTATIC			9216	

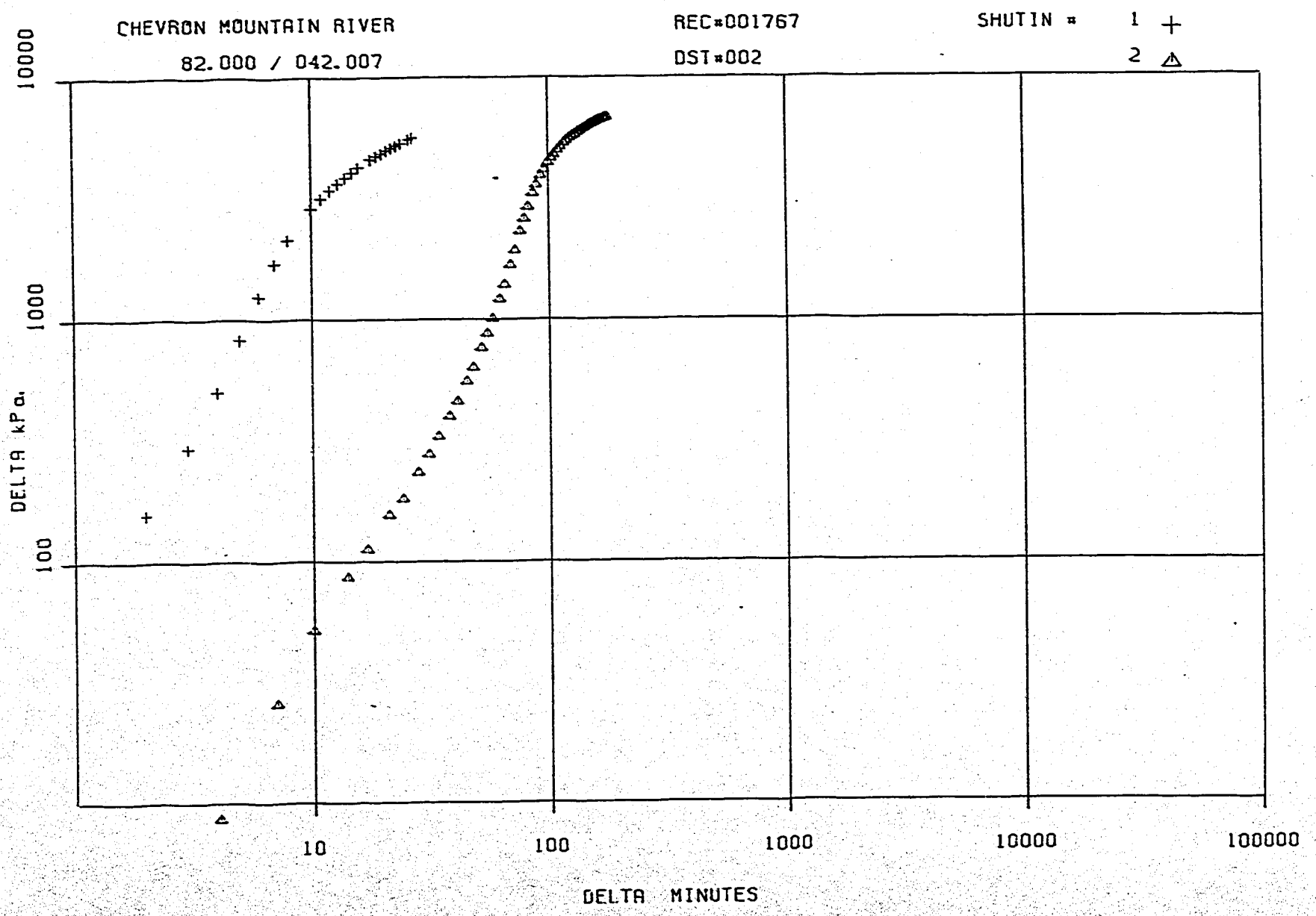
* VALUES USED FOR EXTRAPOLATIONS

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

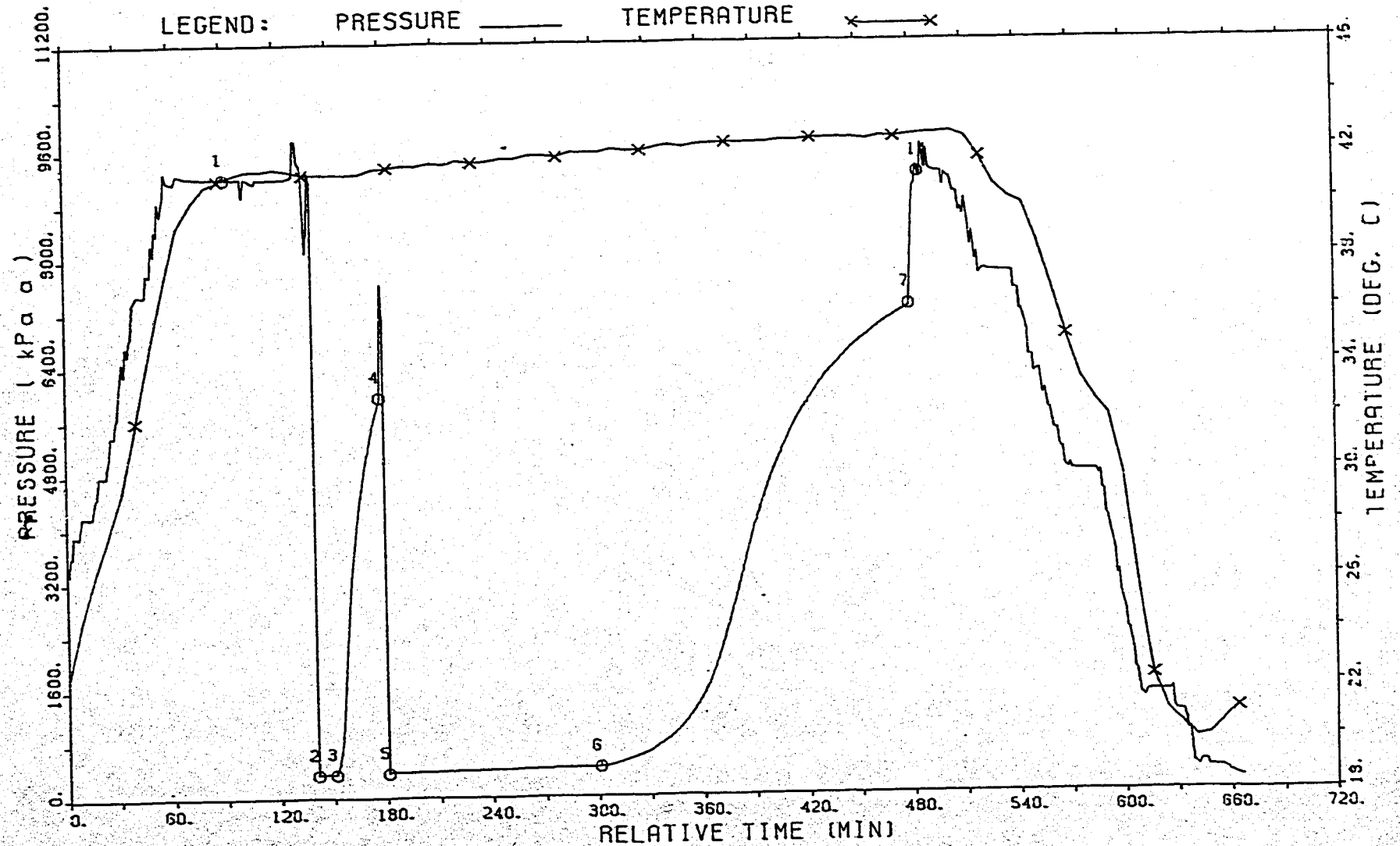

CHEVRON MOUNTAIN RIVER
82.000 / 042.007
DST# 002 REC# 001767 SHUTIN# 1
PRESSURE (kPa A) LIQUID
0.
1000.
2000.
3000.
4000.
5000.
6000.
7000.
8000.
10.
5.
1.
TIME (T+dT)/dT (MIN)


CHEVRON MOUNTAIN RIVER
82.000 / 042.007
DST# 002 REC# 001767 SHUTIN# 2
PRESSURE (kPa A) LIQUID
0.
1000.
2000.
3000.
4000.
5000.
6000.
7000.
8000.
100.
50.
10.
5.
1.
TIME (T+dT)/dT (MIN)


CHEVRON MOUNTAIN RIVER
82.000 / 042.007
REC=001767
DST=002
SHUTIN = 1 +
2 △
10000
1000
100
DELTA kPa
10
100
1000
10000
100000
DELTA MINUTES

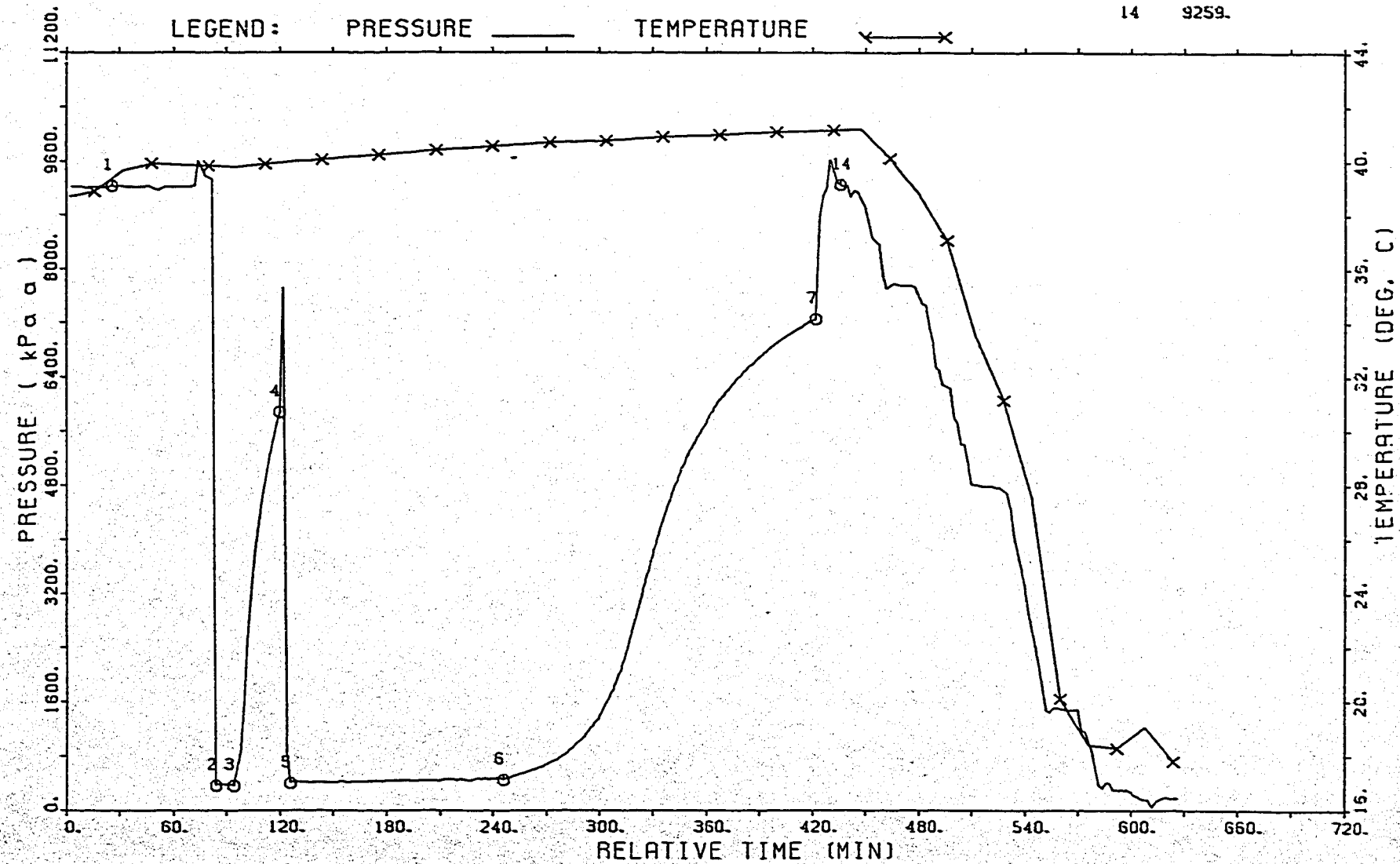
CHEVRON MOUNTAIN RIVER
82.000/42.007 DST #2
ELECTRONIC GAUGE #1767

LEGEND: ⊙ 1 = 9216. (Initial)
2 329.
3 336.
4 5948.
5 353.
6 422.
7 7250.
14 9216.



CHEVRON MOUNTAIN RIVER
82.000/42.007 DST #2
ELECTRONIC GAUGE #1785

LEGEND: ⊙ 1 = 9241. Total
2 362.
3 362.
4 5879.
5 397.
6 448.
7 7259.
14 9259.



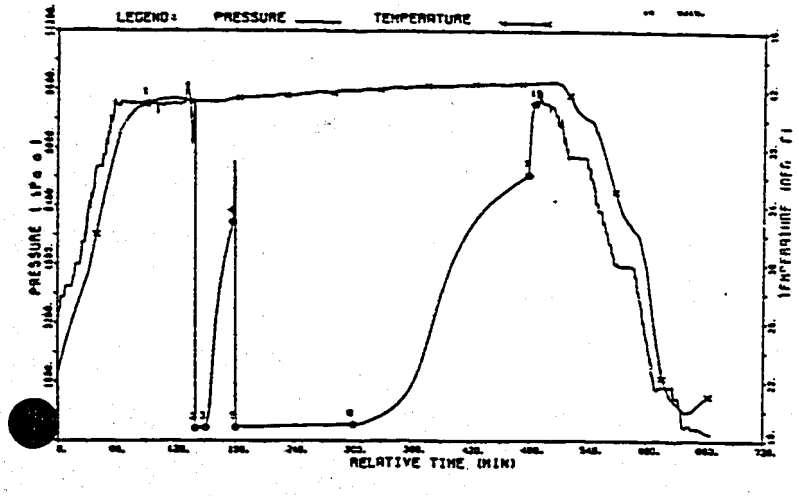
DST#02
CHEVRON MOUNTAIN RIVER
848.00m to 856.00m

PRESSURE RECORDER NUMBER : 001767

DEPTH : 851.00m
TYPE : DMRB
LOCATION : OUTSIDE
CAPACITY : 34500.00kPa(a)

***** TEMPERATURE AT RECORDER DEPTH = 42.3 C

	PRESSURE kPa(a)
1) Initial Hydro :	9216.
2) 1st Flow Start:	328.
3) 1st Flow End :	336.
4) END 1st Shutin:	5948.
5) 2nd Flow Start:	353.
6) 2nd Flow End :	422.
7) END 2nd Shutin:	7250.
14) Final Hydro. :	9216.



ELECTRONIC GAUGE.

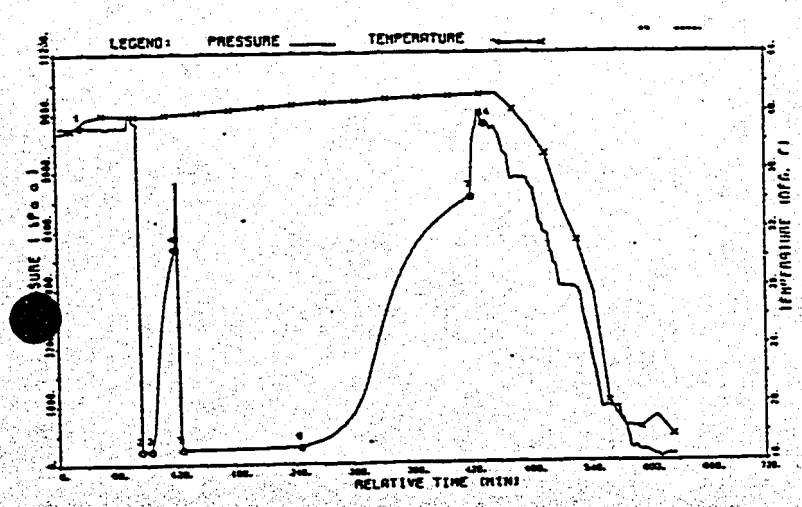
TEST TIMES(MIN)
1st FLOW : 10.0
SHUTIN: 27.0
2nd FLOW : 120.0
SHUTIN: 178.0

PRESSURE RECORDER NUMBER : 001785

DEPTH : 851.00m
TYPE : DMRB
LOCATION : OUTSIDE
CAPACITY : 68900.00kPa(a)

***** TEMPERATURE AT RECORDER DEPTH = 41.1 C

	PRESSURE kPa(a)
1) Initial Hydro :	9241.
2) 1st Flow Start:	362.
3) 1st Flow End :	362.
4) END 1st Shutin:	5879.
5) 2nd Flow Start:	397.
6) 2nd Flow End :	448.
7) END 2nd Shutin:	7259.
14) Final Hydro. :	9259.



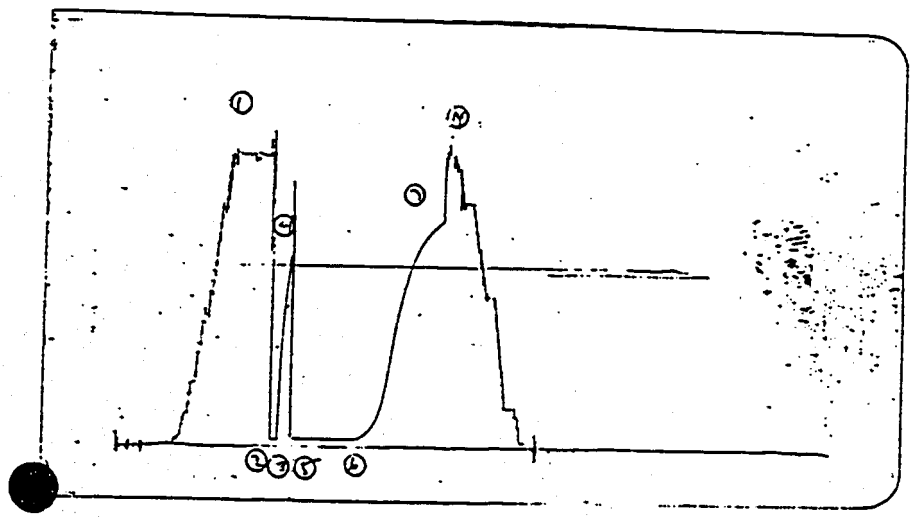
ELECTRONIC GAUGE.

DST#02
CHEVRON MOUNTAIN RIVER
848.00m to 856.00m

PRESSURE RECORDER NUMBER : 014156

DEPTH : 851.00m
TYPE : K-3
LOCATION : OUTSIDE
CAPACITY : 13700.00 kPa

	PRESSURE kPa
1) Initial Hydro :	9102.
2) 1st Flow Start:	288.
3) 1st Flow End :	269.
4) END 1st Shutin:	5829.
5) 2nd Flow Start:	314.
6) 2nd Flow End :	275.
7) END 2nd Shutin:	7106.
14) Final Hydro. :	9102.



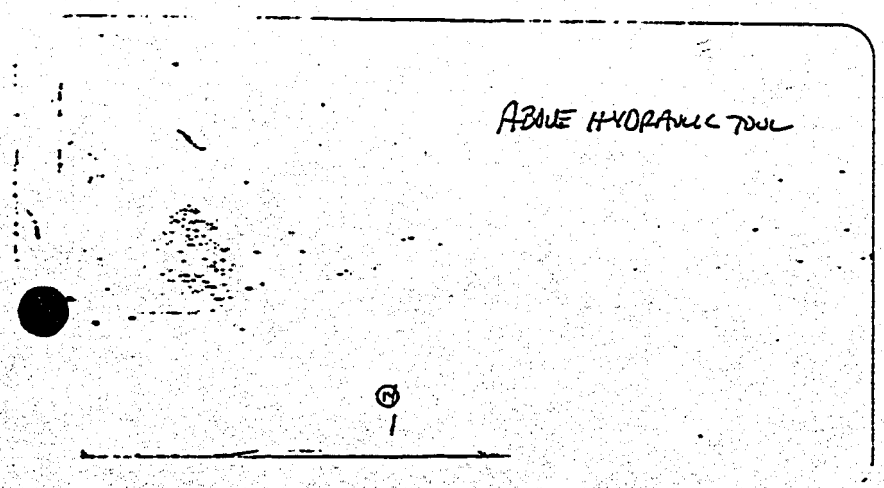
TEST TIMES (MIN)

1st FLOW :	10.0
SHUTIN:	27.0
2nd FLOW :	120.0
SHUTIN:	178.0

PRESSURE RECORDER NUMBER : 021150

DEPTH : 835.00m
TYPE : K-3
LOCATION : INSIDE
CAPACITY : 20500.00 kPa

	PRESSURE kPa
1) Initial Hydro :	
14) Final Hydro. :	78.



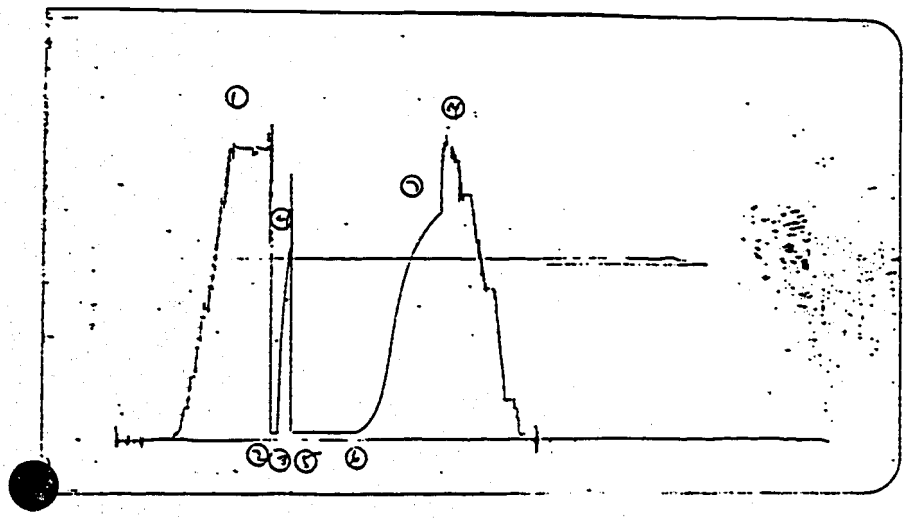
ABOVE HYDRAULIC TOOL.

DST#02
CHEVRON MOUNTAIN RIVER
848.00m to 856.00m

PRESSURE RECORDER NUMBER : 014156

DEPTH : 851.00m
TYPE : K-3
LOCATION : OUTSIDE
CAPACITY : 13700.00 kPa

	PRESSURE kPa
1) Initial Hydro :	9102.
2) 1st Flow Start:	288.
3) 1st Flow End :	269.
4) END 1st Shutin:	5829.
5) 2nd Flow Start:	314.
6) 2nd Flow End :	275.
7) END 2nd Shutin:	7106.
14) Final Hydro. :	9102.

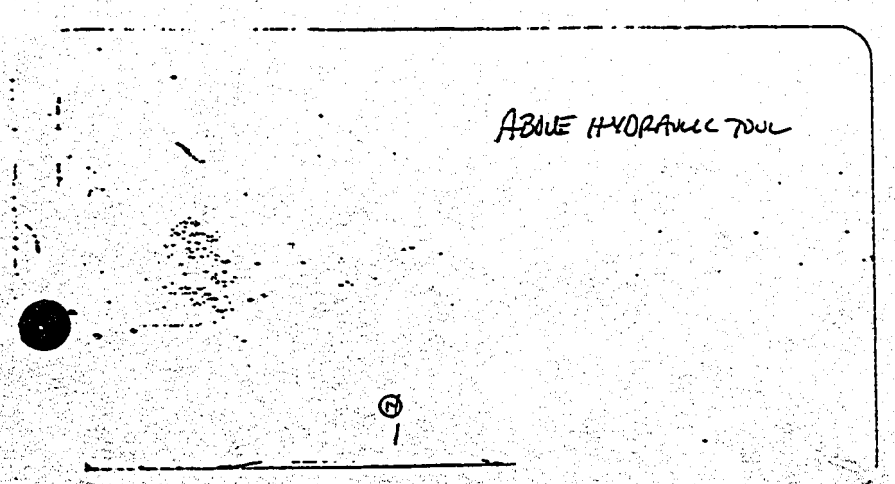


TEST TIMES (MIN)	
1st FLOW :	10.0
SHUTIN:	27.0
2nd FLOW :	120.0
SHUTIN:	178.0

PRESSURE RECORDER NUMBER : 021150

DEPTH : 835.00m
TYPE : K-3
LOCATION : INSIDE
CAPACITY : 20500.00 kPa

	PRESSURE kPa
1) Initial Hydro :	
14) Final Hydro. :	78.



ABOVE HYDRAULIC TOOL.

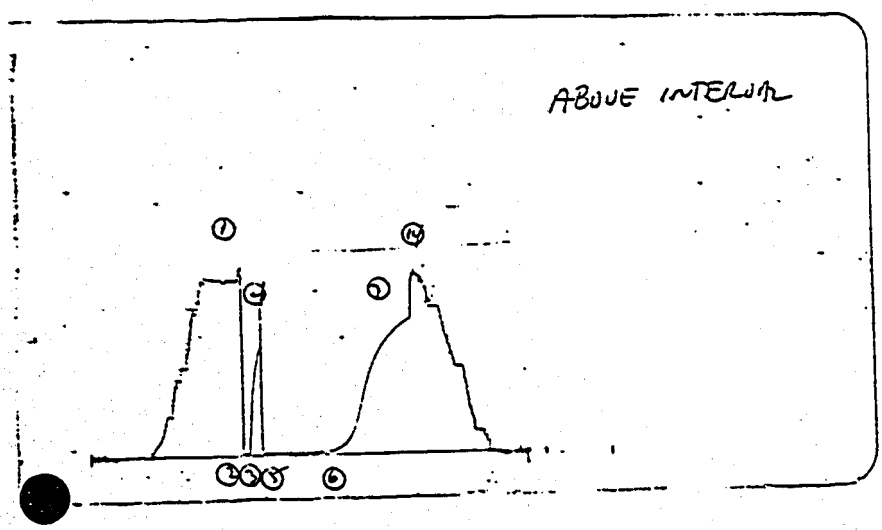
DST#02
CHEVRON MOUNTAIN RIVER
848.00m to 856.00m

PRESSURE RECORDER NUMBER : 021162

DEPTH : 840.00m
TYPE : K-3

LOCATION : INSIDE
CAPACITY : 21900.00 kPa

	PRESSURE kPa
1) Initial Hydro :	9004.
2) 1st Flow Start:	167.
3) 1st Flow End :	159.
4) END 1st Shutin:	5720.
5) 2nd Flow Start:	170.
6) 2nd Flow End :	190.
7) END 2nd Shutin:	7023.
14) Final Hydro. :	9004.



ABOVE INTERVAL.

TEST TIMES (MIN)

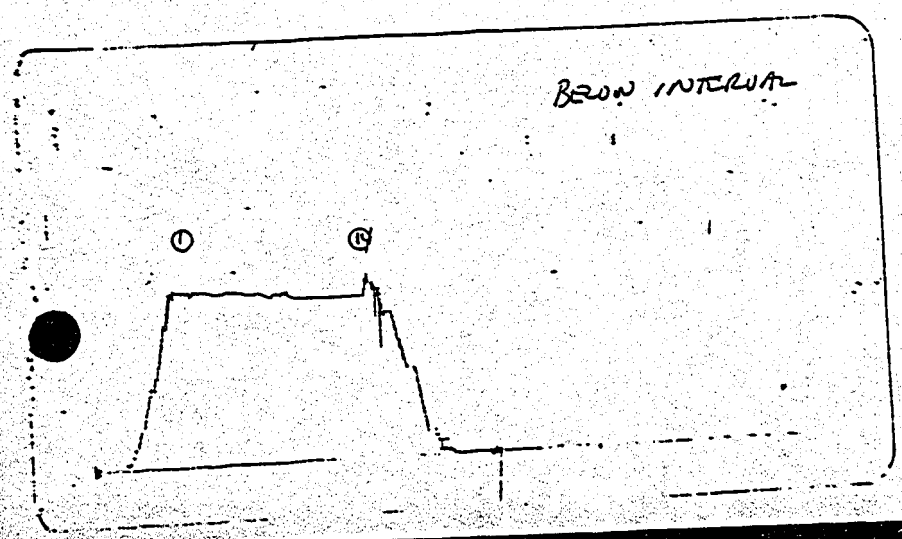
1st FLOW :	10.0
SHUTIN:	27.0
2nd FLOW :	120.0
SHUTIN:	178.0

PRESSURE RECORDER NUMBER : 021347

DEPTH : 860.00m
TYPE : K-3

LOCATION : INSIDE
CAPACITY : 22000.00 kPa

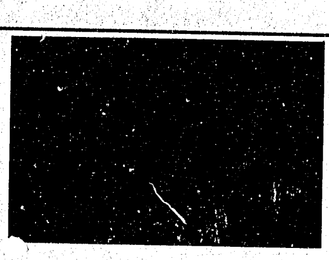
	PRESSURE kPa
1) Initial Hydro :	9160.
14) Final Hydro. :	9160.



BELOW INTERVAL.

APPENDIX 6

LOCALITY MAP



PLAN AND FIELD NOTES OF SURVEY OF

PROPOSED EXPLORATORY WELL CHEVRON MOUNTAIN RIVER IN UNIT O, SECTION 18 GRID AREA 65°40', 129°00'

NORTHWEST TERRITORIES

CANADA OIL AND GAS REGULATIONS

100 50 25 0 50 100 200 300 400 500 metres

Scale= 1:5000

LEGEND

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

Bearings were derived (adjusted) by solar 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 distances have been reduced to the UTM plane by multiplying them by an average combined scale factor of 0.999555

Distances shown on grid area subdivisions are UTM plane.

Authorized control monuments found shown thus . . . . . ●

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

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

Elevations were derived from seismic data. Average elevation is 107m.

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 16th day of November, 1989.

Akbar Karsa
Canada Lands Surveyor

R. Gibennus.
A Commissioner for Oaths in and for the Province of Alberta.

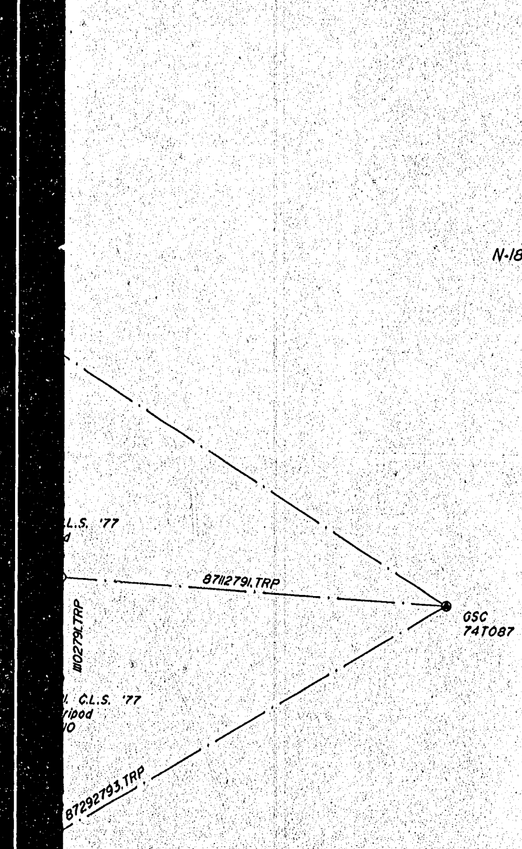
Robert A. Gibennus
25/03/1991

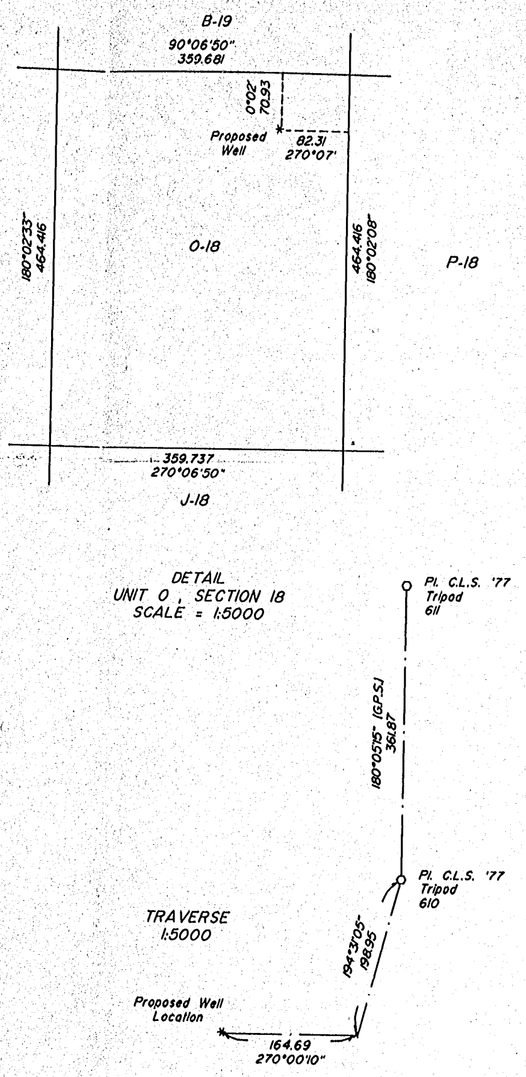
THIS SURVEY WAS EXECUTED DURING THE PERIOD AUGUST 22 TO AUGUST 25, 1989, BY AKBAR KARSAN, C.L.S.

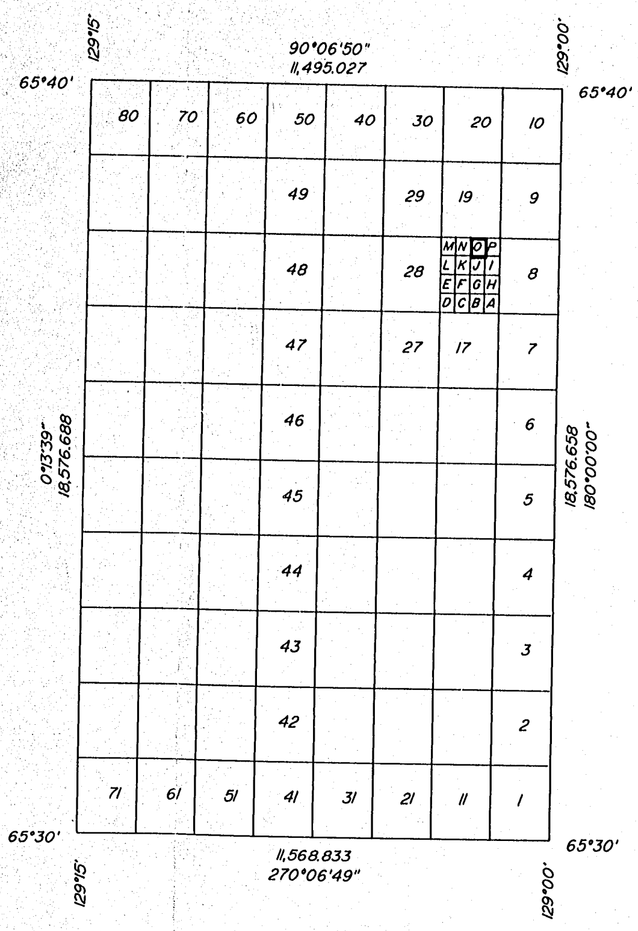
CHEVRON CANADA RESOURCES LIMITED.

STAR TECH LAND SURVEYS LTD.
212, 7618-103rd Street Edmonton
Phone: 432-9331

Job No. S890012A
Dwg No. S890012A







GRID AREA 65°40' , 129°00'

SCALE = 1:100 000

ELINE H (M)
64.391
43.570
72.588
40.815
46.002
07.392
61.805
39.463

D 1927)	
SOID (M)	ORTHOMETRIC HEIGHT (M)
	44.246
	634.736
	89.29
	90.08
	105.64
	102.89
	109.46

P

PROPOS
CHEV
IN
GRID
NO

CAN

100 5025 0

LEGEND

UTM coordinates are compu

Bearings were derived (adju
are referred to meridian 12

Distances are expressed in

Distances shown in traverse
horizontal at general ground

For the computation of coo
reduced to the UTM plane
scale factor of 0.999555

Distances shown on grid are

Authorized control monument

Monuments placed shown thu

Traverse lines shown thus

Elevations were derived fro

Survey was completed prior
not necessarily agree with p

AFFIDAVIT

I, Akbar Karsan, of the
make oath and say that I h
instructions of the Surveyor
executed the survey shown
field notes are correct and
SO HELP ME GOD.

Sworn before me at the Cit
in the Province of Alberta
of November, 1989.

A Commissioner for Oaths in
the Province of Alberta.

Robert
25/03/1

THIS SURVEY WAS E
AUGUST 22 TO AUGU

CHEVRON CANA

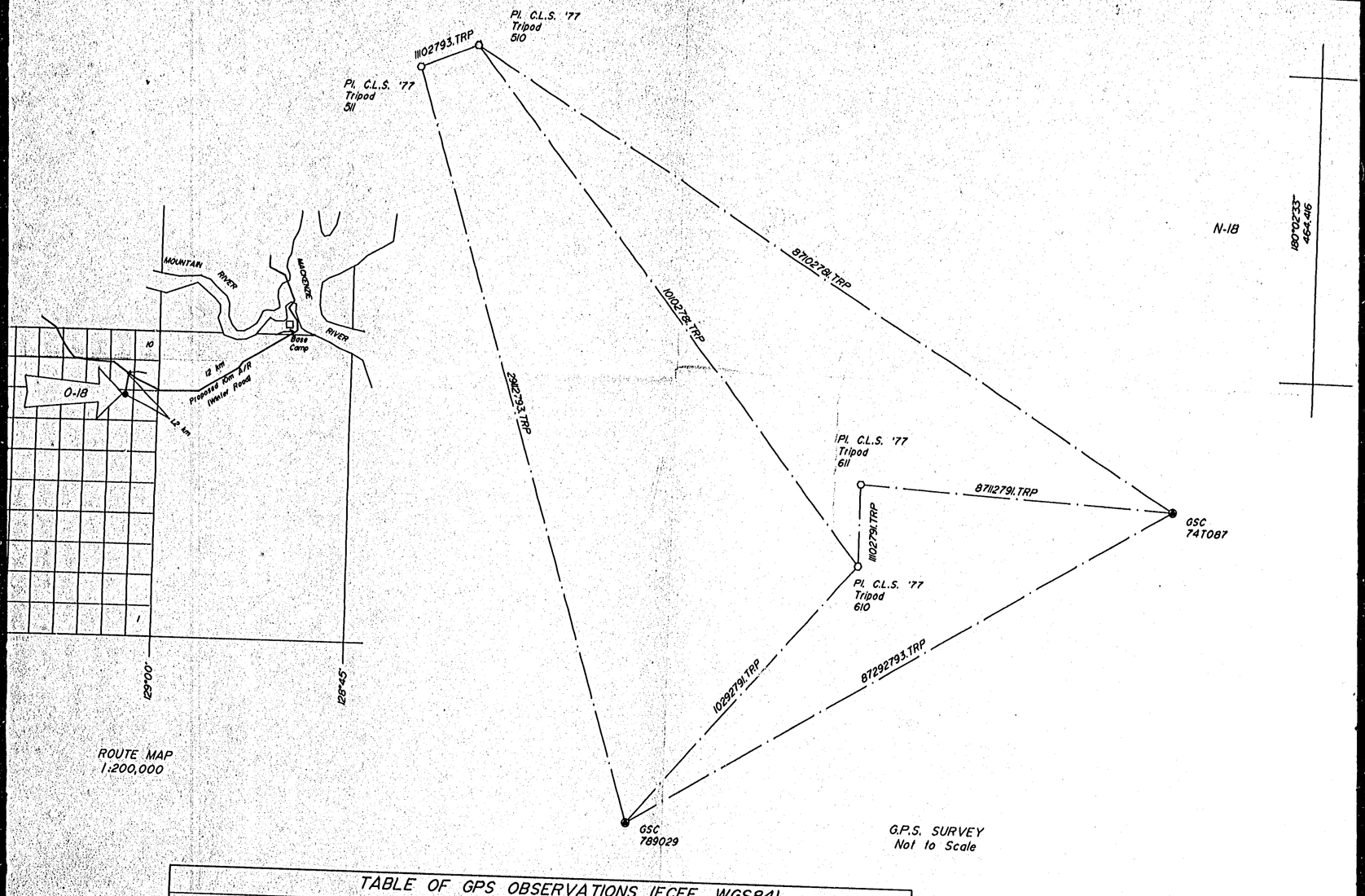
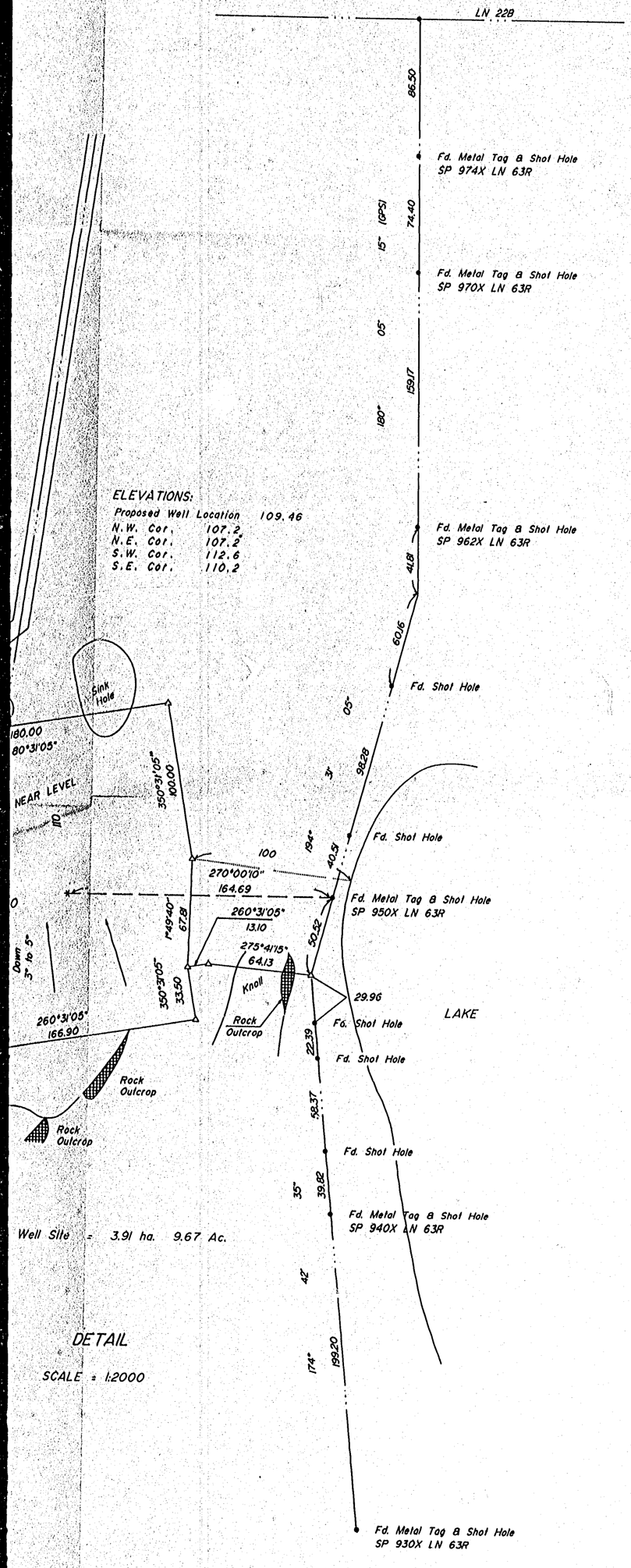


TABLE OF GPS OBSERVATIONS (ECEF, WGS84)

BASELINE	FROM STATION	TO STATION	DELTA X (M)	DELTA Y (M)	DELTA Z (M)	BASELINE LENGTH (M)
29112793.TRP	789029	511	23422.337	49922.653	23555.276	59964.391
87102781.TRP	74T087	510	-22019.692	57426.606	13849.579	63043.578
10102781.TRP	510	610	4278.471	-41990.070	-13363.786	44272.588
87112791.TRP	74T087	611	-17534.232	15694.632	631.857	23540.815
10292791.TRP	610	789029	-28020.029	-7832.122	-10247.522	30846.002
87292793.TRP	74T087	789029	-45763.501	7608.532	-9760.791	47407.392
11102791.TRP	611	610	-208.549	-256.659	-146.753	361.805
11102793.TRP	511	510	318.593	-103.823	54.351	339.463

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

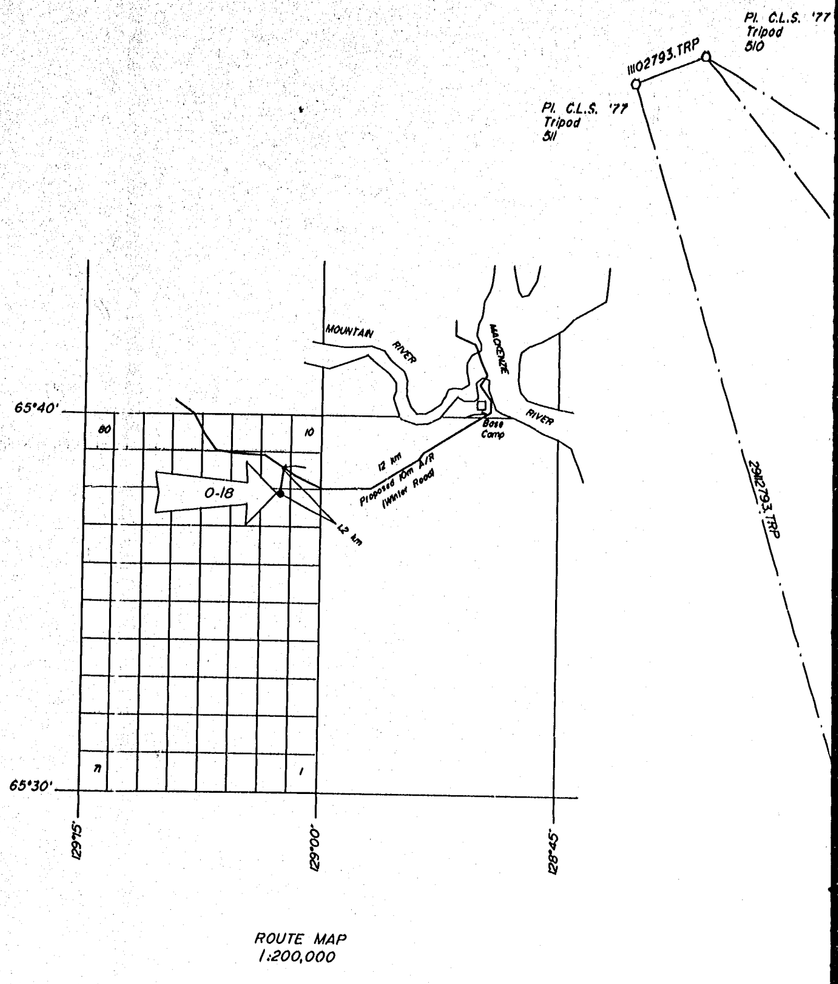
STATION	NORTH LATITUDE	WEST LONGITUDE	NORTHING (M)	EASTING (M)	SPHEROID HEIGHT (M)	GEOID ELLIPSOID SEPERATION (M)	ORTHOMETRIC HEIGHT (M)
FIXED CONTROL MONUMENTS							
74T087	65°37'30.46902"	128°31'33.54572"	7278018.188	521829.996	53.66		44.246
789029	65°24'08.14476"	129°23'54.36863"	7253153.838	481493.443	646.07		634.736
NEW MONUMENTS							
510	65°55'37.03621"	129°41'23.87903"	7311750.766	468594.437	98.58	-9.29	89.29
511	65°55'32.67731"	129°41'48.50271"	7311619.250	468281.613	99.37	-9.29	90.08
610	65°38'04.03619"	129°02'10.29161"	7278975.698	498333.816	115.77	-10.13	105.64
611	65°38'15.71741"	129°02'10.26477"	7279337.363	498334.368	113.02	-10.13	102.89
GRID AREA							
N.E.	65°40'	129°00'	7282565.617	500000.000			
S.E.	65°30'	129°00'	7263988.960	500000.000			
N.W.	65°40'	129°15'	7282588.468	488504.996			
S.W.	65°30'	129°15'	7264011.926	488431.190			
0-18 N.E.			7278853.860	498201.601			
0-18 S.E			7278389.444	498201.312			
0-18 N.W.			7278854.575	497841.920			
0-18 S.W			7278390.159	497841.576			
PROPOSED WELL LOCATION							
*	65°37'57.81139"	129°02'27.06025"	7278783.101	498119.252			109.46



DETAIL

SCALE = 1:2000

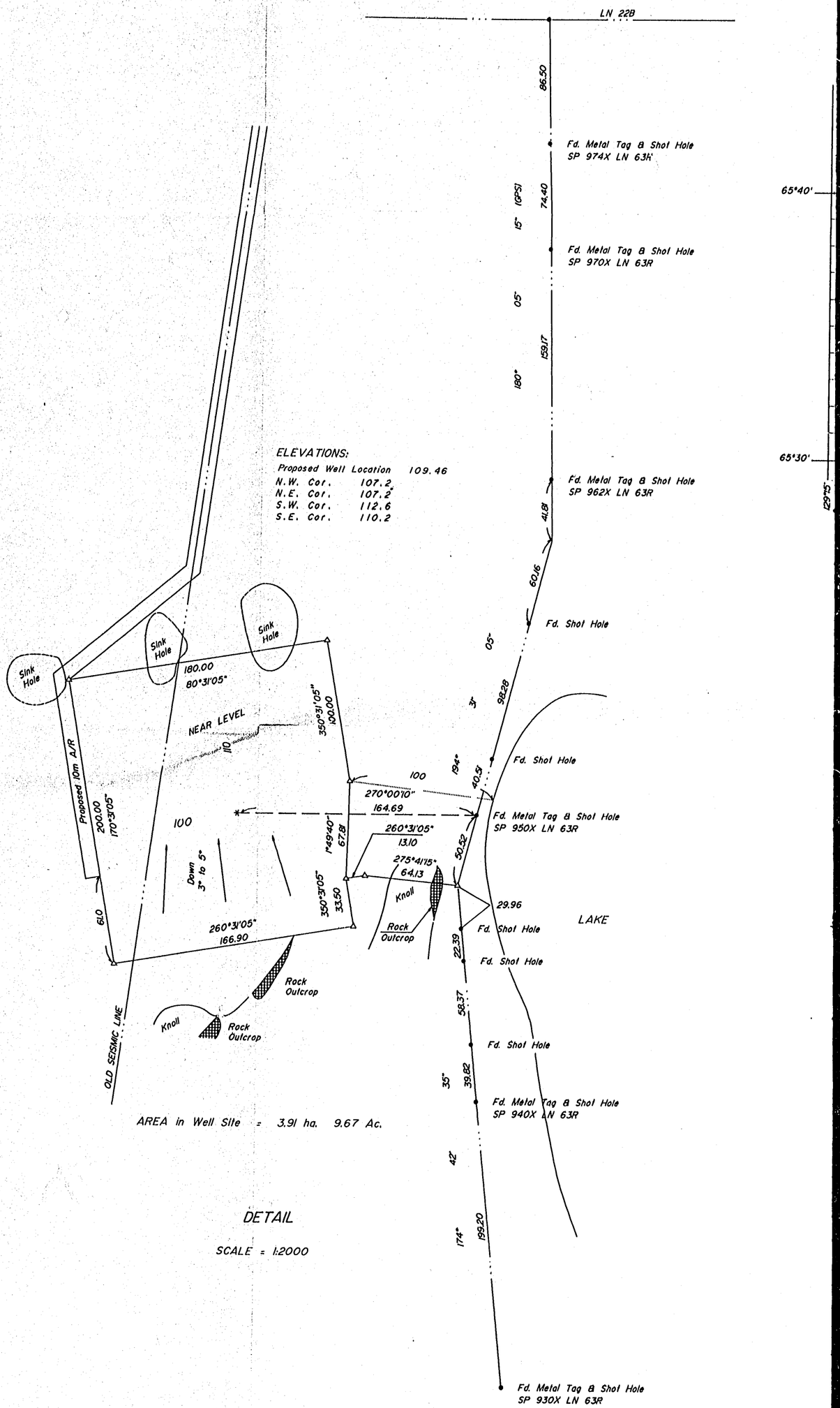
Well Site = 3.91 ha. 9.67 Ac.



ROUTE MAP
1:200,000

TABLE OF GPS OBSER			
BASELINE	FROM STATION	TO STATION	DELTA X
29112793.TRP	789029	511	23422
87102781.TRP	74T087	510	-22019
10102781.TRP	510	610	4278
87112791.TRP	74T087	611	-17534
10292791.TRP	610	789029	-28020
87292793.TRP	74T087	789029	-45763
11102791.TRP	611	610	-208
11102793.TRP	511	510	318

TABLE OF GEOGRAPHIC AND U.T.M. COORD			
STATION	NORTH LATITUDE	WEST LONGITUDE	NORTHING
FIXED CONTROL MONUMENTS			
74T087	65°37'30.46902"	128°31'33.54572"	7278018.
789029	65°24'08.14476"	129°23'54.36863"	7253153.6
NEW MONUMENTS			
510	65°55'37.03621"	129°41'23.87903"	7311750.7
511	65°55'32.67731"	129°41'48.50271"	7311619.2
610	65°38'04.03619"	129°02'10.29161"	7278975.6
611	65°38'15.71741"	129°02'10.26477"	7279337.3
GRID AREA			
N.E.	65°40'	129°00'	7282565.6
S.E.	65°30'	129°00'	7263988.9
N.W.	65°40'	129°15'	7282588.4
S.W.	65°30'	129°15'	7264011.9
0-18 N.E.			7278853.8
0-18 S.E			7278389.4
0-18 N.W.			7278854.5
0-18 S.W			7278390.1
PROPOSED WELL LOCATION			
*	65°37'57.81139"	129°02'27.06025"	7278783.1


LN 228
86.50
Fd. Metal Tag & Shot Hole
SP 974X LN 63R
15° (GPS)
74.40
65°40'
Fd. Metal Tag & Shot Hole
SP 970X LN 63R
05"
159.17
180°
65°30'
Fd. Metal Tag & Shot Hole
SP 962X LN 63R
41.81
60.16
Fd. Shot Hole
05"
98.28
3°
194°
40.51
Fd. Shot Hole
100
270°00'10"
164.69
Fd. Metal Tag & Shot Hole
SP 950X LN 63R
260°31'05"
13.10
50.52
275°41'15"
64.13
Knoll
29.96
LAKE
Fd. Shot Hole
22.39
Fd. Shot Hole
58.37
Fd. Shot Hole
35°
39.82
Fd. Metal Tag & Shot Hole
SP 940X LN 63R
42°
174°
199.20
Fd. Metal Tag & Shot Hole
SP 930X LN 63R
ELEVATIONS:
Proposed Well Location 109.46
N.W. Cor. 107.2
N.E. Cor. 107.2
S.W. Cor. 112.6
S.E. Cor. 110.2
Sink Hole
Sink Hole
Sink Hole
180.00
80°31'05"
NEAR LEVEL
110
350°31'05"
100.00
Proposed 10m A/R
200.00
170°31'05"
100
Down 3° to 5°
1°49'40"
67.81
350°31'05"
33.50
61.0
260°31'05"
166.90
Rock Outcrop
Knoll
Rock Outcrop
Rock Outcrop
OLD SEISMIC LINE
AREA in Well Site = 3.91 ha. 9.67 Ac.
DETAIL
SCALE = 1:2000

APPENDIX 7

DRILLING FLUID REPORT

Chevron Mountain River 0-18

65 37' 57.89"N

129 02' 28.76"W

Well Recap

M-I Drilling Fluids Canada, Inc.

Chevron Mountain River 0-18

65 37' 57.89"N

129 02' 28.76"W

Spud Date:	Nov. 30, 1989
Rig Release Date:	Jan. 8, 1990
Total Days:	40
Total Depth:	1120 m

Sales Representative:	Mark Ralph
Field Representative:	Tim Aldridge

TABLE OF CONTENTS

1. Recap by Interval

2. Graphics Section
   a. Days vs. Depth
   b. Mud Costs - Weekly/Total
   c. PV/YP vs. Depth

3. Summary of Daily Mud Checks

CONDUCTOR HOLE SECTION:

Interval:	0 - 46 m
Mud Type:	Gel / Caustic
Hole Size:	660 mm
Casing Size:	508 mm
Total Days:	5

Comments: Spudded surface hole with Gel/Caustic/Slurry and motor increasing rheology to clean hole at 40 m. Rotary drilled to 46 m. Minor losses over shaker screen. Attempt to run 508 mm casing bridged off approximately 18 m. Had to lay down casing. Run in bit, hole very clean. Run to bottom 6 m fill. Trip out to rerun 508 mm conductor pipe. Rig up and run pipe ledge encountered approximately 18 m. Lay out casing. Lost 20 m^3 volume through cellar pump system.

Make up 311 mm stabilizers. Run in hole. No fill. Trip out and pick up 661 mm stabilizers. Run in hole and work to bottom. Raise viscosity to 90. Run, land and cement 508 mm conductor pipe. Cement returns to surface.

Material Usage:

Product	Units
M-I Gel	142
Caustic Soda	12
Bentonite (40 Kg)	148

SURFACE HOLE SECTION:

Interval:	46 - 145 m
Mud Type:	Gel/Caustic
Hole Size:	444 mm
Casing Size:	339 mm
Total Days:	3

Comments: Drill out conductor with mud. By-pass cement contamination. Drill 444.5 mm surface hole. Log well okay. Rig up and run 339 mm surface casing. Cement surface casing returns to surface.

Material Usage:

Product	Units
Bentonite (40 Kg)	92
Caustic Soda	3
Bicarbonate	3

INTERMEDIATE HOLE SECTION:

Interval:	145 - 534 m
Mud Type:	Gel/Kelzan
Hole Size:	311.2 mm
Casing Size:	245 mm
Total Days:	13

Comments: Drill out with water. Gates were leaking at this time. Treat out cement contamination. Minor lost circulation at approximately 282 m. Treat with sawdust pill. Spot over thief zone. Build volume and drill ahead. Minor losses while drilling fractured formation. Centrifuge down 24 hours. Log well, no problems. Bottom hole temperature 45 C from logs. DST #1 hole taking fluid after clean out trip for 244 mm casing. Mix LCM pill and circulate through system. Well stable. Run, land and cement 244 mm casing returns to surface.

Material Usage:

Product	Units
Caustic	20
Bentonite (40 Kg)	390
Bentonite (100 Kg)	28
Bicarbonate	4
Kelzan XC	22
Sawdust	1
Milfibre	20

MAIN HOLE SECTION:

Interval:	534 - 1120 m
Mud Type:	Gel/Kelzan
Hole Size:	216 mm
Casing Size:	No Casing
Total Days:	10

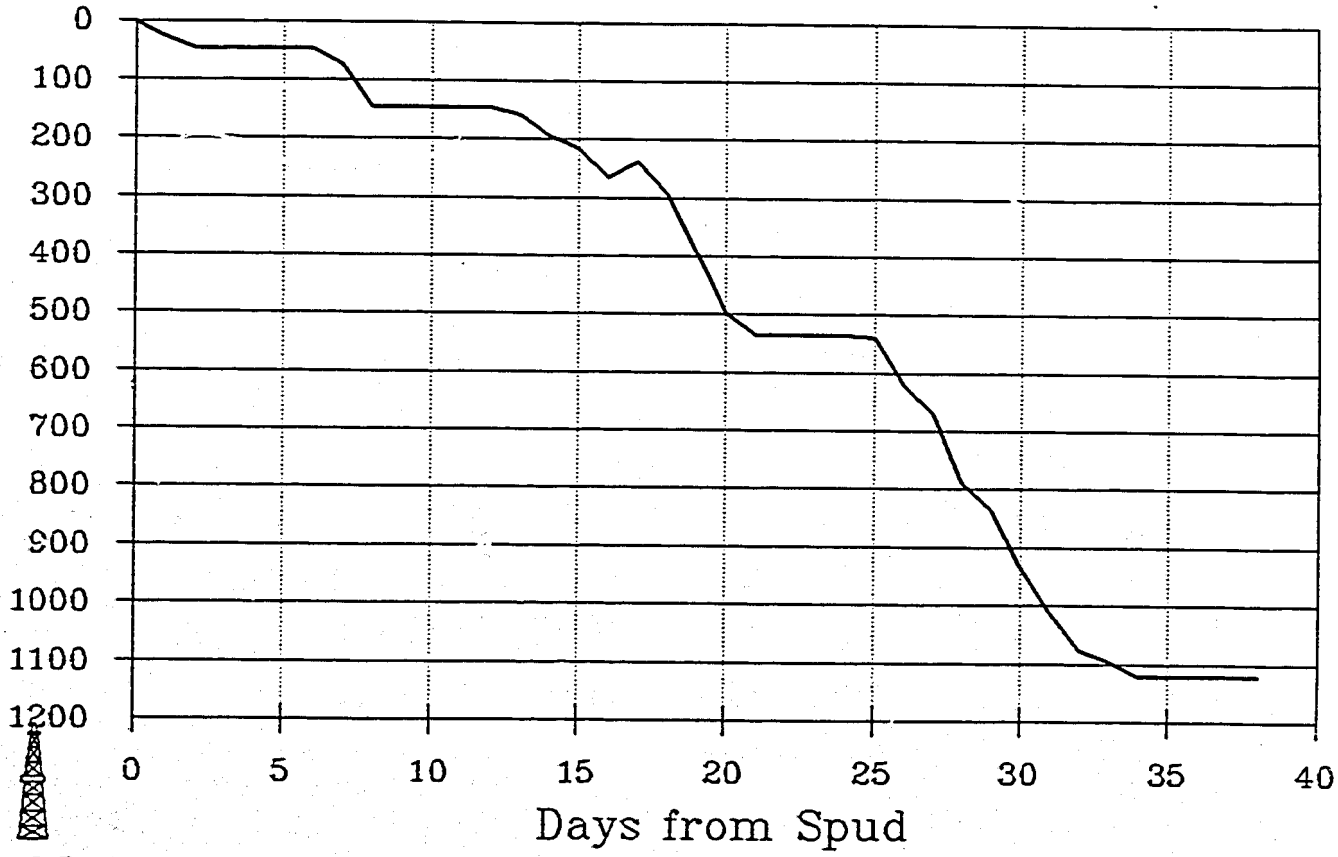
Comments: Drill out with water and displace hole to Gel/Kelzan system. Severe Anhydrite encountered 800 m to 920 m, treat out with Soda Ash.

Material Usage:

Product	Units
Caustic Soda	26
Bentonite (40 Kg)	177
Bentonite (100 Kg)	112
Cello Flake	4
Barite	149
Bicarbonate	9
Kelzan XC	15
Soda Ash	30
Al. Stear	1
Peltex	23

Days vs. Depth

Chevron Mountain River 0–18

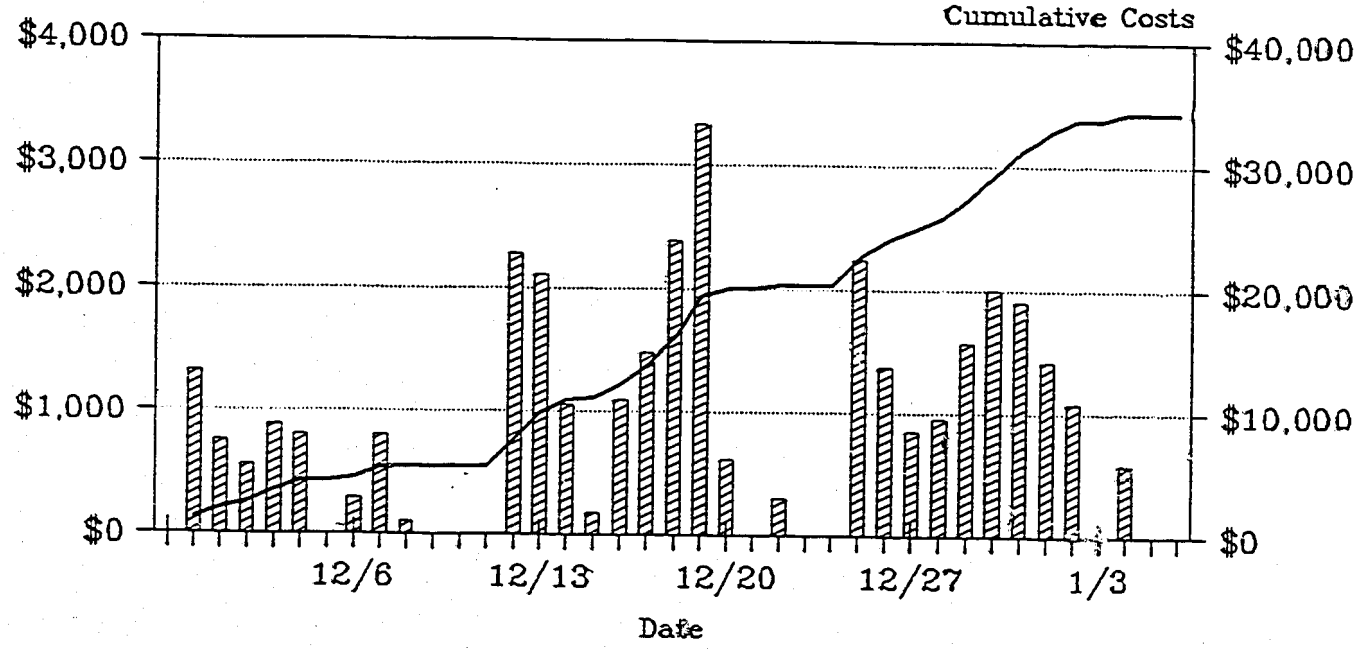


M – I Drilling Fluids Canada, Inc.

X Data	Days from Spud
[redacted]	0
27	1
46	2
46	3
46	4
46	5
46	6
73	7
145	8
145	9
145	10
145	11
145	12
158	13
194	14
215	15
266	16
238	17
292	18
395	19
497	20
534	21
534	22
534	23
534	24
[redacted]9	25
[redacted]0	26
670	27
789	28
835	29
934	30
1012	31
1076	32
1094	33
1120	34
1120	35
1120	36
1120	37
1120	38

Mud Costs – Daily/Total

Chevron Mountain River 0–18

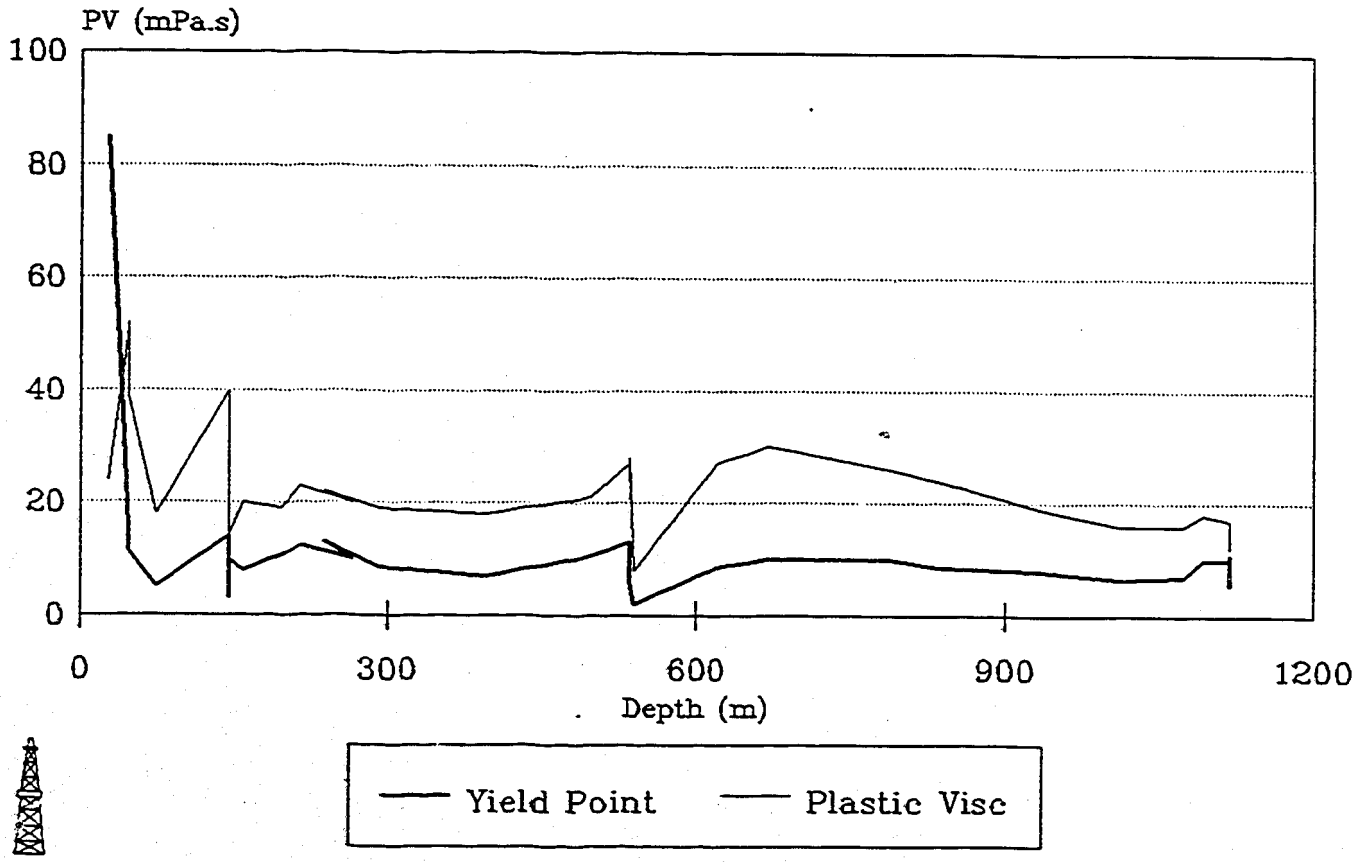


M– I Drilling Fluids Canada, Inc.

X Data	Daily Cost	Cumulative Cos
11/30	1317	1317
12/1	760	2077
12/2	559	2636
12/3	885	3521
12/4	801	4322
12/5	0	4322
12/6	290	4612
12/7	801	5413
12/8	105	5518
12/9	0	5518
12/10	0	5518
12/11	0	5518
12/12	2279	7797
12/13	2107	9904
12/14	1054	10958
12/15	182	11140
12/16	1096	12236
12/17	1475	13711
12/18	2386	16097
12/19	3330	19427
12/20	616	20043
12/21	0	20043
12/22	295	20338
12/23	0	20338
/24	0	20338
/25	2239	22577
12/26	1375	23952
12/27	853	24805
12/28	954	25759
12/29	1568	27327
12/30	1998	29325
12/31	1908	31233
1/1	1417	32650
1/2	1082	33732
1/3	0	33732
1/4	584	34316
1/5	0	34316
1/6	0	34316

PV/YP vs. Depth

Chevron Mountain River 0–18



M – I Drilling Fluids Canada, Inc.

X Data	Yield Point	Plastic Visc
27	85	24
46	15.5	51
46	17	52
46	15	45
46	15	45
46	11.5	39
73	5	18
145	14	40
145	3	16
145	10.5	24
145	4	16
145	10	14
158	8	20
194	10.5	19
215	12.5	23
266	10	20
238	13	22
292	8.5	19
395	7	18
497	10.5	21
534	13	27
534	7.5	24
534	8.5	25
534	6	28
539	2	8
670	8.5	27
789	10	30
835	10	26
934	8.5	24
1012	8	19
1076	6.5	16
1094	7	16
1120	10	18
1120	10	17
1120	7	17
1120	11	17
1120	5.5	12
1120	5.5	12

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

WEEKLY SUMMARY

WELL NAME CHEVRON MOUNTAIN RIVER
LEGAL O-18
MUD TYPE GEL CHEM MUD ENGINEER TIM ALDRIDGE CONTRACTOR SHEFFIAH 1 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	CO3 mg/L	HCO3 mg/L	K+ ion mg/L	POLYMER kg/m³	MBT kg/m³	VOLUME FRACTION OIL	VOLUME FRACTION SOLIDS	VOLUME FRACTION SAND	D/B ratio		ESTIMATED DAILY COST $	ESTIMATED ACCUM COST $
NOV 30	27	1100	58	66	41	24	86	25	16	14.0	-	2	-	9.5	.15	.35	250	TR			-	-	50	0	.05	TR				1317.
DAYS FROM SPUD		SPUD WELL @ 10:00 - DRILL 660 CONDUCTOR HOLE WITH MOTOR - INCREASE RHEOLOGY																												
		MUD LOSSES OVER SHAKER - DRILLING 660 CONDUCTOR HOLE																												1317.
DEC 01	46	1065	90	141	90	51	165	5	12	11.0	-	3	-	10.0	.3	.6	250	0			-	-	64	0	.04	TR				760.
		DRILL 660mm CONDUCTOR HOLE WITH MOTOR - MOTOR FAILURE - TRIP OUT & LAY DOWN MOTOR - RIH W/ OPEN																												
1		WASH TO BOTTOM - ROTARY DRILL TO 46M - WIPER TRIP - HI VIS SWEEP - TRIP OUT FOR 508mm CASING PIPE																												2077.
02	46	1060	95	138	86	52	17	6	15	10.0	-	3	-	10.0	.3	.6	250	0			-	-	64	0	.04	TR				559.
		CASING BRIDGED OFF APPROX 8M - LAY OUT CASING. - RIH WITH BIT - NOTHING FELT - RUN TO BTM CIRC FILL																												
2		CIRC - HI VIS SWEEP - TRIP OUT TO RE-RUN 508mm CSG. - RUN 508mm CSG. LEAKS APPROX 18M - LAY OUT CASING																												2635.
03	46	1060	80	110	75	45	15	6	13	10.4	-	3	-	10.0	.25	.6	250	0	-	-	-	-	64	0	.04	TR				886
3																														3521.
04																														
4																														
05																														
5																														
06																														
6																														

CALGARY OFFICE

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

WEEKLY SUMMARY

WELL NAME CHEVRON MOUNTAIN RIVER

LEGAL Q-18

MUD TYPE GEL-CHEM MUD ENGINEER TIM AUDRIDGE CONTRACTOR SHENTOAH 1E PAGE 2 OF

DATE / DAYS FROM SPUD	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	ESTIMATED DAILY COST $	ESTIMATED ACCUM. COST $
DEC																													
DEC 03	46	1060	80	120	75	45	15	6	13	10.4	-	3	-	10	.25	.6	250	0	-	-	-	-	64	0	.04	TR		885.	
3	MAKE UP 311MM STABILIZERS - RIH - NO FILL - CIRC & WORK. PRE - WIPER TRIP - TRIP OUT. PICK UP 66MM STABILIZER & WORK TO BOTTOM - ROUGH.																											3571.	
DEC 04	46	1070	93	126	80	45	15	5	15	11.0	-	3	-	10	.3	.55	250	0	-	-	-	-	64	0	.04	TR		801.	
4	WORK 66MM STABILIZER & BIT TO BOTTOM - WIPER TRIP - TRIP OUT TO RUN 508MM CONDUCTOR. CIRC & WORK CONDUCTOR TO BOTTOM - CEMENT 508MM CONDUCTOR - RETURNS TO SURFACE.																											4372.	
DEC 05	46	1070	70	101	62	39	11.5	3	9	11.2	-	3	-	9.5	.2	.5	250	0	-	-	-	-	64	0	.04	TR		—	
5	NIPPLE UP DIVERTER SYSTEM - PREPARE TO DRILL OUT 508MM CSG SHOE																											4372.	
DEC 06	73	1070	55	96	58	38	5	2	10	12.0	-	2	-	9.5	.2	.5	250	0	-	-	-	-	64	0	.05	TR		290.	
6	NIPPLE UP DIVERTER & PRESS TEST. - PICK UP DRILLING ASSEMBLY - DRILL OUT CONDUCTOR WITH MUD - DUMP CEMENT CUT MUD (15M³) DRILL 444.5MM SURF. HOLE.																											4613.	
DEC 07	145	1070	92	106	68	40	14	2	15	12.2	-	2	-	10.0	.45	1.5	250	0	-	-	-	-	60	0	.04	TR		801.	
7	DRILL 444.5MM SURF HOLE TO 145M - WIPER TRIP - NO FILL. INCREASE RHEOLOGY - TRIP OUT TO LOG & RUN SURF. CASING.																											5414.	
DEC 08	145	1070	43	38	22	16	3	1	2	12.0	-	2	-	9.0	.15	4	250	0	-	-	-	-	46	0	.04	TR		105.	
8	LOG WELL OK NO FILL - WIPER TRIP - RIG UP & RUN 339MM SURF CASING. - CIRC & LOWER RHEOLOGY - CEMENT SURFACE CASING - RETURNS TO SURFACE. (DUMP 10M³ CEMENT CUT)																											5519.	
DEC 09	145	1070	64	69	45	24	10.5	2	9	12.0	-	2	-	10.0	.25	.5	250	0	-	-	-	-	53	0	.04	TR		—	
9	RIG DOWN DIVERTER - NIPPLE UP B.O.P. STACK.																											5519.	

CALGARY OFFICE

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

WEEKLY SUMMARY

WELL NAME CHEVRON MOUNTAIN RIVER

LEGAL O-18

MUD TYPE GEL-CHEM MUD ENGINEER TIM ALDRIDGE CONTRACTOR SHENTIAN 1E PAGE 3 OF

89 DATE DEC	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		ESTIMATED DAILY COST $	ESTIMATED ACCUM. COST $
DEC 10	145	1070	48	40	24	16	4	1	2	11.2	-	1	-	9.0	.1	.3	250	0	-	-	-	-	46	0	.04	TR			—	
DAYS FROM SPUD						NIPPLE UP B.O.P. STACK - RIG TO PRESS TEST.																								
10																													557. —	
DEC 11	145	1060	58	58	48	14	10	1.5	8	11.4	-	2	-	9.5	.2	.5	250	40	-	-	-	-	49.9	0	.038	TR			—	
		PRESS TEST BOP's - PICK UP DRILLING ASSEMBLY - DRILL OUT CEMENT & SHOE																												
11		WITH WATER. HOLE CONTAMINATED - DISPLACE HOLE TO MUD.																											5579. —	
DEC 12	158	1070	56	56	36	20	8	2.5	5	10.6	-	2	-	10.0	.5	1.6	250	0	9.9	9.9	-	-	57	0	.04	TR			2279.	
		CIRCULATION MUD FOR CORING - TRIP OUT & PICK UP CORE BBL - CUT CORE #1 - BBL JAMMED																												
12		TRIP OUT & RECOVER CORE #1 - PICK UP DRILLING ASSEMBLY RIH REAM OUT RAT HOLE																											7797. —	
DEC 13	194	1060	52	59	40	19	10.5	3	6	10.4	-	2	-	10.0	.5	1.3	250	0	9.9	5.0	-	-	57	0	.04	TR			2107.	
		REAM CORE #1 RAT HOLE - DRILL 311.2mm HOLE TO 194 M - TRIP OUT TO CORE																												
13		RIH & CUT CORE #2 - 311.2mm CORE BAR.																											9904. —	
DEC 14	215	1055	57	83 71	47 48	23	11.5	4	6	9.8	-	2	-	9.5	.4	1.2	250	0	8	12	-	-	57	0	.04	TR			1054	
		CUT CORE #2 - TRIP OUT & LAY DOWN CORE #2																												
14		RIH & CUT CORE #3																											10958. —	
DEC 15	266	1055	53	60	46	20	10	3	5	9.0	-	2	-	10.0	.55	1.5	250	0	11	5	-	-	57	0	.04	TR			182.	
		CUT CORE #3 - TRIP OUT AND LAY DOWN CORE #3 - RUN IN HOLE																												
15		CUT CORE #4 - TRIP OUT & LAY DOWN CORE #4																											11140. —	
DEC 16	238	1060	67	70	48	22	13	4	7	9.0	-	1	-	10.0	.5	1.4	250	0	11	5	-	-	62	0	.04	TR			1096	
		MAKE UP NEW BHA - RIH REAM OUT CORE RAT HOLE WITH																												
16		311.2 mm BIT - REAMING																											12235 —	

CALGARY OFFICE

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

WEEKLY SUMMARY

WELL NAME CHEVRON MOUNTAIN RIVER
LEGAL O-15
MUD TYPE GEL-KELZAN XC MUD ENGINEER TIM ALDRIDGE CONTRACTOR SHEHTAH 1E PAGE 4 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	ESTIMATED DAILY COST $	ESTIMATED ACCUM. COST $
DEC 17	292	1070	55	55	36	19	8.5	3	5	12	-	1	-	10.0	6	2.0	250	0	12	6	-	-	50	0	.04	TR			1475.
DAYS FROM SPUD		DRILL 311.2MM HOLE - MINOR LOST CIRC @ 283M - TREAT WITH SALINAT ALL - BUILD VOLUME																											
17		& DRILL AHEAD.																											13710 -
DEC 18	395	1070	50	50	32	18	7	2	3	10.0	-	1	-	10.0	3.5	1.2	250	0	7	3	-	-	50	0	.04	TR			2386.
		DRILL 311.2MM HOLE - MINOR LOSSES WHILE DRILLING FRACTURED FORM. BUILD VOLUME																											
18		TO COMPENSATE LOSSES																											K096.-
DEC 19	497	1080	56	63	42	21	10.5	7.5	5	10.0	-	1	-	10.0	.2	.7	250	0	4	2	-	-	50	0	.05	TR			3330.
		DRILL - HOLE TAKING FLUID IN FRACTURES FREQUENTLY - MIX LCM SWEEPS X FIBRE																											
19		BUILD VOLUME WHILE DRILLING. CIRC AND ADDING STABLE MUD.																											19426.
DEC 20	534	1110	65	80	53	27	13	3	6	10.8	-	2	-	9.5	.15	.5	250	0	3	5	-	-	57	0	.07	TR			616
		DRILL 311.2MM HOLE - TRIP OUT TO LOG. HOLE CONDITION GOOD - LOGGING.																											
20		BOTTOM HOLE TEMP 45°C FROM LOGS																											20043.-
DEC 21	534	1090	55	63	39	24	7.5	2.5	4	10.4	-	1	-	9.5	.15	.5	250	0	3	5	-	-	54	0	.05	TR			—
		FINISH LOGGING FOR - HOLE GOOD. - RIG UP FOR DST #1																											
21																													20043.-
DEC 22	534	1090	60	67	42	25	8.5	2	7	10.4	-	2	-	9.5	.2	.7	250	0	-	-	-	-	54	0	.05	1/8			295.-
		DST #1 - TRIP OUT - RIH CLEAN OUT TRIP FOR 244MM CSG - HOLE TAKING FLUID																											
22		W/ LCM PILL & CIRCULATE THROUGH SYSTEM - RESUME VOL. & MONITOR PVT. TRIP OUT FOR CSG.																											20338.-
DEC 23	534	1085	55	68	40	28	6	2	3.5	12.0	-	2	-	9.0	.05	.3	250	0	-	-	-		57	0	.05	TR			—
		RUN LAND & CEMENT 244MM CSG OK - CEMENT RETURNS TO SURFACE.																											
23		CHANGE OUT DRILLING SPOOL - CHANGE PUMP LINERS - PRESS TEST STACK																											20338.-

CALGARY OFFICE

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

WEEKLY SUMMARY

WELL NAME CAIRN MOUNTAIN RIVER
LEGAL 0-18
MUD TYPE GEL - KELZAN XC MUD ENGINEER TIM ALDRIDGE
CONTRACTOR SHEHTAH 16 PAGE 5 OF

1989 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		ESTIMATED DAILY COST $	ESTIMATED ACCUM. COST $
DEC 24	539	1070	40	20	12	8	2	3	7	60	-	2	-	11.5	10	4.5	250	0	12	1	-	-	43	0	.04	TR			—	
DAYS FROM SPUD	PRESS TEST: SURF EQPT - DRILL OUT CEMENT WITH WATER: GATES LEAKING																													
24	CONTAMINATION IN SYSTEM - TREAT OUT CONTAMINATION WHILE DRILLING.																												20338.-	
DEC 25	620	1080	56	71	49	27	85	2.5	5	10.4	-	2	-	10.0	.3	1.3	250	0	6	3	-	-	57	0	.05	TR			2239.	
	DRILL 216 MM HOLE: TREAT OUT (OH)- CONTAMINATION																													
25																													22577.-	
DEC 26	670	1080	58	80	50	30	10	3.0	4.5	10.0	-	1	-	10.0	.5	1.6	250	0	10	5	-	-	57	0	.04	TR			1375.	
	DRILL 216 MM HOLE - TRIP FOR BIT - CHANGE BHA - PICK UP STABILIZERS - R E H																													
26	REAM STUCK ASSEMBLY TO BOTTOM - DRILLING:																												23952.-	
DEC 27	789	1065	58	78	46	26	10	3.0	4.5	10.0	-	1	-	10.0	.6	2.0	250	0	12	6	-	-	50	0	.04	TR			853.	
	DRILL 216 MM HOLE - CIRC SAMPLE - TRIP OUT TO CORE.																													
27																													24805.-	
DEC 28	835	1090	58	65	41	24	85	3	9	10.0	-	1	-	10.0	.05	.5	250	40	1	5	-	-	50	0	.04	TR			954.	
	MAKE UP CORE BBL - CUT CORE #5 - TRIP OUT RECOVER CORE - RIH - DRL 216 MM HOLE																													
28	TREATING OUT ANHYDRITE CONTAM - DRILLING:																												25758.-	
DEC 29	934	1080	58	54	35	19	8	3	20	14.8	-	3	-	9.0	.05	.45	250	160	1	5	-	-	54	0	.04	TR			1568.	
	DRILL 216 MM HOLE - ANHYDRITE CONTAMINATION - TREAT WITH SODA ASH & THINNER																													
29	FOAMING.																												27327.-	
DEC 30	1012	1085	49	45	29	16	6.5	2.5	9	10.0	-	2	-	10.0	.35	1.2	250	0	7	3	-	-	54	0	.04	TR			1998.	
	DRILL 216 MM HOLE - TRIP FOR BIT - HOLE GOOD - DRILL 216 MM HOLE - CIRC SAMPLE																													
30	DRILLING: - MUD FOAMING.																												29325.-	

CALGARY OFFICE

Drilling Fluids
Magcobar/MiCO A Dresser/Halliburton Company

WEEKLY SUMMARY

WELL NAME CHEVRON MOUNTAIN RIVER
LEGAL O-18
MUD TYPE GEL-KELZAN XC MUD ENGINEER TIM ALDRIDGE CONTRACTOR SHENTAH #1E PAGE 6 OF

1989 DATE 1990	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	ESTIMATED DAILY COST $	ESTIMATED ACCUM. COST $
DEC 31	1076	1080	48	96	30	16	7	2	7	10.2	-	1	-	10.0	.3	1.3	250	TR	6	3	-	-	54	0	.04	TR		1908.	
DAYS FROM SPUD		DRILL 216MM HOLE, CIRCULATE SAMPLES, TRIP OUT TO CORE - PICK UP CORE																											
31		BARREL - RIH - CUT CORE #6																										31233.	
JAN 01	1094	1085	53	56	38	18	10	3	8	9.8	-	1	-	10.0	.1	.8	250	0	2	3	-	-	58	0	.04	TR		MT.	
		CUT CORE #6 - TRIP OUT & RECOVER CORE #6 100% - RIH.																											
32		DRILL 216 MM HOLE.																										32651.	
JAN 02	1120	1075	55	54	37	17	10	2.5	6	9.6	-	1	-	9.5	.2	.7	250	0	2	3	-	-	62	0	.04	TR		1082.	
		DRILL 216 MM HOLE TO 1120 - WIPER TRIP - NO FILL TRIP OUT TO LOG.																											
33		LOGGING BOTTOM HOLE TEMP 45°C FROM LOGGERS																										33733.	
JAN 03	1120	1070	53	48	31	17	7	2	5	9.8	-	1	-	9.0	.1	.3	350	0	-	-	-	-	54	0	.04	TR		-	
		LOGGING - OK. HOLE CONDITION GOOD																											
34																												33733.	
JAN 04	1120	1070	58	56	39	17	11	2.5	5	9.6	-	1	-	10.0	.5	1.7	250	0	-	-	-	-	54	0	.04	TR		584.	
		LOGGING - HOLE GOOD - WIPER TRIP																											
35																												34316.	
JAN 05	1120	1070	46	35	23	12	5.5	2	3	9.4	-	1	-	9.5	.15	.5	250	0	2	3	-	-	49	0	.04	TR		-	
		FINISH LOGGING - HOLE CONDITION GOOD - PIC UP & RUN IN DST #2																											
																												34316.	
J.	1120	1070	45	35	23	12	5.5	2	3	10.0	-	1	-	9.5	.2	.5	250	0	-	-	-	-	43	0	.04	TR		-	
		FINISH DST #2 - LAY DOWN TOOLS - LAY DOWN BHA - RIH. OPEN ENDED																											
37		RUN CEMENT PLUGS. - END OF WELL.																										34316.	

CALGARY OFFICE

APPENDIX 8

DEVIATION SURVEYS

EASTMAN CHRISTENSEN

Canada District

WELL DEFLECTION SURVEY

for

CHEVRON CANADA RESOURCES LIMITED

MOUNTAIN RIVER 0-18

Slot : <001>
Well : <001>

Survey Reference : S02564.0CH

CHEVRON CANADA RESOURCES LIMITED
MOUNTAIN RIVER 0-18

Slot : (001)
Well : (001)
PBHL : 0.00

Date Printed : 10-JAN-90
Our Ref : S02564.0CH

Measured Depth	Drift Angle	Drift Direction	Course Length	Vertical Depth	Vertical Section	RECTANGULAR COORDINATES		Dogleg Severity
127.00	1.75	110.00	0.00	126.98	-0.66	0.66 S	1.82 E	0.00
245.00	2.50	128.00	118.00	244.90	-2.86	2.86 S	5.54 E	0.25
263.00	2.50	128.00	18.00	262.88	-3.34	3.34 S	6.16 E	0.00
291.00	2.35	128.00	28.00	290.86	-4.07	4.07 S	7.09 E	0.16
310.00	2.15	129.00	19.00	309.84	-4.54	4.54 S	7.68 E	0.32
320.00	2.50	130.00	10.00	319.83	-4.80	4.80 S	7.99 E	1.06
339.00	2.85	130.00	19.00	338.81	-5.37	5.37 S	8.67 E	0.55
357.00	3.25	130.00	18.00	356.79	-5.98	5.98 S	9.40 E	0.67
375.00	3.75	128.00	18.00	374.75	-6.67	6.67 S	10.26 E	0.86
403.00	4.50	132.00	28.00	402.68	-7.97	7.97 S	11.80 E	0.86
412.00	4.65	130.00	9.00	411.65	-8.44	8.44 S	12.34 E	0.73
449.00	5.15	133.00	37.00	448.52	-10.54	10.54 S	14.70 E	0.46
477.00	5.50	134.00	28.00	476.40	-12.33	12.33 S	16.59 E	0.39
527.00	5.85	135.00	50.00	526.15	-15.79	15.79 S	20.11 E	0.22
552.00	6.25	133.00	25.00	551.01	-17.62	17.62 S	22.01 E	0.54
598.00	7.50	131.00	46.00	596.68	-21.30	21.30 S	26.10 E	0.83
616.00	7.75	131.00	18.00	614.52	-22.87	22.87 S	27.91 E	0.42
658.00	7.75	131.00	42.00	656.14	-26.58	26.58 S	32.18 E	0.00
705.00	8.00	132.00	47.00	702.69	-30.85	30.85 S	37.00 E	0.18
743.00	8.25	134.00	38.00	740.31	-34.51	34.51 S	40.93 E	0.30
811.00	8.50	136.00	68.00	807.59	-41.52	41.52 S	47.93 E	0.17
846.00	9.15	137.00	35.00	842.17	-45.41	45.41 S	51.62 E	0.57
902.00	10.00	140.00	56.00	897.39	-52.39	52.39 S	57.79 E	0.53
969.00	10.00	140.00	67.00	963.38	-61.31	61.31 S	65.27 E	0.00
1016.00	10.75	137.00	47.00	1009.61	-67.64	67.64 S	70.88 E	0.59
1098.00	10.75	139.00	82.00	1090.17	-79.00	79.00 S	81.11 E	0.14
1120.00	10.75	139.00	22.00	1111.78	-82.10	82.10 S	83.80 E	0.00

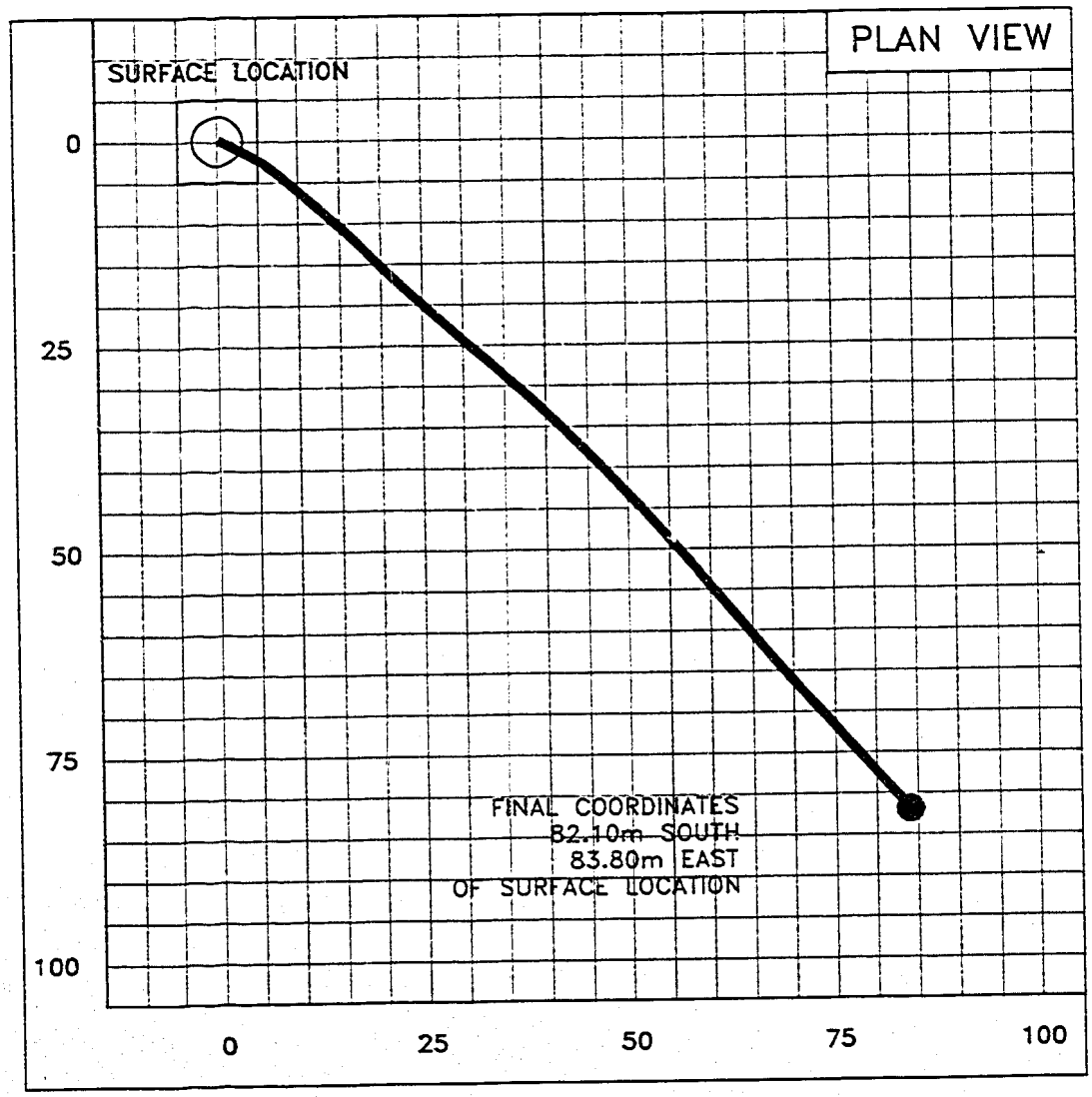
CALCULATION METHOD : Minimum curvature
SLOT COORDINATES : 0.00 N 0.00 E
BOTTOM HOLE LOCATION : Referenced to SLOT
DISTANCE : 117.32
DIRECTION : 134.41

Report Units : Meters
Accepted by :
Checked by :

SURVEY RUN INFORMATION

MD 1120 - EXTRAPOLATION TO T.D. - NOT A SURVEY.
SURVEY FILE COMPLETE: 01-JAN-90 (MD 1098)

CHEVRON CANADA RESOURCES LIMITED
MOUNTAIN RIVER 0-18



EASTMAN CHRISTENSEN

DRAWN BY: I G COGHILL
DATE: 10 JANUARY 1990
REF. #S02564.0CH

APPENDIX 9

WELLSITE ROCK LOG

APPENDIX 10

WELLSITE HYDROCARBON REPORT

WELLSITE HYDROCARBON REPORT

FOR

CHEVRON CANADA RESOURCES

CHEVRON MOUNTAIN RIVER O-18

prepared by

SHELDON HARBINSON

and

DEAN BIRD

IMPERIAL **46 m to 140 m**

Chevron Mountain River O-18 was spudded on November 30, 1989. Logging was to be started at surface but due to the problems of getting the mud to the proper physical properties and due to the lack of gas at this very shallow depth the logging was not started until after the conductor barrel was set. Logging was commenced in the Imperial formation at a depth of 46 meters. The conductor barrel was set at this depth.

Very little background gas was seen in this formation as it ranged from 1 to 12 units. Because of the shallow depth and abundance of shale very little gas was expected. The gas was composed mainly of C1 with trace amounts of C2 present. The oil indicator ratio ((C3 + C4)/C1) was also quite low at the baseline of .010 for the majority of the formation. One show was noted in this formation and it is as follows:

		oil ind.
129.0 m to 130.8 m	31 units over 3 units	.019

The above show is a poor show because of the relatively low peak and because the show occurred over a thin interval. The show consisted of C1 with small amounts of C2 present. The presence of the C2 with the C1 suggests the presence of gas charged water.

The carbon dioxide level ranged from about .015 % to .030% throughout the majority of the formation.

KEE SCARP 140 m to 276 m

Surface Casing was set shortly after penetration into this formation at 144.5 m after which coring was commenced.

The total gas background in this formation was very low ranging from 0 to 6 units. Most of the formation was cored which partially contributed to the low gas (less rock is being cut therefore less gas is liberated). This background gas was composed of C1 with only trace amounts of C2 present. The low background gas was the result of drilling a very dense limestone. Four cores were cut in this formation. Core #1 was cut from 146.0 m to 157.4 m, core #2 was cut from 194.0 m to 212.0 m, core #3 was cut from 212.0 m to 229.0 m and core #4 was cut from 229.0 m to 256.0 m (see Geologist's core description). No shows were noted in the Kee Scarp formation.

The carbon dioxide level remained low at about .01 % to .022 %.

HARE INDIAN 276 m to 482 m

The gas background level throughout most of this formation (up to about 460 m) was very low as in the previous formations. It ranged from 0 to 7 units and consisted of methane with only C2 present in trace amounts. No heavies were seen up to this point. The low gas was the result of

drilling in dense limestone and siltstone through most of the formation and dense marlstone in the latter part of the formation. The penetration rate was very consistent throughout this formation.

The shaker was bypassed for some of this section (as seen on log) because of lost circulation and the necessity of retaining the lost circulation material in the mud until normal circulation was restored.

After normal circulation was restored some increases in background gas level were encountered. The background gas from 460 m to 482 m ranged from 2 units to about 15 units. The gas was composed of C1 through C4 with a sharp increase in the heavies recorded as compared to previous levels. With the increase in heavies the resulting oil indicator ratio was considerably higher as well. Three shows were noted in this section and they are as follows:

		oil ind.
1. 463.6 m to 464.2 m	38 units over 10 units	.236
2. 474.2 m to 474.6 m	33 units over 6 units	.440
3. 477.2 m to 478.2 m	44 units over 15 units	.091

The above shows can all be rated as poor shows because of their weak gas peaks and thin intervals. The shows were composed of C1 through C4 with strong amounts of heavies present which suggests the presence of residual oil but is quite weak.

The level of carbon dioxide was still quite consistent as it averaged from about .015 % to .025 %.

BLUEFISH 482 m to 495 m

The total gas background through this formation was quite varied as it ranged from about 8 units to 35 units. The gas consisted of mainly C1 with some C2 and some heavies present. The increase in the level of heavier components is probably the result of drilling in a carbonaceous shale as seen in the corresponding samples. The oil indicator ratio was quite inconsistent as well. This was caused by the presence of the carbonaceous shales. One significant gas response was recorded in this formation and it is as follows:

		oil ind.
489.0 m to 490.0 m	65 units over 15 units	.047

The above show can be rated as a fair show because of its sharp increase over background levels. The show was quite thin however but did contain some heavies. This gas response is probably the result of drilling in the carbonaceous shales.

The level of carbon dioxide in this section ranged from about .018 % to .025 %.

NAHANNI 495 m to 589 m

The total gas background from was quite inconsistent throughout this formation as it ranged from 0 units to about 15 units. From 495 meters to 533 meters the gas was composed of C1 through C4 resulting in a higher oil indicator ratio. The ratio averaged from about .10 to about .40 for this section. Intermediate casing was then set at 534.4 meters.

From 533 meters to 589 meters the gas was composed of mostly C1 with small amounts of C2 present. This resulted in a significantly lower oil indicator ratio (.010 to .040).

Two significant gas responses were noted in the Nahanni formation and they are as follows:

		oil ind.
1. 509.6 m to 511.2 m	22 units over 14 units	.064
2. 548.8 m to 554.8 m	317 units over 10 units	.035

The above shows can be rated as fair and good respectively. The first show occurs over a thin interval and has a relatively low gas peak considering the background level of gas. The show is composed of C1 through C4 with more emphasis on the lighter components. This suggests that this show may be the result of condensate and saturated oil. The second show occurred over a somewhat thicker interval and contained a very sharp increase in gas level. The background gas remained higher following the show as well. The show was composed of C1 through C4 but as before most of the gas is

from the lighter components. The composition of the show suggests the presence of gas charged water. No porosity was seen in the corresponding samples and the show did not occur over a significant drilling break. This may suggest that the show is the result of a fracture.

The carbon dioxide level was very consistent throughout this formation as it ranged from about .010 % to .020 %.

LANDRY 589 m to 686 m

The total gas background through the Landry formation was quite consistant and very low. The gas ranged from 0 units to 7 units. The gas was composed of mainly C1 with only trace levels of C2 present. The oil indicator ratio was quite low for most of this formation as well at .010. The low background gas was probably the result of drilling in the fairly dense limestone as seen in the samples. One significant show was seen in this formation:

		oil ind.
589.0 m to 594.0 m	2000 units over 6 units	.099

The above show can be rated as excellent because of its very sharp increase over background gas levels and because of its thickness relative to some of the previous shows. Some porosity was seen in the corresponding sample. The gas did not remain high following the show. This gas response was composed of C1 through C4 with slightly moderate levels of

heavies present. This may suggest the presence of condensate and saturated oil. As in the previous formation this show may also be the result of a fracture because of its sharp gas increase.

The carbon dioxide level was somewhat more varied than the level in the last formation as it ranged from about .010 % to about .030 %.

ARNICA 686 m to 798 m

The background gas in this formation was low throughout and it consisted of C1 with only trace to nil levels of C2 present. The penetration rate varied somewhat in this section. The formation consisted of mostly a dense dolomite with no porosity except towards the base of the formation. At this point Core #5 was commenced (789.0 m) and was continued until 797.0 meters. No shows were noted in this section.

The level of carbon dioxide ranged from .015 % to .025 % through the entire formation.

FORT NORMAN 798 m to 920 m

The background gas in the Fort Norman formation was very low as it ranged from 0 units to about 5 units. This gas was composed almost entirely of C1 with only trace to small

levels of C2 present. The formation consisted of alternate of anhydrite with dolomite in [illegible] and was quite [illegible] for the majority [illegible]. The penetration rate [illegible] tended to increase with a [illegible] dolomite and slowed again with the massive [illegible]. Several shows were noted in this section and they are as follows:

		oil ind.
1. 805.2 m to 806.0 m	22 units over 0 units	.010
2. 853.0 m to 855.4 m	91 units over 0 units	.010
3. 866.8 m to 868.4 m	44 units over 0 units	.026
4. 872.6 m to 874.4 m	50 units over 3 units	.010

The first of the above shows is a poor show because of its relatively weak gas peak and its thin interval. The second of the above shows is a good show as it occurs over a slightly thicker interval and has a stronger gas peak. Some porosity was seen in the corresponding samples for this show as well. The last two shows are poor shows because of their thinner intervals and fairly weak gas peaks. The gas level did not remain high following any of the above shows. All of these responses was composed of primarily C1 with only small amounts of C2 present. This suggests the possible presence of gas or gas charged water.

For the majority of the formation the carbon dioxide level was fairly low ranging from .010 % to .030 %. From the top of the formation to about 825 meters the level was

significantly higher as it ranged from .030 % to .280 %. This increase occurred upon penetration of this formation and the subsequent anhydrite that was encountered.

TATSIETA **920 m to 950 m**

The background gas for this section was very low as in the last formation. The gas ranged from 0 units to 4 units and was composed of C1 only. A considerable amount of anhydrite was seen in the samples, which was interbedded with dolomite. The formation was quite dense resulting in a very inconsistent penetration rate. Their were no shows noted in the Tatsieta formation.

The carbon dioxide level in this section was low averaging between .010 % and .030 %.

MOUNT KINDLE **950 m to 1120 m (F.T.D.)**

The total gas level remained very low averaging between 0 units and 9 units. The gas was composed almost entirely of C1 with only trace to small amounts of C2 recorded. Some porosity was seen in some of the dolomite but most of the formation was fairly dense. Core #6 was commenced at 1075.0 meters and continued to 1092.0 meters. No significant gas responses were recorded in this section.

The carbon dioxide remained low and fairly consistent averaging between .010 % to .030 %.

Final total depth was reached on January 2, 1990 at of 1120 meters.

APPENDIX 11

WATER ANALYSIS

GEOTECH

CHEVRON MOUNTAIN RIVER

O-18

WATER ANALYSES

Prepared For:

CHEVRON CANADA RESOURCES

File No: 89AS6162

Date: January 3, 1990

GEOTECHnical resources ltd.

4500 - 5th STREET N.E., CALGARY, ALBERTA T2E 7C3 (403) 230-4128
TELEX 03-821172 ENVOY 100: TELEX GEO FAX: (403) 230-4370

GEOTECH

BOTTOM HOLE SAMPLER DEPLETIONS

FILE # 89AS6162 DATE - December 27, 1989

COMPANY CHEVRON CANADA RESOURCES

WELL NAME CHEVRON MOUNTAIN RIVER

LSD 0-18 TESTER Baker

DST 1 FORMATION Kee Scarp

INTERVALS 190 - 205 OPENING PRESSURE 0 kPa

FLUID BREAKDOWN : WATER

MUD 1650 mL

OIL

TOTAL FLUID RECOVERED 1650 mL mud.

COMMENTS

WATER ANALYSIS

GEOTECH

Company Name: CHEVRON CANADA RESOURCES
Well Name: CHEVRON MOUNTAIN RIVER
LSD: 0-18

DST: 1
Interval: 190 - 205
Formation: Kee Scarp

KB: 115.01
GRD: 109.46

File Number: 89AS6162

Date: January 3, 1990

Sample Location	Resistivity (ohm.m)
Top	2.632
Middle	2.632
Tool	0.625

GEOTECH analytical

GEOTECHnical resources ltd.
4500 - 5th STREET N.E., CALGARY, ALBERTA T2E 7C3
(403) 230-4129

WATER ANALYSIS

FILE NUMBER ▶ 89AS5162

LABORATORY NUMBER ▶ 6162-W4

CONTAINER IDENTITY: 6162F4

OPERATOR'S NAME: CHEVRON CANADA RESOURCES

SAMPLE LOCATION	WELL NAME		ELEVATIONS KB	GRD
	CHEVRON MOUNTAIN RIVER	0-18	115.01	109.46

FIELD OR AREA	POOL OR ZONE	NAME OF SAMPLER	COMPANY
	KEESCARP		BAKER

TEST TYPE	NO	TEST RECOVERY	AMT. AND TYPE OF CUSHION	MUD RESISTIVITY Ω·m
DST	1	30.00		

SAMPLING POINT: BOTTOM HOLE SAMPLER

MULTIPLE RECOVERY TEST INTERVAL
FROM 190
TO 205

PERFORATIONS
FROM
TO

PUMPING | FLOWING | GAS LIFT | SWAB

WATER m³/d | OIL m³/d | GAS 10³m³/d

SEPARATOR | TREATER | RESERVOIR | SAMPLED | RECEIVED

GAUGE PRESSURE K.Pa

TEMPERATURE (°C)

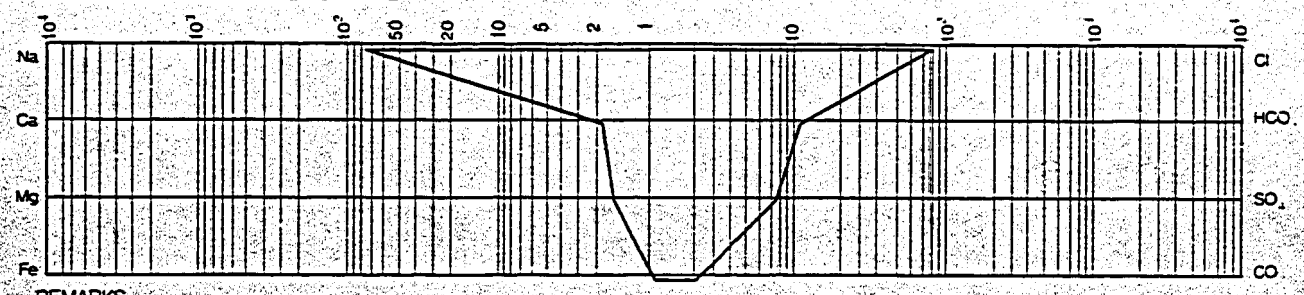
DATE SAMPLED Y M D	H:M	DATE RECEIVED Y M D	DATE ANALYZED Y M D	ANALYST
22-DEC-89		27-DEC-89	03-JAN-90	GB/VB

SUMMARY DATA

TOTAL HARDNESS AS $CaCO_3$	215	g/m³
TOTAL ALKALINITY	565	g/m³
SALINITY AS NaCl	4113	ppm
SATURATION INDEX	1.09	CaCO3 SCALING TENDENCY
STABILITY INDEX	5.89	CaCO3 SCALING TENDENCY
CORROSION TENDENCY	6.83	

Scaling calculations done at 30 C

LOGARITHMIC PATTERN MEQ PER LITRE



REMARKS

GEOTECH Analytical

GEOTECHnical resources ltd.
4500 - 5th STREET N.E. CALGARY, ALBERTA T2E 7C3
(403) 230-4128

WATER ANALYSIS
DETAILED REPORT

OPERATOR'S NAME	CHEVRON CANADA RESOURCES
WELL NAME	CHEVRON MOUNTAIN RIVER
LOCATION	0-18
SAMPLING POINT	BOTTOM HOLE SAMPLER
FILE NUMBER ▶	89AS6162
LABORATORY NUMBER ▶	6162-W4

CATIONS				ANIONS			
ION	g/m³	MASS FRACTION	MEQ/L	ION	g/m³	MASS FRACTION	MEQ/L
Na	1950	0.35	84.8	Cl	2500	0.47	70.6
K	23.8	0.00	0.61	Br			
Ca	44.3	0.01	2.21	I			
Mg	22.9	0.00	1.88	F			
Ba	0.023	0.00	0.00	HCO_3	574	0.1	9.4
Sr	7.24	0.00	0.17	CO_3	56.5	0.01	1.88
Fe	0.29	0.00	0.016	OH	0.00	0.00	0.00
Mn				SO_4	311	0.06	6.5
Al				H_2S			
Si				PO_4			
B	0.876						
U							
Th							

TOTAL SOLIDS (g/m³)

EVAPORATED AT 110°C — EVAPORATED AT 180°C

AT IGNITION — CALCULATED: 5491

SPECIFIC GRAVITY at 15°C — REFRACTIVE INDEX (RI) at 25°C: 1.342

OBSERVED pH at 25°C: 8.09 — RESISTIVITY (RW) Ω m at 25°C: 1.177

REDOX POTENTIAL (Eh) — DISSOLVED O_2 g/m³

TOTAL METALS

METAL	g/m³
Fe	
Mn	

Cations/Anions: 1.01

DST 1

Interval: 190 to 205

KB: 115.01 GRD: 109.46

Perfs to

REMARKS

IODIDE NOT AVAILABLE - INSUFFICIENT SAMPLE

GEOTECH

CHEVRON MOUNTAIN RIVER

O-18

WATER ANALYSES

Prepared For:

CHEVRON CANADA RESOURCES

File No: 90AS5020

Date: January 9, 1990

GEOTECHnical resources ltd.
4500 - 5th STREET N.E., CALGARY, ALBERTA T2E 7C3 (403) 230-4128
TELEX 03-821172 ENVOY 100: TELEX GEO FAX: (403) 230-4370

GEOTECH

GAS ANALYSIS

Company Name: CHEVRON CANADA RESOURCES
Well Name: CHEVRON MOUNTAIN RIVER
LSD: 0-18

File Number: 90AS5020 Date: January 9, 1990

Sample Location: Sample #1 @ 788.4

Sample contained insufficient pressure for analysis.

GAS ANALYSIS

GEOTECH

Company Name: CHEVRON CANADA RESOURCES
Well Name: CHEVRON MOUNTAIN RIVER
LSD: O-18

File Number: 90AS5020 Date: January 9, 1990

Sample Location: Sample #2 @ 998.8

Sample contained insufficient pressure for analysis.

GEOTECH

WATER ANALYSIS

Company Name: CHEVRON CANADA RESOURCES
Well Name: CHEVRON MOUNTAIN RIVER
LSD: 0-18

SFT: 2
Interval: 848 - 856
Formation: Fort Norman

KB : 112.0
GRD: 106.7

File Number: 90AS5020

Date: January 5, 1990

Sample Location	Resistivity (ohm.m)	Salinity (ppm)
Top	0.481	320
Top of Tool A	0.481	320
Top of Tool B	0.427	440
Top of Tool C	0.427	440
Top of Tool D	0.427	460

GEOTECHnical resources ltd.
4500 - 5th STREET N.E. CALGARY, ALBERTA T2E 7C3
(403) 230-4129

WATER ANALYSIS

FILE NUMBER ▶ 90AS5020

LABORATORY NUMBER ▶ 5020-W6

CONTAINER IDENTITY
5020F6

OPERATOR'S NAME
CHEVRON CANADA RESOURCES

SAMPLE LOCATION | WELL NAME | | ELEVATIONS KB | GRD
CHEVRON MOUNTAIN RIVER | 0-18 | 112.0 | 106.70

FIELD OR AREA | POOL OR ZONE | NAME OF SAMPLER | COMPANY
FORT NORMAN | | BOTC

TEST TYPE NO. | TEST RECOVERY
SFT 2

SAMPLING POINT | AMT. AND TYPE OF CUSHION | MUD RESISTIVITY Ω/m
BOTTOM HOLE SAMPLER NO. 53

MULTIPLE RECOVERY TEST INTERVAL FROM
848
TO
856

PUMPING | FLOWING | GAS LIFT | SWAB

WATER m³/d | OIL m³/d | GAS 10³m³/d

SEPARATOR | TREATER | RESERVOIR | SAMPLED | RECEIVED

PERFORATIONS FROM
TO

GAUGE PRESSURE kPa
TEMPERATURE °C

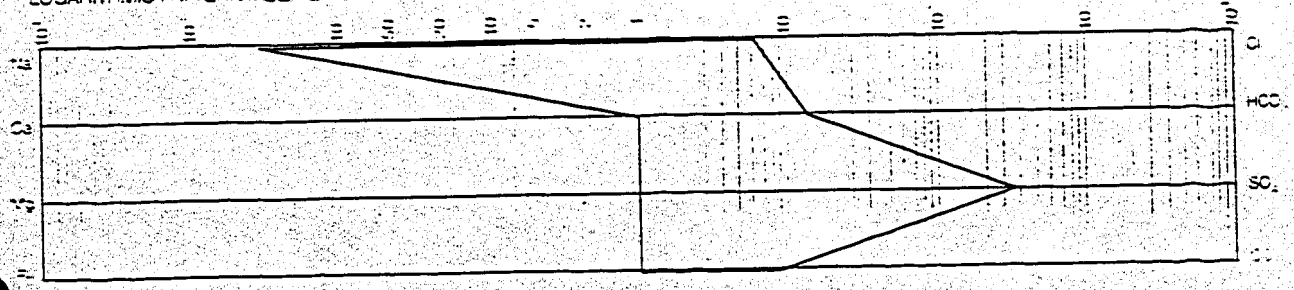
DATE SAMPLED Y M D	DATE RECEIVED Y M D	DATE ANALYZED Y M D	ANALYST
06-JAN-90	08-JAN-90	09-JAN-90	GB/VB

SUMMARY DATA

TOTAL HARDNESS AS CaCO3	45	g/m³
TOTAL ALKALINITY	1110	g/m³
SALINITY AS NaCl	352	ppm
SATURATION INDEX	2.28	CaCO3 SCALING TENDENCY
STABILITY INDEX	5	CaCO3 SCALING TENDENCY
CORROSION TENDENCY	14.9	

Scaling calculations done at 30 C

LOGARITHMIC PATTERN MEQ PER LITRE



REMARKS

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WATER ANALYSIS
DETAILED REPORT

OPERATOR'S NAME	CHEVRON CANADA RESOURCES
WELL NAME	CHEVRON MOUNTAIN RIVER
LOCATION	0-18
SAMPLING POINT	BOTTOM HOLE SAMPLER NO. 53

FILE NUMBER ▶ 90AS5020

LABORATORY NUMBER ▶ 5020-W6

CATIONS

ION	g/m³	MASS FRACTION	MEQ/L
Na	7750	0.31	338
K	57.4	0.00	1.47
Ca	11.2	0.00	0.56
Mg	3.35	0.00	0.28
Ba	0.329	0.00	0.005
Sr	0.621	0.00	0.014
Fe	0.55	0.00	0.03
Mn			
Al			
Si			
B	0.573		
U			
Th			

ANIONS

ION	g/m³	MASS FRACTION	MEQ/L
Cl	214	0.01	6
Br			
I	13.1	0.00	0.1
F			
HCO_3	827	0.03	13.5
CO_3	260	0.01	8.6
OH	0.00	0.00	0.00
SO_4	15600	0.64	325
H_2S			
PO_4			

TOTAL SOLIDS (g/m³)

EVAPORATED AT 110°C — EVAPORATED AT 180°C

AT IGNITION — CALCULATED

24736

SPECIFIC GRAVITY at 15°C — REFRACTIVE INDEX at 25°C

1.347

OBSERVED pH 9.58 at 25°C — RESISTIVITY Ω·m at 25°C 0.414

REDOX POTENTIAL (E) — DISSOLVED O₂ g/m³

TOTAL METALS

METAL	g/m³
Fe	
Mn	

Cations/Anions: 0.96

SFT 2

Interval: 848 to 856

KB: 112.0 GRD: 106.70

Perfs to

REMARKS

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WATER ANALYSIS

FILE NUMBER ▶ 90AS5020

LABORATORY NUMBER ▶ 5020-W7

CONTAINER IDENTITY
5020F7

OPERATOR'S NAME
CHEVRON CANADA RESOURCES

SAMPLE LOCATION

WELL NAME
CHEVRON MOUNTAIN RIVER

FIELD OR AREA

POOL OR ZONE
FORT NORMAN

NAME OF SAMPLER
0-18

ELEVATIONS KB 112.0 GRD 106.70

COMPANY
BOTC

TEST TYPE: SFT

NO: 2

TEST RECOVERY

SAMPLING POINT

LOG ANALYST

AMT. AND TYPE OF CUSHION

MUD RESISTIVITY Ω/m

MULTIPLE RECOVERY TEST INTERVAL
FROM 848
TO 856

PERFORATIONS
FROM
TO

PUMPING FLOWING GAS LIFT SWAB

WATER m³/d OIL m³/d GAS 10³m³/d

SEPARATOR TREATER RESERVOIR SAMPLED RECEIVED

GAUGE PRESSURE kPa

TEMPERATURE °C

DATE SAMPLED Y M D: 06-JAN-90

DATE RECEIVED Y M D: 08-JAN-90

DATE ANALYZED Y M D: 09-JAN-90

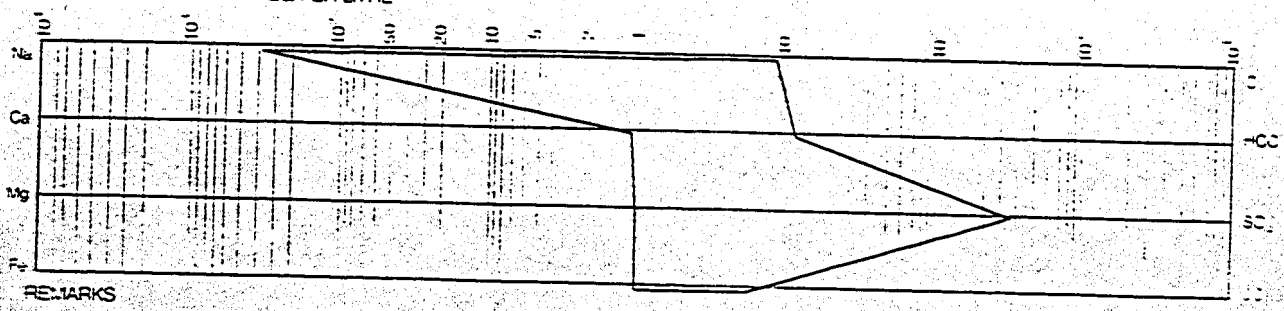
ANALYST: GB/VB

SUMMARY DATA

TOTAL HARDNESS AS CaCO	96	g/m³
TOTAL ALKALINITY	864	g/m³
SALINITY AS NaCl	499	g/m³
SATURATION INDEX	2.29	CaCO3 SCALING TENDENCY
STABILITY INDEX	4.82	CaCO3 SCALING TENDENCY
CORROSION TENDENCY	19.1	

Scaling calculations done at 30 C

LOGARITHMIC PATTERN MEQ PER LITRE



REMARKS

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WATER ANALYSIS
DETAILED REPORT

OPERATOR'S NAME	CHEVRON CANADA RESOURCES	FILE NUMBER ▶	90AS5020
WELL NAME	CHEVRON MOUNTAIN RIVER	LABORATORY NUMBER ▶	5020-W7
LOCATION	0-18		
SAMPLING POINT	LOG ANALYST		

CATIONS				ANIONS			
ION	g/m³	MASS FRACTION	MEQ/L	ION	g/m³	MASS FRACTION	MEQ/L
Na	7600	0.31	331	Cl	303	0.01	8.5
K	67.9	0.00	1.74	Br			
Ca	21.5	0.00	1.07	I	5.4	0.00	0.04
Mg	9.48	0.00	0.78	F			
Ba	0.372	0.00	0.005	HCO_3	716	0.03	11.7
Sr	1.07	0.00	0.02	CO_3	167	0.01	5.5
Fe	0.54	0.00	0.029	OH	0.00	0.00	0.00
Mn				SO_4	15400	0.64	321
Al				H_2S			
Si				PO_4			
B	0.746						
U							
Th							

TOTAL SOLIDS (g/m³)

EVAPORATED AT 110°C — EVAPORATED AT 180°C

AT IGNITION — CALCULATED: 24292

SPECIFIC GRAVITY at 15°C — REFRACTIVE INDEX at 25°C: 1.345

OBSERVED pH: 9.42 at 25°C — RESISTIVITY (Ω·m) at 25°C: 0.425

REDOX POTENTIAL (Eh) — DISSOLVED O_2

TOTAL METALS	
METAL	g/m³
Fe	
Mn	

Cations/Anions: 0.97

SFT 2

Interval: 848 to 856

KB: 112.0 GRD: 106.70

Perfs to

REMARKS

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WATER ANALYSIS

FILE NUMBER ▶ 90AS5020

LABORATORY NUMBER ▶ 5020-W8

CONTAINER IDENTITY
5020F8

OPERATOR'S NAME
CHEVRON CANADA RESOURCES

SAMPLE LOCATION | WELL NAME
CHEVRON MOUNTAIN RIVER

FIELD OR AREA | POOL OR ZONE
0-18

NAME OF SAMPLER

ELEVATIONS KB
112.0

GRD
106.7

COMPANY
BOTC

TEST TYPE NO | TEST RECOVERY

SAMPLING POINT
SAMPLE NO. 1 - 788.4 M

MULTIPLE RECOVERY TEST INTERVAL FROM

AMT. AND TYPE OF CUSHION

MUD RESISTIVITY Ω/m

PUMPING | FLOWING | GAS LIFT | SWAB

TO

WATER m³/d | OIL m³/d | GAS 10³m³/d

SEPARATOR | TREATER | RESERVOIR | SAMPLED | RECEIVED

PERFORMATIONS FROM

GAUGE PRESSURE kPa

TEMPERATURE °C

TO

DATE SAMPLED Y M D
06-JAN-90

DATE RECEIVED Y M D
08-JAN-90

DATE ANALYZED Y M D
09-JAN-90

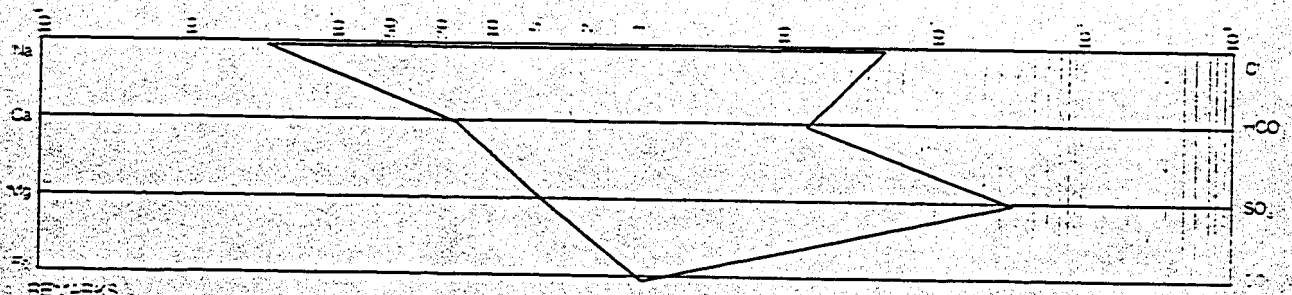
ANALYST
GB/VB

SUMMARY DATA

TOTAL HARDNESS AS CaCO3	1146	g/m³
TOTAL ALKALINITY	638	g/m³
SALINITY AS NaCl	2419	ppm
SATURATION INDEX	1.93	CaCO3 SCALING TENDENCY
STABILITY INDEX	4.09	CaCO3 SCALING TENDENCY
CORROSION TENDENCY	27	

Scaling calculations done at 30 C

LOGARITHMIC PATTERN MEQ PER LITRE



REMARKS

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WATER ANALYSIS
DETAILED REPORT

OPERATOR'S NAME	CHEVRON CANADA RESOURCES	FILE NUMBER ▶	90AS5020
WELL NAME	CHEVRON MOUNTAIN RIVER	LABORATORY NUMBER ▶	5020-W8
LOCATION	0-18		
SAMPLING POINT	SAMPLE NO. 1 - 788.4 M		

CATIONS				ANIONS			
ION	g/m³	MASS FRACTION	MEQ/L	ION	g/m³	MASS FRACTION	MEQ/L
Na	7750	0.31	338	Cl	1470	0.06	41.6
K	88.9	0.00	2.27	Br			
Ca	357	0.01	17.8	I			
Mg	56.9	0.00	4.68	F			
Ba	2.56	0.00	0.04	HCO_3	778	0.03	12.7
Sr	7.52	0.00	0.17	CO_3	0.00	0.00	0.00
Fe	5.1	0.00	0.27	OH	0.00	0.00	0.00
Mn				SO_4	14500	0.59	302
Al				H_2S			
Si				PO_4			
B	2.04						
U							
Th							

TOTAL SOLIDS (g/m³)

EVAPORATED AT 110°C	EVAPORATED AT 180°C
AT IGNITION	CALCULATED
	25018

SPECIFIC GRAVITY at 15°C	REFRACTIVE INDEX at 25°C
	1.346

OBSERVED pH at 25°C	RESISTIVITY (Ω·m) at 25°C
7.97	0.386

REDOX POTENTIAL (E_h) | DISSOLVED O₂ g/m³

TOTAL METALS

METAL	g/m³
Fe	
Mn	

Cations/Anions: 1.02

Interval: to

KB: 112.0 GRD: 106.7

Perfs to

REMARKS

IODIDE NOT AVAILABLE - SOUR SAMPLE

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WATER ANALYSIS

FILE NUMBER ▶ 90AS5020

LABORATORY NUMBER ▶ 5020-W9

CONTAINER IDENTITY
5020F9

OPERATOR'S NAME
CHEVRON CANADA RESOURCES

SAMPLE LOCATION	WELL NAME		ELEVATIONS KB	GRD
	CHEVRON MOUNTAIN RIVER	0-18	112.0	106.7
FIELD OR AREA	POOL OR ZONE	NAME OF SAMPLER	COMPANY	
			BOTC	

TEST TYPE NO — TEST RECOVERY

SAMPLING POINT — AMT. AND TYPE OF CUSHION — MUD RESISTIVITY Ω/m

MULTIPLE RECOVERY TEST INTERVAL
FROM — SAMPLE NO. 2 - 998.8 M
TO

PUMPING — FLOWING — GAS LIFT — SWAB

WATER m³/d — OIL m³/d — GAS 10³m³/d

SEPARATOR — TREATER — RESERVOIR — SAMPLED — RECEIVED

PERFORATIONS
FROM — GAUGE PRESSURE K Pa
TEMPERATURE °C
TO

DATE SAMPLED Y M D	DATE RECEIVED Y M D	DATE ANALYZED Y M D	ANALYST
06-JAN-90	08-JAN-90	09-JAN-90	GB/VB

SUMMARY DATA

TOTAL HARDNESS AS CaCO	725	g/m³
TOTAL ALKALINITY	831	g/m³
SALINITY AS NaCl	2880	ppm
SATURATION INDEX	2.5	CaCO3 SCALING TENDENCY
STABILITY INDEX	3.67	CaCO3 SCALING TENDENCY
CORROSION TENDENCY	21.8	

Scaling calculations done at 30 C

LOGARITHMIC PATTERN MEQ PER LITRE

REMARKS

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WATER ANALYSIS
DETAILED REPORT

OPERATOR'S NAME	CHEVRON CANADA RESOURCES	FILE NUMBER ▶	90AS5020
WELL NAME	CHEVRON MOUNTAIN RIVER	LABORATORY NUMBER ▶	5020-W9
LOCATION	0-18		
SAMPLING POINT	SAMPLE NO. 2 - 998.8 M		

CATIONS

ION	g/m³	MASS FRACTION	MEQ/L
Na	8300	0.32	362
K	98.4	0.00	2.52
Ca	195	0.01	9.7
Mg	55.5	0.00	4.56
Ba	0.144	0.00	0.002
Sr	5.91	0.00	0.13
Fe	0.87	0.00	0.047
Mn			
Al			
Si			
B	1.73		
U			
Th			

ANIONS

ION	g/m³	MASS FRACTION	MEQ/L
Cl	1750	0.07	49.6
Br			
I	1.78	0.00	0.01
F			
HCO_3	834	0.03	13.7
CO_3	87.9	0.00	2.93
OH	0.00	0.00	0.00
SO_4	15000	0.57	313
H_2S			
PO_4			

TOTAL SOLIDS (g/m³)

EVAPORATED AT 110°C | EVAPORATED AT 180°C

AT IGNITION | CALCULATED
26331

SPECIFIC GRAVITY at 15°C | REFRACTIVE INDEX (RI) at 25°C
1.347

OBSERVED pH at 25°C
8.68

RESISTIVITY (RW) Ω·m at 25°C
0.371

REDOX POTENTIAL (Eh) | DISSOLVED O₂ g/m³

TOTAL METALS

METAL	g/m³
Fe	
Mn	

Cations/Anions: 1.00

Interval: to

KB: 112.0 GRD: 106.7

Perfs to

REMARKS

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WATER ANALYSIS

FILE NUMBER ▶ 90AS5020

LABORATORY NUMBER ▶ 5020-W10

CONTAINER IDENTITY
5020F10

OPERATOR'S NAME
CHEVRON CANADA RESOURCES

SAMPLE LOCATION	WELL NAME		ELEVATIONS KB	GRD
	CHEVRON MOUNTAIN RIVER	0-18	112.0	106.7
FIELD OR AREA	POOL OR ZONE	NAME OF SAMPLER	COMPANY	
			BOTC	

TEST TYPE NO | TEST RECOVERY

SAMPLING POINT | AMT AND TYPE OF CUSHION | MUD RESISTIVITY Ω/m
SAMPLE NO. 3 - 1073.0 M

MULTIPLE RECOVERY TEST INTERVAL
FROM | PUMPING | FLOWING | GAS LIFT | SWAB

TO | WATER m³/d | OIL m³/d | GAS 10³m³/d
SEPARATOR | TREATER | RESERVOIR | SAMPLED | RECEIVED

PERFORATIONS
FROM | GAUGE PRESSURE kPa
TEMPERATURE °C

TO

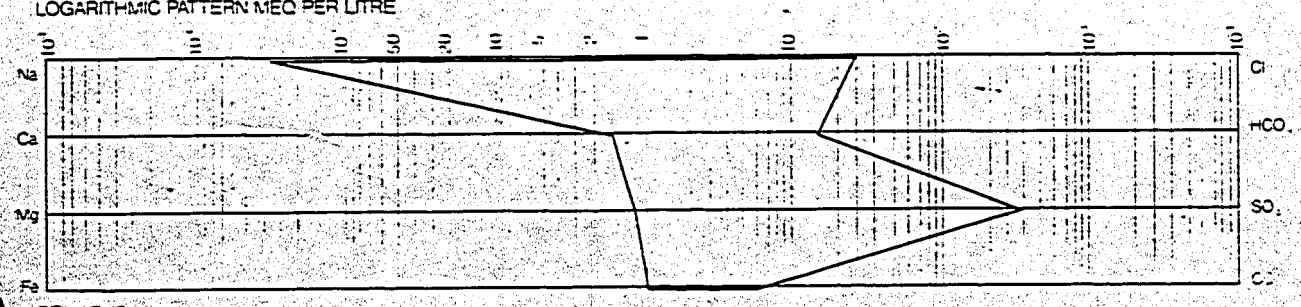
DATE SAMPLED Y M D	DATE RECEIVED Y M D	DATE ANALYZED Y M D	ANALYST
06-JAN-90	08-JAN-90	09-JAN-90	GB/VB

SUMMARY DATA

TOTAL HARDNESS AS CaCO	150	g/m³
TOTAL ALKALINITY	953	g/m³
SALINITY AS NaCl	1436	ppm
SATURATION INDEX	2.5	CaCO3 SCALING TENDENCY
STABILITY INDEX	4.37	CaCO3 SCALING TENDENCY
CORROSION TENDENCY	17.8	

Scaling calculations done at 30 C

LOGARITHMIC PATTERN MEQ PER LITRE



REMARKS

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WATER ANALYSIS
DETAILED REPORT

OPERATOR'S NAME	CHEVRON CANADA RESOURCES
WELL NAME	CHEVRON MOUNTAIN RIVER
LOCATION	0-18
SAMPLING POINT	SAMPLE NO. 3 - 1073.0 M

FILE NUMBER ▶ 90AS5020

LABORATORY NUMBER ▶ 5020-W10

CATIONS				ANIONS			
ION	g/m³	MASS FRACTION	MEQ/L	ION	g/m³	MASS FRACTION	MEQ/L
Na	7750	0.31	338	Cl	873	0.04	24.6
K	83.5	0.00	2.14	Br			
Ca	34.2	0.00	1.71	I	2.05	0.00	0.02
Mg	14.7	0.00	1.21	F			
Ba	0.136	0.00	0.002	HCO	839	0.03	13.7
Sr	1.93	0.00	0.04	CO_3	160	0.01	5.3
Fe	0.34	0.00	0.018	OH	0.00	0.00	0.00
Mn				SO_4	15100	0.61	315
Al				H_2S			
Si				PO_4			
B	1.09						
U							
Th							

TOTAL SOLIDS (g/m³)

EVAPORATED AT 110°C	EVAPORATED AT 180°C
AT IGNITION	CALCULATED
	24858

SPECIFIC GRAVITY at 15°C	REFRACTIVE INDEX (RI) at 25°C
	1.346

OBSERVED pH at 25°C	RESISTIVITY (RW) Ω m at 25°C
9.38	0.401

REDOX POTENTIAL (Eh) DISSOLVED O₂ g/m³

TOTAL METALS

METAL	g/m³
Fe	
Mn	

Cations/Anions: 0.96

Interval: to

KB: 112.0 GRD: 106.7

Perfs to

REMARKS

GEOTECH

CHEVRON MOUNTAIN RIVER

O-18

WATER ANALYSES

Prepared For:

CHEVRON CANADA RESOURCES

File No: 89AS6162

Date: January 11, 1990

ORIGINAL

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WATER ANALYSIS

FILE NUMBER ▶ 89AS6162

LABORATORY NUMBER ▶ 6162-W1

CONTAINER IDENTITY
6162F1

OPERATOR'S NAME
CHEVRON CANADA RESOURCES

SAMPLE LOCATION

WELL NAME
CHEVRON MOUNTAIN RIVER

ELEVATIONS KB 115.01 GRD 109.46

FIELD OR AREA

POOL OR ZONE
KEESCARP

0-18

NAME OF SAMPLER

COMPANY
BAKER

TEST TYPE NO
DST 1

TEST RECOVERY

SAMPLING POINT
TOP

AMT AND TYPE OF CUSHION

MUD RESISTIVITY Ω m

MULTIPLE RECOVERY TEST INTERVAL FROM
190
TO
205

PUMPING FLOWING GAS LIFT SWAB

WATER m³ OIL m³ GAS 10³ m³

PERFORATIONS FROM

SEPARATOR TREATER RESERVOIR SAMPLED RECEIVED

GAUGE PRESSURE kPa

TEMPERATURE °C

TO

DATE SAMPLED Y M D
22-DEC-89

DATE RECEIVED Y M D
27-DEC-89

DATE ANALYZED Y M D
10-JAN-90

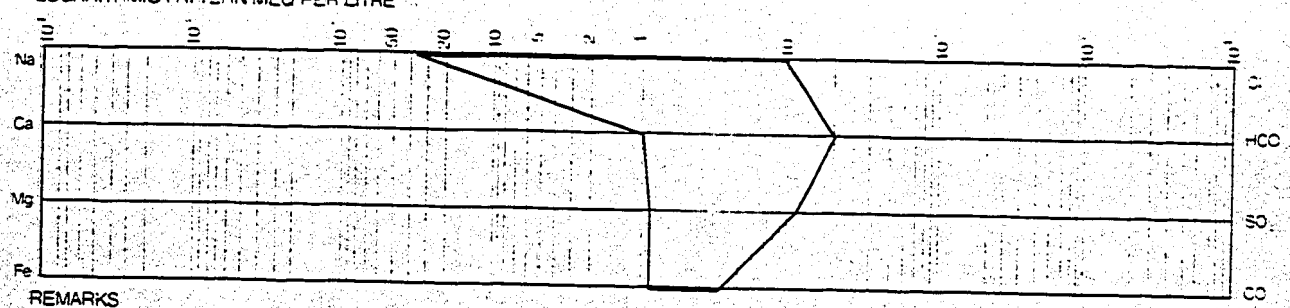
ANALYST
GB/VB

SUMMARY DATA

TOTAL HARDNESS AS CaCO	72	g/m³
TOTAL ALKALINITY	999	g/m³
SALINITY AS NaCl	460	ppm
SATURATION INDEX	1.61	CaCO3 SCALING TENDENCY
STABILITY INDEX	5.42	CaCO3 SCALING TENDENCY
CORROSION TENDENCY	0.87	

Scaling calculations done at 30 C

LOGARITHMIC PATTERN MEQ PER LITRE



REMARKS

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WATER ANALYSIS
DETAILED REPORT

OPERATOR'S NAME	CHEVRON CANADA RESOURCES	FILE NUMBER ▶	89AS6162
WELL NAME	CHEVRON MOUNTAIN RIVER	LABORATORY NUMBER ▶	6162-W1
LOCATION	0-18		
SAMPLING POINT	TOP		

CATIONS				ANIONS			
ION	g/m	MASS FRACTION	MEQ/L	ION	g/m	MASS FRACTION	MEQ/L
Na	852	0.31	37.1	Cl	280	0.1	7.9
K	12.4	0.00	0.32	Br			
Ca	22.4	0.01	1.12	I	< 1.0		
Mg	3.28	0.00	0.27	F			
Ba	0.202	0.00	0.003	HCO	1040	0.39	17.1
Sr	1.33	0.00	0.03	CO_3	85.6	0.03	2.85
Fe	0.07	0.00	0.004	OH	0.00	0.00	0.00
Mn				SO_4	453	0.16	9.4
Al				H_2S			
Si				PO_4			
B	0.504						
U							
Th							

TOTAL SOLIDS (g/m³)

EVAPORATED AT 110°C	EVAPORATED AT 180°C
AT IGNITION	CALCULATED
	2750

SPECIFIC GRAVITY	REFRACTIVE INDEX (RI)
1.0026 at 15°C	1.342 at 25°C

OBSERVED pH	RESISTIVITY (RW) Ω·m
8.65 at 25°C	2.633 at 25°C

REDOX POTENTIAL (E)	DISSOLVED O₂
	g/m³

TOTAL METALS

METAL	g/m³
Fe	
Mn	

Cations/Anions: 1.04

DST 1

Interval: 190 to 205

KB: 115.01 GRD: 109.46

Perfs to

REMARKS

SPECIFIC GRAVITY OF THE MUD = 1.0860

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WATER ANALYSIS

FILE NUMBER ▶ 89AS6162

LABORATORY NUMBER ▶ 6162-W2

CONTAINER IDENTITY: 6162F2

OPERATOR'S NAME: CHEVRON CANADA RESOURCES

SAMPLE LOCATION	WELL NAME		ELEVATIONS KB	GRD
	CHEVRON MOUNTAIN RIVER	0-18	115.01	109.46

FIELD OR AREA	POOL OR ZONE	NAME OF SAMPLER	COMPANY
	KEESCARP		BAKER

TEST TYPE	NO	TEST RECOVERY			
DST	1	SAMPLING POINT: MIDDLE	AMT AND TYPE OF CUSHION	MUD RESISTIVITY Ω·m	
MULTIPLE RECOVERY TEST INTERVAL FROM		PUMPING	FLOWING	GAS LIFT	SWAB
190		WATER m³	OIL m³	GAS 10³ m³	
TO 205		SEPARATOR	TREATER	RESERVOIR	SAMPLED / RECEIVED
PERFORATIONS FROM		GAUGE PRESSURE kPa			
		TEMPERATURE °C			
TO					

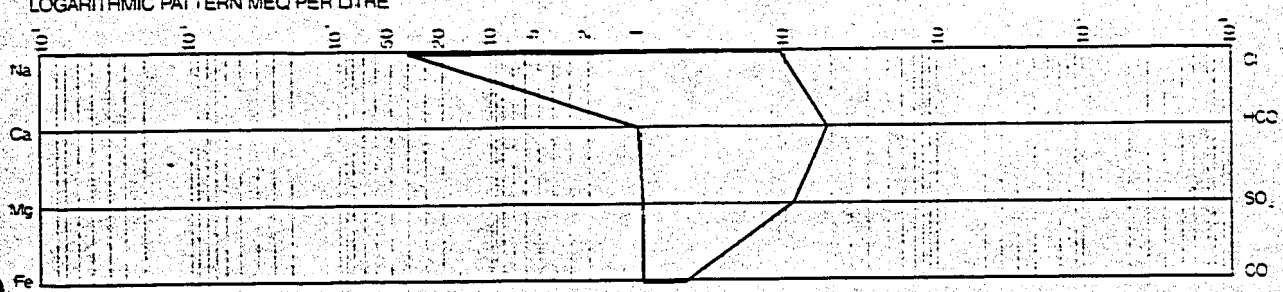
DATE SAMPLED Y M D H M	DATE RECEIVED Y M D	DATE ANALYZED Y M D	ANALYST
22-DEC-89	27-DEC-89	10-JAN-90	GB/VB

SUMMARY DATA

TOTAL HARDNESS AS CaCO3	69	g/m³	
TOTAL ALKALINITY	967	g/m³	
SALINITY AS NaCl	493	ppm	
SATURATION INDEX	1.32		CaCO3 SCALING TENDENCY
STABILITY INDEX	5.74		CaCO3 SCALING TENDENCY
CORROSION TENDENCY	0.98		

Scaling calculations done at 30 C

LOGARITHMIC PATTERN MEQ PER LITRE



REMARKS

GEOTECH Analytical

GEOTECHnical resources ltd.
4500 - 5th STREET N.E. CALGARY ALBERTA T2E 7C3
(403) 230-4128

WATER ANALYSIS
DETAILED REPORT

OPERATOR'S NAME	CHEVRON CANADA RESOURCES	FILE NUMBER ▶	89AS6162
WELL NAME	CHEVRON MOUNTAIN RIVER	LABORATORY NUMBER ▶	6162-W2
LOCATION	0-18		
SAMPLING POINT	MIDDLE		

CATIONS				ANIONS			
ION	g/m	MASS FRACTION	MEQ/L	ION	g/m	MASS FRACTION	MEQ/L
Na	832	0.3	36.2	Cl	299	0.11	8.4
K	13.4	0.00	0.34	Br			
Ca	21.4	0.01	1.07	I	< 1.0		
Mg	3.13	0.00	0.26	F			
Ba	0.109	0.00	0.002	HCO	1060	0.38	17.4
Sr	1.28	0.00	0.03	CO_3	57	0.02	1.9
Fe	< 0.05			OH	0.00	0.00	0.00
Mn				SO_4	499	0.18	10.4
Al				H_2S			
Si				PO_4			
B	0.443						
U							
Th							

TOTAL SOLIDS (g/m³)

EVAPORATED AT 110°C | EVAPORATED AT 180°C

AT IGNITION | CALCULATED: 2787

SPECIFIC GRAVITY: 1.0031 at 15°C | REFRACTIVE INDEX R_i: 1.341 at 25°C

OBSERVED pH: 8.40 at 25°C | RESISTIVITY (R_W) Ω·m: 2.633 at 25°C

REDOX POTENTIAL (E) | DISSOLVED O₂

TOTAL METALS

METAL	g/m³
Fe	
Mn	

Cations/Anions: 0.99

DST 1

Interval: 190 to 205

KB: 115.01 GRD: 109.46

Perfs to

REMARKS

SPECIFIC GRAVITY OF THE MUD = 1.0905

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4500 - 5th STREET N.E. CALGARY, ALBERTA T2E 7C3
(403) 230-4123

WATER ANALYSIS

FILE NUMBER ▶ 89AS6162

LABORATORY NUMBER ▶ 6162-W3

CONTAINER IDENTITY
6162F3

OPERATOR'S NAME
CHEVRON CANADA RESOURCES

SAMPLE LOCATION | WELL NAME
CHEVRON MOUNTAIN RIVER 0-18

ELEVATIONS KB 115.01 GRD 109.46

FIELD OR AREA | POOL OR ZONE
KEESCARP

NAME OF SAMPLER | COMPANY
BAKER

TEST TYPE NO
DST 1

TEST RECOVERY

SAMPLING POINT
TOOL

AMT. AND TYPE OF CUSHION

MUD RESISTIVITY Ω·m

MULTIPLE RECOVERY TEST INTERVAL
FROM 190
TO 205

PUMPING | FLOWING | GAS LIFT | SWAB

WATER m³ | OIL m³ | GAS 10³ m³

SEPARATOR | TREATER | RESERVOIR | SAMPLED | RECEIVED

PERFORATIONS
FROM
TO

GAUGE PRESSURE (kPa)

TEMPERATURE (°C)

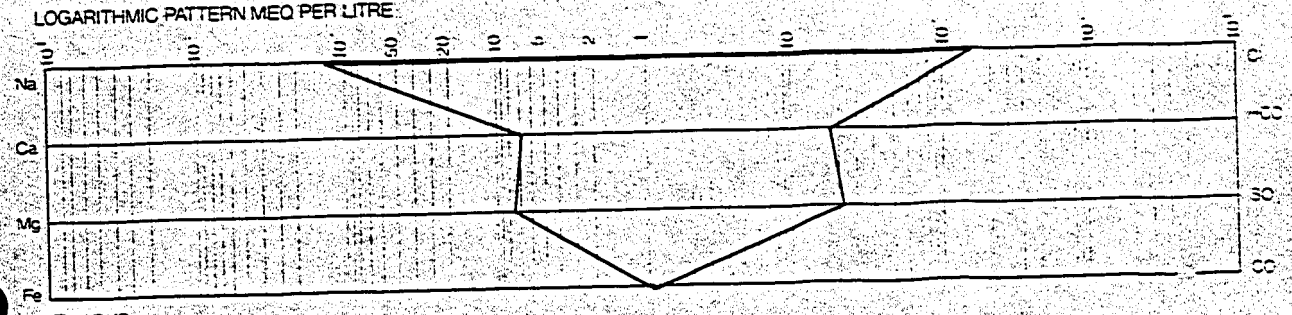
DATE SAMPLED (Y M D)	DATE RECEIVED (Y M D)	DATE ANALYZED (Y M D)	ANALYST
22-DEC-89	27-DEC-89	10-JAN-90	GB/VB

SUMMARY DATA

TOTAL HARDNESS AS CaCO	832	g/m³
TOTAL ALKALINITY	785	g/m³
SALINITY AS NaCl	8160	ppm
SATURATION INDEX	1.86	CaCO3 SCALING TENDENCY
STABILITY INDEX	4.45	CaCO3 SCALING TENDENCY
CORROSION TENDENCY	10.2	

Scaling calculations done at 30 C

LOGARITHMIC PATTERN MEQ PER LITRE



REMARKS

GEOTECH Analytical

GEOTECHnical resources ltd.
3500 - 5th STREET N.E. CALGARY, ALBERTA T2E 7C3
(403) 230-4128

WATER ANALYSIS
DETAILED REPORT

OPERATOR'S NAME	CHEVRON CANADA RESOURCES	FILE NUMBER ▶	89AS6162
WELL NAME	CHEVRON MOUNTAIN RIVER	LABORATORY NUMBER ▶	6162-W3
LOCATION	0-18		
SAMPLING POINT	TOOL		

CATIONS				ANIONS			
ION	g/m	MASS FRACTION	MEQ/L	ION	g/m	MASS FRACTION	MEQ/L
Na	3440	0.32	150	Cl	4960	0.45	140
K	329	0.03	8.4	Br			
Ca	149	0.01	7.4	I	2.82	0.00	0.02
Mg	101	0.01	8.3	F			
Ba	0.516	0.00	0.008	HCO	957	0.09	15.7
Sr	37.3	0.00	0.85	CO_3	0.00	0.00	0.00
Fe	0.05	0.00	0.003	OH	0.00	0.00	0.00
Mn				SO_4	931	0.09	19.4
Al				H_2S			
Si				PO_4			
B	1.43						
U							
Th							

TOTAL SOLIDS (g/m³)

EVAPORATED AT 110°C	EVAPORATED AT 180°C
AT IGNITION	CALCULATED
	10909

SPECIFIC GRAVITY		REFRACTIVE INDEX (RI)	
1.0086	at 15°C	1.344	at 25°C

OBSERVED pH		RESISTIVITY RW (Ω·m)	
8.19	at 25°C	0.626	at 25°C

REDOX POTENTIAL (Eh) DISSOLVED O₂

TOTAL METALS

METAL	g/m
Fe	
Mn	

Cations/Anions: 1.00

DST 1

Interval: 190 to 205

KB: 115.01 GRD: 109.46

Perfs to

REMARKS

SPECIFIC GRAVITY OF THE MUD = 1.0769

APPENDIX 12

LOGS

APPENDIX 12

LOGS

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

D.A. 1402

				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 MOUNTAIN RIVER O-18 Area: Fort Good Hope

Grid Area: 65° 40' 129° 00' Field/Pool: Exploratory - Wildcat

Permit or Lease No.: N89 A 099 Final Coordinates: Lat.: 65° 37' 57.89" N Long: 129° 02' 28.76" W

Drilling Unit: Shehtah 1E Elevations-RT/KB: 115.01m SF/GL: 109.46m

Spud Date: 1989-11-30 Rig Released: 1990-01-08 Total Depth: 1120m

UWI: 3000186540129000

CASING AND CEMENTING

O.D.:	Weight:	Grade:	Depth Set:	Cement and Additives:
508.0mm	139.9 kg/m	X-56	46m	Alaskan Class "G" Permafrost + 6% Gilsonite + 0.15% Permafrost retarder
339.7mm	101.2 kg/m	K-55	144m	Alaskan Class "G" Permafrost + 6% Gilsonite + 0.15% Permafrost retarder
244.5mm	59.5 kg/m	K-55	534m	Class "G" Neat + 0.5% CFR-3

PLUGGING PROGRAM

Approval of the following program was obtained by (person) Brent Defosse from (person) Pierre Guenard of the Canada Oil and Gas Lands Administration by means of Telephone on January 5th 19 90.

Type of Plug:	Interval:	Felt:	Cement and Additives:
Abandonment #1	1120m - 1020m	No Feel	Class "G" Neat + 0.5% CFR-3
Abandonment #2	900m - 700m	660m	Class "G" Neat + 0.5% CFR-3
Abandonment #3	584m - 484m	474m	Class "G" Neat + 0.5% CFR-3
Halliburton EZSV	400m	399m	
Abandonment #4	399m - 370m	No Feel	Class "G" Neat
Abandonment #5	17m - 7m	No Feel	Class "G" Neat

Lost Circulation/Overpressure Zones: Partial losses @ 286m (8m³), 379m, 383m, 397m (12m³) 403m, 408m, 440m (9m³)

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: P. Eng. Title: MANAGER DRILLING DIVISION

Name: W. H. GARMAN Date: 1990-01-15

Acknowledged by: Engineering Branch

Date: 90-01-19

File: 9211-C4-I-1

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

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

Canada

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

1990-01-05
Calgary, Alberta

COGLA
YELLOWKNIFE

Attention: Mr. Morris Thomas

Chevron Canada Resources may elect to abandon the Chevron Mountain River O-18 well, located at 65° 37' 57.98" N, 129° 2' 22.82" W. We propose the following abandonment program:

Plug No.	Interval	Length	Cement Type	Cement Volume	Tag Plug*
1	1120m - 1020m	100m	Class "G" Neat	Caliper + 20% excess	No
2	900m - 700m	200m	Class "G" Neat	Caliper + 20% excess	Yes
3	584m - 484m	100m	Class "G" Neat	Caliper + 20% excess	Yes
EZSV	400m				
4	400m - 370m	30m	Class "G" Neat	Caliper	No

* Using Density Logging Tool to locate top of plug.

Should Chevron elect to move on a Service Rig and production test the subject well, operational procedures and final abandonment details will be forwarded to the COGLA Yellowkife Regional Office for approval prior to commencement of said operations.

Attached is the pertinent well data and sketch of the proposed abandonment program for the subject Mountain River well. Should you require any additional information, contact Mr. Roy S. Rettie, Staff Drilling Engineer, at (403) 234-5522 (office), or (403) 275-3677 (home).

Yours very truly,

WHG

W. H. GARMAN
Manager Drilling Division

cc: F. H. Lepine - COGLA, Ottawa
P. West
M. Gelleny

BD/107:im

CHEVRON MOUNTAIN RIVER O-18
ABANDONMENT PROGRAM

WELL DATA

KB Elevation : 115.01m
T.D. : 1120m
Drilling Program No.: 9211-C4-1
Land Use Permit No. : N 89 A 099
UWI : 3000186540129000

Casing:

Conductor : 508.0mm, 139.9 kg/m, X-56, RL-4S set @ 46m.
Surface : 339.7mm, 101.2 kg/m, K-55, ST&C set @ 144m.
Intermediate: 244.5mm, 59.6 kg/m, K-55, LT&C set @ 534m.

Lost Circulation:

Partial loss circulation at 286m ($8m^3$) 379m, 383m, 397m ($12m^3$), 403m, 408m, 440m ($9m^3$).

DST:

DST #1 - 190m 205m Inflate straddle(Kee Scarp).
Remarks: No gas to surface. Recovered 30m drilling fluid.

Cored Intervals:

Core	Interval	Length	Recovery	Formation
Core #1	146m - 157.4m	11.4m	11.4 (100%)	Kee Scarp
Core #2	194m - 212m	18m	18 (100%)	Kee Scarp
Core #3	212m - 239m	27m	27m (100%)	Kee Scarp
Core #4	239m - 266m	27m	26-1/4m (97%)	Kee Scarp
Core #5	789m - 797m	8m	8m (100%)	Arnica
Core #6	1075m - 1092m	17m	17m (100%)	Mt. Kindle

Logs:

Surface : LLS-GR-CAL
Intermediate Hole: DIL-GR, SLD-CNS-SGR, DLL-MSFL, BCS-CAL-GR, BCS-SSL-CAL-GR, MEL-GR-CAL, SED-GR
Main Hole : DLL-MSFL-GR, DIL-GR, SLD-CNS-SGR-CAL, SLD-CNS-SGR-CAL, BCS-GR-CAL, BCS-SSL-GR-CAL, MEL-GR, SED-GR, Velocity SFT

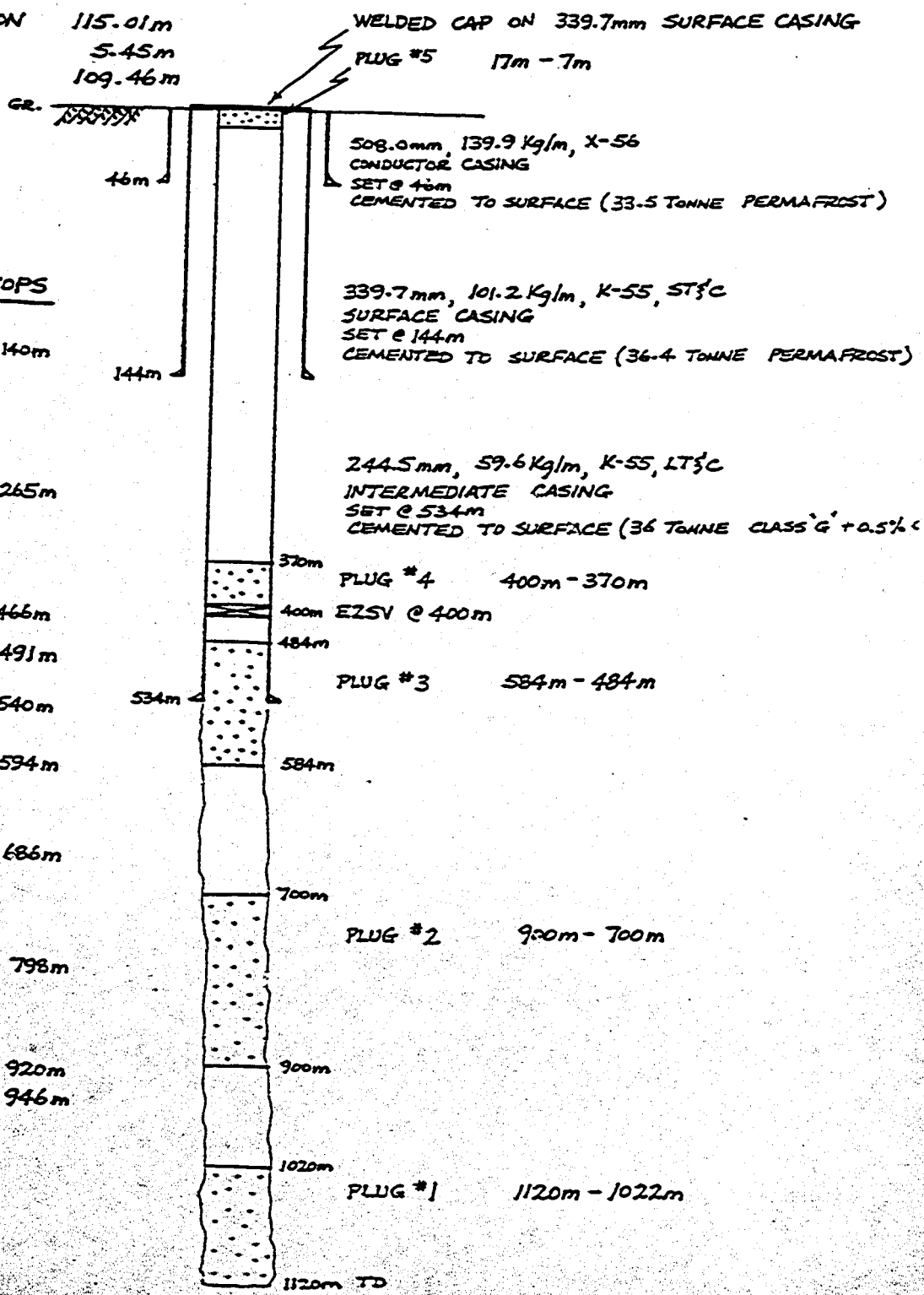
.../2

Formation Tops: (RKB)

Kee Scarp	140 m
Hare Indian	265 m
Bluefish	466 m
Nahanni	491 m
Headless	540 m
Landry	594 m
Arnica	686 m
Ft. Norman	798 m
Tatsieta	920 m
Mount Kindle	946 m
T.D.	1120 m

CHEVRON MOUNTAIN RIVER O-18
ABANDONMENT PROGRAM

KB ELEVATION 115.01m
KB - GROUND 5.45m
GROUND 109.46m



FORMATION TOPS

KEE SCARP	140m
HARE INDIAN	265m
BLUE FISH	466m
NAHANNI	491m
HEADLESS	540m
LANDRY	594m
ARNICA	686m
FT. NORMAN	798m
TATSIETA	920m
MOUNT KINDLE	946m