SUPPLEMENTARY WELL HISTORY

DECALTA ET AL ROND LAKE NO. 2

WESTERN DECALTA PETROLEUM LIMITED

MAY, 1961

SUPPLEMENTARY WELL HISTORY

ON

DECALTA ET AL ROND LAKE NO. 2

On August 10th, 1960 the 6 5/8" surface casing was perforated from 35' to 85' with four shots per foot, these perforations being opposite to the oil saturated Cretaceous sandstone encountered during drilling. There was no fluid above the plug at 466' before perforation. Subsequent to perforating there was no fluid entry.

The hole was found to be dry again on August 21st. There was no seeping of either oil or water through the perforations into the hole. It is our intention to check the well again this summer and if there is still no fluid entry the well will be abandoned.

A. M. Patterson, P. Eng.,
Exploration Manager.

17-65-30-W4

CGL-6

CHEMICAL & GEOLOGICAL LABORATORIES LTD. 12-25-43-24W

Edmonton — Fort St. John — Calgary

WATER ANALYSIS REPORT

Field or Area: Rond Lake, Alberta. Well No. Rond Lake No. 2. (Docalta)

Operator Western Docalta Petroleums Limited Date Received March 1, 1960.

Formation Depths

Other pertinent data Fluid bailed. at T.D. 778'

Date March 10, 1960 Lab. No. C 2733-1

PARTS PER MILLION (MILLIGRAMS PER LITER)

Na & K	Ca	Mg	Fe	SO_4	Cl	CO_3	HCO_3	OH	H_2S
1,101	345	51		19	1,750		1,195		

MILLIGRAM EQUIVALENTS

47.93	17.22	4.19		0.39	49.35		19.60		

MILLIGRAM EQUIVALENTS IN PERCENT

34.56	12.42	3.02		0.28	35.59		14.13		

Total Solids in Parts per Million

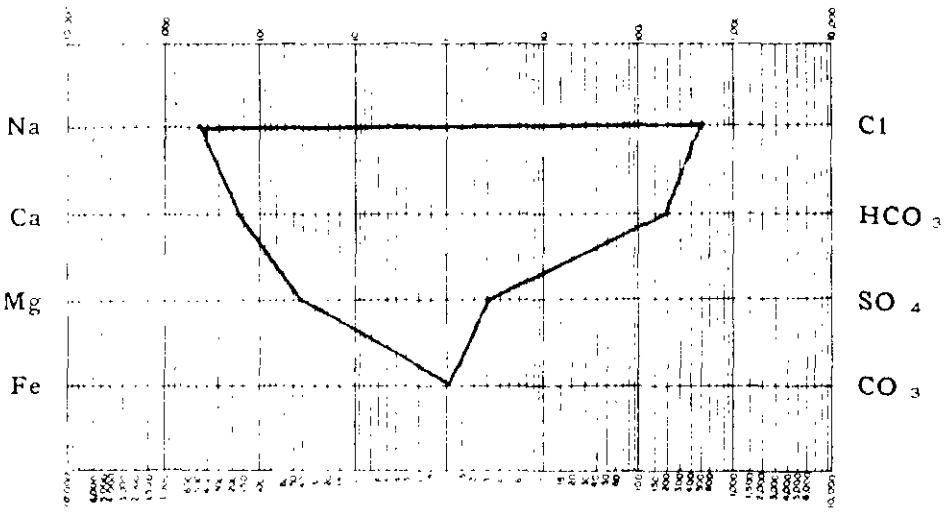
By evaporation	3,880
After ignition	3,200
Calculated	3,854
Specific Gravity	1.004
Observed pH	7.4
Resistivity	1.89 ohm meters @ 68° F.

Properties of Reaction in Percent

Primary salinity	69.12
Secondary salinity	2.62
Primary alkalinity	---
Secondary alkalinity	28.26
Chloride salinity	99.22
Sulfate salinity	0.78

Remarks and conclusions Freezing Point 31°F.
Milligram Equivalents multiplied by 10 on graph.

LOGARITHMIC PATTERN
MEQ per unit



FORM "B"

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES

NORTHERN ADMINISTRATION BRANCH

RESOURCES DIVISION

For the period from . . . . . .

to . . . . . .

REPORT of ~~COMPLETION~~ ~~REWORK~~ — ~~RECOMPLETION~~ ~~SUSPENSION~~ ABANDONMENT of a Well

Permit No. 1484 .

Name of well . . Decalta Et Al., Rond Lake No. 2 . . . . . Lease No. . . . .

Registered owner Western Decalta Petroleum Drilling Company . Big Indian . . .

Location . . 67° 05' 27" . . . . . N. Lat. 128° 25' 42" W. Long.

Survey description, if available . . . . . .

Elevation: Ground . . . 784 . . Last previous depth . . . . . .

Kelly bushing. . 793 . . . Present depth . . . 8054 . . . . . .

Spudded . . Feb. 19, 1960 . . . . . Finished drilling Mar. 5 . Rig Released

. March 5 . . . . .

Deviations from vertical . . . 425' - 0°, 790' 1/2° , 3[illegible] - 7½ . . . .

. . . . . .

CASING RECORD

	Date	Size O.D.	Weight lbs/ft	Grade	Set at feet	Sacks Cement	Top of Cement
1	Feb. 24	6 5/8	24	J-55	474 1/2	50	Surface
2							
3							
4							

TUBING RECORD

Size	Wt. Lbs/foot	Grade	Amount	Landed Depth	Remarks

Wellhead . . . . . .(Manufacturer). . . . (Size). . . .(Series)

Status of well on completion of drilling . . Dry Hole. . . . . .

Producing Zone . . . . . .and formation . . . . . .
Injection
Cord intervals 73' - 83', 533' - 543', 764' - 766', 766' - 778'.

. . . . . .

. . . . . .

. . . . . .

Interval logged: E-log Surface to 805.1/2. Other logs . . . . . .

R-log . . . . . .

M-log . . . . . .

Velocity log . . . . . .

The above logs (~~are~~)
(will be) submitted in accordance with Section 65 of the Regulations.

DRILL STEM TESTS

Test No.	Date	Interval Tested	Duration	Results
NONE				

(If space insufficient, attach further sheet)

(Strike out the non-applicable) (Completion) (Rework) (Recompletion)

Perforations Bullet. . . . . .

Shootings . . . . . .

Hydraulic fracturing . . . . . .

Chemical treatment . . . . . .

Date initial production tests . . . . . .

Initial production data . . . . . .

Pumping or flowing . . . . . .

Plug back . . . . . .

Other . . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

CEMENT PLUGS SET

Date	Plug set at	Sacks cement	Method	Top found at
Mar. 5	Forced wooden plug into casing shoe and dumped 15 sax on top.			
Mar. 5	5 sax at surface.			

Washed well samples have been sent to Geological Survey of Canada, Calgary

Cores will be stored at Western Decalta, Calgary, Alta.

Core analysis (was made) of the Intervals . . . . .
(to be made)

Oil analysis (was made) of the Intervals. . . . . .
(to be made)

Gas analysis (was made) of the Intervals. . . . . .
(to be made)

Water analysis (was made) of the Intervals. 776' - 778' . . . . . .
(~~to be made~~)

The above analyses (~~xxx~~)
(will be) submitted in accordance with Section 70(2) of the Regulations.

ADDITIONAL DETAILS AND COMMENTS

Lost circulation 766' to 778', bailed four hours at rate of 2 1/2 barrels per hour. Fluid level remained constant at 425'. Recovered sulphur water.

. . . . . .

. . . . . .

. . . . . .

Signed. . . . . Address 627 - 8th Avenue SW, CALGARY.

Date . . . . . .

(To be submitted in triplicate in accordance with Sections 68, 69, 70 and 71 of the Territorial Oil and Gas Regulations to the Oil Conservation Engineer at Calgary, Alberta.)

DRILLING REPORT

DECALTA ET AL., ROND LAKE NO. 2

N.W.T.

D. BRUCE BULLOCK & ASSOCIATES LTD.

CONSULTING GEOLOGISTS

MARCH, 1960

TABLE OF CONTENTS

Water Analysis, 776'-778',

ILLUSTRATIONS

SUMMARY OF WELL DATA

Well Name:	Decalta Et Al., Rond Lake No. 2
Location:	Approximately, 67° 05' 27" N., Latitude 128° 25' 42" W., Longitude
Elevations:	Ground: 784' KB: 793'
Spudded:	February 19, 1960.
Abandoned:	March 5, 1960.
Total Depth:	805 1/2'
Surface Casing:	466' of 6 5/8", J-55, 24 lb. casing cemented with 50 sax. set at 474.5' KB.
Logs:	E-log (point curve)
Classification:	Stratigraphic Test.
Abandonment:	Forced a wooden plug into casing shoe and dumped 15 sax cement on top. 2" pipe welded on surface casing, marked R L #2.

Markers:	Depth	Subsea	Thickness
Drift			35'
Cretaceous Sand	35'	+758'	65'
Upper Hare Indian River Shale	100'	+693'	330'
Lower Hare Indian River Shale	430'	+363'	33'
Lower Ramparts	466'	+327'	272'
Bear Rock	738'	+ 55'	

Summary Of Cores

Core #1	73 ' to 83' Rec. 10 feet, sand and oil sand.
Core #2	533' to 543' Rec. 10 feet, limestone, minor shale.
Core #3	764' to 766' Rec. 1/2 foot, (core jammed).
Core #4	766' to 778' Rec. 13 feet, limestone, lower two feet fractured.

Summary Of Formation Tests

Lost circulation at interval 776' to 778', bailed sulphur water.

DAILY PROGRESS REPORTS

February 18, 1960

Current Operation: Moving and rigging up.

February 19.

Spudded: 9:00 A. M.
Mud: Add. 200 lbs. Calcium Chloride.
Current Operation: Drilling
Depth: 100'

8 hrs. rig up
1/2 hr. mix chloride
8 1/2 hrs. drilling
1 hr. repair
3 hrs. trip and core
1 1/2 hrs. rig to bail
1 1/2 hrs. trip and thaw mud hoses

Operations: Drill from ground to 73'
Core from 73' to 83'
Drill from 83' to 100'

Rock Types Penetrated: From ground to 35', drift, brown clay, sand, gravel.
From 35' to 40', sand.
From 40' to 100', oil sand.

Core #1 73' to 83', Rec. 10'.
Unconsolidated quartz sand, bound by dark brown oil and ice, ice filled fractures

KB 793'
Cretaceous 35'
Devonian Shale 100'

February 20.

Mud:	Add. 200 lbs. Calcium Chloride, 100 lbs. gel., 20 lbs. Low Vis.
Current Operation:	Drilling
Depth: 168'	1 hr. cleaning mud lines
	6 hrs. wait on water(motor trouble)
	2 1/2 hrs. trip
	1/2 hr. service
	14 hrs. drilling
Operations:	Drill from 100' to 168'
Rock Types Penetrated:	From 100' to 168' - green shale.

February 21.

Mud:	Wt. 9.65, Vis. 39, Add. 200 lbs. Calcium Chloride.
Current Operation:	Drilling
Depth: 280'	21 1/2 hrs. drilling
	1/2 hr.s service
	2 hrs. trip
Operations:	Drill from 168 ' to 280'
Rock Types Penetrated:	Greenish grey shale.

February 22.

Mud:	Add. 200 lbs. Calcium Chloride. Chloride and water appeared unable to lift cutting so added 1800 lbs. gel.
Current Operation:	Drilling and mixing mud.
Depth: 365'	15 hrs. drilling
	1/2 hr. service
	6 1/4 hrs. trips and survey
	2 1/4 hrs. mix mud
Operations:	Drill from 280' to 365'. Trouble raising cutting in hole and in bit balling up in shale
Rock Types Penetrated:	From 280' - 305' - green shale
	From 305' -365' - mottled grey and green shale.

February 23.

Mud:	Vis. 35, Chloride and water.
Operations:	Drilling.
Depth: 440'	14 1/4 hrs. drilling 9 1/4 hrs. trip 1/2 hr. service (Trouble with bit balling up, cut back mud with water, left off drill collar).
Operations:	Drill from 365' to 440'.
Rock Types Penetrated:	Grey shale.

February 24.

Mud:	Wt. 10.1, Vis. 36.
Current Operation:	Finish surface hole and run surface casing.
Depth: 475'	12 1/4 hrs. drilling 5 1/4 hrs. trips 1/2 hr. circulate 1 hr. log 5 hrs. case and cement
Operations:	Drill from 440' to 475' Trip to condition hole Ran 466', 6 5/8", 24 lb., new J-55 casing, cemented with 50 sax cement, displaced with pump and plug. Landed at 474.5 KB. Plug down at 12:00 P. M.

February 25.

Current Operation:	W.O.C.

February 26.

Mud:	Wt. 8.9, Vis. 49, Add. 1200 lbs. gel.
Current Operation:	Drilling 4 3/4"

February 26. (cont'd.)

Depth: 533'	2 hrs.	trip and drill plug.
	3 hrs.	mix mud
	1 1/4 hrs.	change flow line.
	1/2 hr.	service
	15 1/4 hrs.	drilling
	1/2 hr.	circulate
	1 1/2 hrs.	trip for core
Operations:	Drill out plug.	
	Drill 4 3/4" 475' to 533'	
Rock Types Penetrated:	From 475' to 525' limestone	
	From 525' to 533' limestone and shale.	

February 27.

Mud:	Wt. 9.3, Vis. 43, WL 8, pH 9.5, add. 15 lbs. caustic, 20 lbs. Quebracho, 20 lbs. Spersene.
Current Operation:	Drilling.
Depth: 696'	2 1/2 hrs. core
	1 1/2 hrs. trip
	1/4 hr. service
	19 3/4 hrs. drilling
Operations:	Core from 533' to 543'
	Drill from 543' to 696'
Rock Types Penetrated:	From 533' to 696' - limestone, and shale.
Core #2	From 533' to 543', Recovered 10' of limestone and shale.

February 28.

Mud:	Wt. 9.6, Vis. 65, WL 8.0, pH 9.
Current Operation:	Preparing to core.

February 28. (cont'd.)

Depth: 766'	12 3/4 hrs. drilling 2 3/4 hrs. trip 1/2 hr. circulate 3 3/4 hrs. reaming with core barrel. 1 1/4 hrs. coring
Operations:	Drill 4 3/4" 696' to 764' Pulled out to core, trouble getting core barrel below surface casing.
Rock Types Penetrated:	From 696' to 764', limestone, trace of oil stained porosity at base.
Core #3	664' to 666', Rec. 1/2', dense limestone.

February 29.

Mud:	Add. 900 lbs. gel, 600 lbs. sawdust, 550 lbs. fiberseal.
Current Operation:	Combating lost circulation.
Depth: 978'	4 hrs. core 1 1/2 hrs. trip out 4 hrs. bail 2 hrs. log 12 1/2 hrs. mixing mud, tripping and waiting on water.
Operations:	Core from 766' to 778'. Lost circulation while cutting lower two feet. Bailed hole, recovered dark sulphurous water. Logged. While bailing fluid level remained constant at 425'. Mixed sawdust and fiber seal, pumped down, no returns. Prepared another batch of same.

Core #4 — 765' to 778', Rec. 13'.
11 feet of tight limestone
2 feet of limestone with fractures and vugs.

March 1, 1950.

Current Operation: Combating lost circulation.
Depth: 778'

8 hrs. regained circulation using sawdust and gel. flake.
2 hrs. reaming (lost circulation).
5 hrs. running gel. and diesel plug.
2 hrs. running cement and diesel plug.
5 hrs. W.O.C.

Operations:
Regained circulation, using sawdust and gel. flake.
Had to ream cored interval to 4 3/4".
Lost circulation on bottom.
Ran gel. and diesel mix,
1/2 bbl. diesel with 200 lbs. gel.
1 bbl. diesel ahead
1 1/2 bbl. diesel behind
Left plug, 20 min. on bottom,
then tried to fill hole - did not hold.
Ran cement and diesel plug.
1/2 bbl. diesel, 240 lbs. cement
1/2 bbl. diesel, ahead
1 bbl. diesel, behind
Waited for cement to set.

March 2.

Mud: Add 1600 lbs. gel, 13 sax sawdust, 13 sax gel.

Current Operation: Combating lost circulation.

March 2. (cont'd.)

Depth: 778'

6 hrs. W.O.C.
1 hr. trip in
14 hrs. mixing mud, waiting on water, etc.
Regained circulation at 6:30 P.M.
3 hrs. Lay down pipe and mast.

Operations:

After 12 hrs., drilled out cement plug, solid at 775', lost circulation at 777 1/2'.
Mixed mud, seal and sawdust, got returns at 6:30 P.M.
Lay down mast because of high wind.

March 3.

Mud:

Add 1100 lbs. gel., 300 lbs. sawdust, 300 lbs. seal.

Current Operation:

Combating lost circulation, drilling blind.

Depth: 780'

8 hrs. unplugging and thawing pipe, pump and mud lines.
14 hrs. hoist mast, run in, circulate and mix mud.
1/2 hr. drilled 2', no returns.
1 1/2 hrs. wait on water.

Operations:

Laid down mast because of high wind.
Drill pipe plugged with lost circulation material, lines and pumps frozen.
Unable to keep circulation once bit touches bottom.

March 4.

Mud: Add 1900 lbs. gel, 800 lbs. sawdust and 750 lbs. fiberseal.

Current Operation: Drilling blind.

Depth: 802'

6 hrs. drilling
18 hrs. waiting on water and mixing mud.

Operations: Drill blind from 780' to 802'

March 5.

Current Operation: Log and abandon.

Depth: 803 1/2'

(Pipe correction to 805 1/2')
1 1/2 hrs. drill blind
3 1/2 hrs. mix mud and wait on water.
7 hrs. log and velocity survey
1 hr. plug
8 hrs. tear down and move

Operations: Drill blind from 802' to 803 1/2'
Lay down drill pipe.
Log and run velocity survey.
Abandon:
A tree trunk was forced into casing shoe, 15 sax cement, 2% Ca Cl_2 run on top.

TIME DRILLING RECORD

Core #1

73' - 83' 2. 2, 3, 7, 2, 3, 2, 2, 1, 2.

Drilling Time

135' - 140'	25,	8,	10,	12,	11.					
140' - 150'	16,	21,	11,	10,	10,	11,	11,	8,	8,	9.
150' - 160'	12,	11,	12,	15,	16,	17,	22,	20,	12,	15.
160' - 170'	30,	48*,	20,	10,	8,	7,	6,	8,	7,	6.
170' - 180'	6,	7,	6,	6,	7,	11,	10,	11,	9,	10.
180' - 190'	13,	11,	12,	10,	11,	12,	13,	21,	20,	11.
190' - 200'	9,	16,	15,	9,	14,	15,	9,	17,	15,	13.
200' - 210'	10,	7,	6,	5,	7,	6,	5,	5,	6,	6.
210' - 220'	7.	5,	6,	7,	7,	8,	13,	11,	12,	10.
220' - 230'	12,	15,	40,	17,	15.	10,	8,	8,	11,	9.
230' - 240'	10,	9,	8,	9,	11,	14,	11,	13,	14,	13.
240' - 250'	19,	8,	18,	10,	11,	8 ,	8,	14,	14,	17.
250' - 260'	12,	11,	11,	10,	14,	15,	15,	14,	15,	20.
260' - 270'	12,	10,	7,	9,	7,	8,	7,	8,	7,	6.
270' - 280'	6,	6,	5,	5,	5,	7,	7,	7,	6,	15.
280' - 290'	18,	7,	7,	8,	8,	8,	9,	7,	8,	7.
290' - 300'	7,	6,	6,	5,	6,	5,	6,	6.	6,	6.
300' - 310'	5,	6,	6,	7.	6,	5,	6,	7,	6,	6.
310' - 320'	5,	6,	6,	6,	6,	6,	6,	6,	6,	5.
320' - 330'	5,	5,	6,	6,	6,	6,	7,	7,	6,	6.
330' - 340'	6,	6,	6,	6,	6,	6,	6,	6,	6,	6.
340' - 350'	5,	6,	6,	6,	6,	6,	6,	7,	7,	6.
350' - 360'	6,	5,	5,	5,	7,	7,	8,	7,	7,	23.
360' - 370'	*+55,	58,	62,	60,	32,	*5,	6,	6,	7,	6.
370' - 380'	6,	6,	6,	6,	6,	6,	6,	6,	6,	+60.
380' - 390'	7,	8,	7,	6,	5,	6,	10,	10,	8,	9.
390' - 400'	8,	8,	6,	8,	9,	8,	8,	9,	9,	10.
400' - 410'	10,	10,	10+	78,	27,	31,	7,	7,	6,	7.
410' - 420'	6,	7,	7,	8,	9,	8,	9,	10,	12,	12.

* New Bit
\+ Balled Bit

420' - 430'	12,	11,	11,	8,	7,	9,	9,	10,	10,	16.
430' - 440'	15,	12,	13,	12,	19,	14,	12,	9,	10,	10.
440' - 450'	11,	12,	14,	25,	11,	9,	9,	10,	11,	18.
450' - 460'	18,	+41,	22,	18,	17,	14,	16,	20,	15,	15.
460' - 470'	20,	15,	13,	18,	18,	16,	25,	24,	23,	22.
470' - 480'	25,	31,	25,	25,	30,	*11,	12,	12,	12,	13.
480' - 490'	23,	19,	18,	19,	21,	19,	21,	15,	13,	16.
490' - 500'	18,	10,	18,	19,	21,	23,	27,	29,	21,	23.
500' - 510'	16,	14,	17,	15,	11,	11,	13,	20,	21,	18.
520' - 530'	9,	16,	18,	7,	13,	16,	16,	13,	17,	8.
530' - 533'	7,	7,	7.							

Core #2

533' - 543'	12,	17,	17,	19,	15,	15,	17,	16,	13,	16.

Drilling Time

543' - 550'	-,	-,	-,	*10,	11,	6,	6,	8,	7,	6.
550' - 560'	7,	7,	7,	6,	7,	10,	15,	12,	8,	7.
560' - 570'	7,	6,	8,	14,	9,	8,	8,	6,	5,	6.
570' - 580'	7,	5,	6,	6,	7,	5,	10,	9,	8,	8.
580' - 590'	7,	6,	7,	6,	5,	5,	6,	5,	5,	5.
590' - 600'	7,	11,	5,	6,	7,	10,	11,	10,	9,	8.
600' - 610'	8,	6,	5,	5,	5,	6,	7,	7,	7,	6.
610' - 620'	6,	6,	6,	6,	6,	8,	8,	8,	6,	6.
620' - 630'	7,	7,	6,	6,	5,	6,	6,	7,	6,	6.
630' - 640'	6,	7,	7,	6,	7,	7,	6,	7,	7,	7.
640' - 650'	7,	7,	7,	6,	6,	7,	6,	6,	7,	6.
650' - 660'	6,	8,	8,	7,	6,	6,	7,	6,	7,	7.
660' - 670'	7,	7,	7,	7,	7,	7,	7,	6,	7,	6.
670' - 680'	6,	8,	9,	8,	8,	7,	7,	7,	7,	7.
680' - 690'	7,	7,	7,	6,	7,	7,	7,	7,	8,	7.
690' - 700'	8,	10,	9,	9,	9,	7,	8,	14,	11,	10.
700' - 710'	10,	14,	14,	9,	13,	10,	17,	10,	*8,	7.
710' - 720'	7,	7,	7,	7,	7,	7,	6,	6,	7,	7.
720' - 730'	6,	6,	8,	9,	7,	7,	6,	6,	6,	6.
730' - 740'	6,	6,	7,	7,	8,	7,	7,	7,	10,	10.
740' - 750'	12,	12,	10,	15,	9,	15,	18,	13,	8,	14.
750' - 760'	21,	9,	20,	15,	15,	16,	24,	14,	14,	14.
760' - 764'	17,	20,	21,	17.						

* New Bit

+ Balled Bit

Coring Time

Core #3

764' - 766' 7, 45 (Jammed)

Core #4

766' - 778' 30, 26, 17, 17, 18, 15, 19, 16, 17, 16, 19, 16.

MUD RECORD

Date	Wt.	Vis.	W. L.	pH	Additives
Feb. 19					200 lbs. Chloride
20					200 lbs. Calcium Chloride, 100 lbs. gel, 20 lbs. Low Viscosity.
21	9.65	39			200 lbs. Calcium Chloride.
22					200 lbs. Calcium Chloride, 1800 lbs. mud.
23		35			Cut mud back with water.
24	10.1	36			
26	8.9	49			1200 lbs. gel.
27	9.3	43	8	9.5	15 lbs. caustic, 20 lbs. QX, 20 lbs. Spersene.
28	9.6	65	8.0	9	
29					900 lbs. gel, 600 lbs. sawdust, 550 lbs. fiberseal.
March 1					1200 lbs. gel, 50 lbs. fiberseal.
2					1600 lbs. gel, 650 lbs. sawdust & 650 lbs. fiberseal.
3					1100 lbs. gel, 300 lbs. sawdust, 300 lbs. seal.
4					1300 lbs. gel, 800 lbs. sawdust, 850 lbs. fiberseal.

BIT RECORD

NO.	SERIAL	SIZE	MAKE	TYPE	FROM	TO	FEET	HOURS	REMARKS
1	55757	8 5/8	Hughes	OSC	Gr.	162	152	21 1/2	Teeth missing
2	55744	8 5/8	Hughes	OSC	162	360	198	34	Balled up, but good shape.
3	43100	8 5/8	Hughes	OSC	360	365	5	2 1/2	
4	62814	8 5/8	Hughes	OWV	365	475	110	27 1/2	
5	9286	4 3/4	Williams	K3	475	533	58	15 1/4	
6	610	4 3/4	Williams	K2	533	707	174	22	(Reamed 533-43)
7	606	4 3/4	Williams	K2	707	764	57	10 1/2	
8	283	4 3/4	Williams	K3	778	805 1/2	25 1/2	8	

BAILING OPERATION

Date: February 29, 1960.

Formation Tested: Bear Rock.

Lost circulation in fractured, vuggy interval 776' to 778'. Bailed for four hours at a rate of about 2 1/2 barrels per hours. Fluid level remained constant at 425 feet.

BREAKDOWN OF TIME SPENT ON THE HOLE

Drilling	140 3/4 hrs.
Casing	31 hrs.
Mud problem	15 hrs.
Trips	32 1/2 hrs.
Coring	19 1/2 hrs.
Repairs	1 hr.
Service	2 3/4 hrs.
Log	10 hrs.
Plug	1 hr.
Bail	5 1/2 hrs.
Lost circulation	98 hrs.
Time lost due to freezing mud lines	8 hrs.
TOTAL TIME ON HOLE	365 hrs.

SAMPLE AND CORE DESCRIPTION

Surface -	Brown clay.
0' - 35'	Brown clay, sand and gravel, sand is fine to coarse, mostly quartz grains, rounded, also grains, pebbles and boulders of sandstone, limestone, shale, igneous rocks, Traces of oil staining.
35'	Cretaceous
35' - 40'	Sand - quartz, fine to coarse, rounded, oil stained.
40' - 100'	Oil sand - sand as above, saturated with dark brown oil.
Core #1	73' - 83' Rec. 10 feet. Oil sand and sand - fine to coarse rounded quartz grains cemented by ice and oil, (oil is about 30%) irregular inclusions of solid carbonaceous material, ice filled fractures.
100'	Upper Hare Indian River Shale
100' - 170'	Shale - light greenish grey, fissile, micromicaceous, a few spores, moderate hardness. Traces of grey, more limy layers, trace of crinoid stems, trace of olive brown shale at 165'.
170' - 255'	Shale - about the same, getting slightly darker and less calcareous, a few stringers of hard, more calcareous shale, some traces of limestone, possibly fossil fragments. The odd spore throughout.

255' - 305' Shale - looks the same but cuttings finer, slightly brighter green cast.

305' - 370' Shale - mottled grey and green (mottled on horizontal plane, laminated on vertical) spores abundant, practically non-calcareous, some green shale, either cavings or inter= bedded. Traces of hard, brown silty limy material, probably in laminae.

370' - 395' Shale - mottled grey and green as above and shale - medium grey, finely laminated, a few spores, section grades downward into straight grey shale.

395' - 430' Shale - medium grey, a few spores.

430' Lower Hare Indian River Shale

430' - 466' Shale - as above, some dark brown shale with a brown streak, amount increases downward, a few spores, especially numerous at 460'.

Lower few feet are all dark brown shale, with fossil impressions including Tentaculites or Styliolina.

466' Lower Ramparts.

466' - 480' Limestone - light brownish grey, very fine crystalline; part clean, probably corralline, part vitreous, slightly argillaceous with earthy or chalky appearance in part. Ostracod and brachiopod fragments, pyrite, calcite.

480' - 490' Limestone - darker brown than above, very fine crystalline, calcite, minor pyrite. Traces of brown limy shale.

490' - 495' Limestone - brown and brownish grey as above.

495' - 515' Limestone - as above, interbedded with limestone-light, clean, very fine crystalline, probably coralline material, some medium crystalline clear calcite, clean limestone increases up to 50% at base.

515' - 525' Limestone - 80% clean limestone as above, probably coralline, remainder slightly argillaceous limestone. Trace of green shale.

525' - 533' Limestone - light brownish grey, very fine crystalline, fine fragmental with some whole fossils. Minor shale - dull green, slightly calcareous.

Core #2 Rec. 10 feet.

533' - 543' Limestone and shale.
Limestone - light, brownish grey, very fine crystalline, fine fragmental as well as whole fossils - brachiopods and cup corals, Some fossils are outlined by clear medium crystalline calcite.
Shale - dull green, slightly calcareous, silty texture.

533' - 535 1/2'	50% shale, 50% limestone.
535 1/2' - 536 1/2'	Shale.
536 1/2' - 540 1/2'	50% shale, 50% limestone.
540 1/2' - 543'	Limestone with a few shale partings.

Limestone and shale occur in an irregular mixture, with a mottled appearance, irregular but smooth sided blobs of limestone occur in shale, or irregular thin shale partings occur in limestone.

543' - 690' Limestone and shale - as above. Proportion of limestone in samples varies from 20 to 90% but drilling time indicates near constant proportion.

690' - 740' Limestone and shale - as above but rich in disseminated pyrite.

738' Bear Rock

740' - 764' Limestone - brown, in part vitreous, in part chalky, very fine crystalline and dense, some medium crystalline fragments from fractures or veins. Algal texture common, a few ostracods. In last sample are rare cuttings which indicate drusy, oil stained vugs.

Core #3 Rec. 6 inches.

764' - 766' Limestone - as below

Core #4 Rec. 13 feet.

766' - 778' Limestone, minor shale as follows:

764' - 768' 8"	Limestone - light to medium dark brown, very fine crystalline to dense, trace of faint laminations in the limestone. Layers and laminations, up to 2" thick of dark brownish grey, slightly calcareous shale, most shale layers are 1/8" to 1/4" thick, and are wavy. Many tiny fracturers or faults with movement of a fraction of an inch, tightly sealed by clear limestone crystals.

768' 8" - 774' 6"	Limestone - light tan, sublithographic, many tiny calcite filled fracturers, traces of faint algal texture, rare fine stylolite.
774' 6" - 776' 8"	Limestone - brown, very fine crystalline, algal texture, argillaceous stylolites and partings, these are slightly irregular and show a dip of between 1^{o} and 5^{o}. A 6" long fracture at base, lined with crystals, excellent permeability.
776' 8" - 778'	Limestone - tan to brown, very fine crystalline to sublithographic, algal texture, minor brecciation, one large and several small irregular drusy vugs, oil staining, excellent permeability.

STRATIGRAPHY

GENERAL

In the Rond Lake area, the upper part of the Stratigraphic Section is as follows.

Glacial Deposits

Till and lake sands, up to 200', nearly everywhere present.

Cretaceous

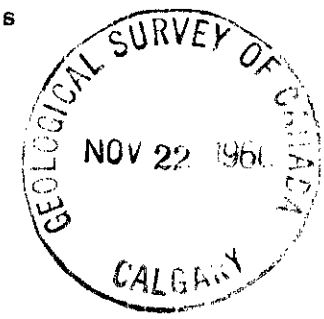
Poorly consolidated quartz sand, thin, random, patchy distribution.

Middle Devonian - Ramparts Formation

Upper Ramparts Limestone - 200'$^{+}_{-}$ not present in any of the wells drilled, forms the scarp west of Rond Lake.

Middle Ramparts Shale; also called Hare Indian River Shale - 600' to 700' of green shale, 30' at base contains interbedded dark brown shale.

Lower Ramparts Limestone - 300 - feet fossiliferous limestone.



Bear Rock Formation

800'±, very fine algal rich limestone, equivalent to the dolomite breccia of the Norman Wells area.

Silurian

Thickness unknown, dolomite with reefs.

PLEISTOCENE AND RECENT

Only 35 feet of drift are present in this well. The drift consists of brown clay with fine to coarse quartz sand, of the type comprising the underlying Cretaceous, and pebbles of sedimentary and igneous material.

CRETACEOUS

Cretaceous sands, 65 feet thick, overlie the Devonian shale. The sands are entirely quartz, fine to coarse grained, poorly sorted, angular to polished and well rounded.

The sand is poorly consolidated, in part has a light colored clay matrix. Carbonaceous fragments are common. The sand is oil stained and most of it is saturated with brown oil. A core was taken, which showed fractures filled with ice.

UPPER HARE INDIAN RIVER SHALE

In this well 330 feet of the Upper Hare Indian River Shale are present; this thickness represents approximately the lower half of the formation, the remainder has been removed by pre-Cretaceous erosion. The section consists of green, very slightly calcareous shale which gradually becomes darker with depth. The lower 175 feet have a mottled appearance caused by interlaminated green and grey shale; the mottled shale grades to straight grey shale in the basal 35 feet. Small, flat, circular, resinous spores occur throughout the section but are abundant only in the lower part.

LOWER HARE INDIAN RIVER SHALE

The Lower Hare Indian River Shale is 36 feet thick, it consists of grey shale interbedded with hard, brown

shale which has a brown streak. Fossil impressions resembling Tentataculites or Styliolina are present in the brown shale.

LOWER RAMPARTS

The Lower Ramparts limestone consists of argillaceous, fossiliferous limestone with interbedded green calcareous shale. Brachiopods, Ostracods and cup-corals are common throughout. As in Rond Lake No. 1, the upper portion of the Lower Ramparts consists predominantly of limestone with a lot of clean, coralline material, whereas the lower part contains much interbedded shale.

In Rond Lake No. 2, the Lower Ramparts is 272 feet thick, 17 feet thinner than in Rond Lake No. 1. From a comparison of the E-logs of the two wells it can be seen that most of the thinning takes place in the lower part of the section, below the depth of 606 feet in Rond Lake No. 2. The thickness of the upper coralline zone thins from 82 feet in Rond Lake No. 1 to 53 feet in No. 2, this is a facies change rather than stratigraphic thinning.

BEAR ROCK

Only the upper 67 feet of the Bear Rock formation wer penetrated. The lithology is the same as in well No. 1, - clean, very fine limestone with algal texture. Part of the section was cored and showed that the limestone has very faint, fine laminae; also partings and stylolites of brown shale. The cores also showed the presence of many small fractures tightly sealed by calcite. Below 776 feet there are vugs and open fractures, so permeable that circulation was lost. The E-logs of wells No. 1 and 2 correlate exactly, point for point, throughout the section drilled, which would seem to confirm that the Bear Rock in this area is well bedded and not brecciated, and to indicate that the Ramparts - Bear Rock contact is conformable.

DISCUSSION

A lot of delay in drilling this well was caused by balled up rock bits while drilling in the soft Hare Indian River Shales. Unfortunately a finger bit was not available at the time, but drilling in hole No. 4 illustrated that a finger bit is the remedy for this problem. aside from the mud problems, the drilling proceeded with no major delays until circulation was lost in the upper part of the Bear Rock formation. Circulation could be regained using sawdust and fiber seal but the mud would disappear immediately the bit touched bottom. A gel in diesel and also a cement in diesel plug were tried, with similar results. Finally 27 feet were drilled without returns, slowly pumping water down while drilling; the cuttings all disappeared into the formation.

The core of the Bear Rock showed excellent permeability due to vugs and fracturers. The core was oil stained but had a nasty sulphur odour. Sulphur water

was recovered by bailing. The level of water in the hole after losing circulation, indicates the same hydrostatic pressure as found in the Silurian and the Bear Rock formation in Rond Lake No. 1 (approximately the level of Rond Lake) indicating the lack of a permeability barrier between the Silurian and the Bear Rock.

The Cretaceous sands, beneath only 35 feet of drift are nearly saturated with oil; oil and ice occur together in fractures in the sand. The oil must have entered the sand prior to the Pleistocene. Probably the slow melting of permafrost releases the oil and keeps the Rond Lake oil seep active.

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