

CHEMICAL ANALYSIS

for

PAN AMERICAN PETROLEUM CORPORATION

Pan Am Beaver YT *61-01*  
Beaver River  
Yukon Territories

CHEMICAL ANALYSIS

for .

PAN AMERICAN PETROLEUM CORPORATION

Pan Am Beaver YT *G-01*  
Beaver River  
Yukon Territories



**CORE LABORATORIES - CANADA LTD.**  
 PETROLEUM RESERVOIR ENGINEERING  
 WATER ANALYSIS



File CAL-2-316 Page 1 of 2

Company Pan American Petroleum Corporation  
 Well Pan Am Beaver YTG-01 K.B. \_\_\_\_\_ Grd. \_\_\_\_\_  
 Location 60°10'N, 124°10'W Field Beaver River Province Yukon Territories  
 Formation Mississippian Interval 10170'-10220'  
 Sampled from Flare Line (After 8 Hrs. Flow) by \_\_\_\_\_  
 Date sampled May 31/69 Date analyzed June 6/69 Analyst M.B.  
 Recovery Muddy Salt Water  
 \_\_\_\_\_ Mud type \_\_\_\_\_ Water cushion \_\_\_\_\_

Resistivity 0.060 Ohm-meters @ 70 °F  
 Specific gravity 1.1107 @ 60°F  
 pH 4.55 H<sub>2</sub>S Absent  
 Refractive Index 1.370 @ 70°F

Total Solids:  
 Calculated 159,923 mg/liter  
 By evaporation @ 110°C - mg/liter  
 By evaporation @ 180°C - mg/liter  
 At ignition - mg/liter

**MILLIGRAMS PER LITER**

Na + K	Ca	Mg	Fe	Ba	Br	I	Cl	HCO <sub>3</sub>	SO <sub>4</sub>	CO <sub>3</sub>	OH
18,648	32,139	5,993	Pres.	Abs.	-	-	103,089	54	-	-	-

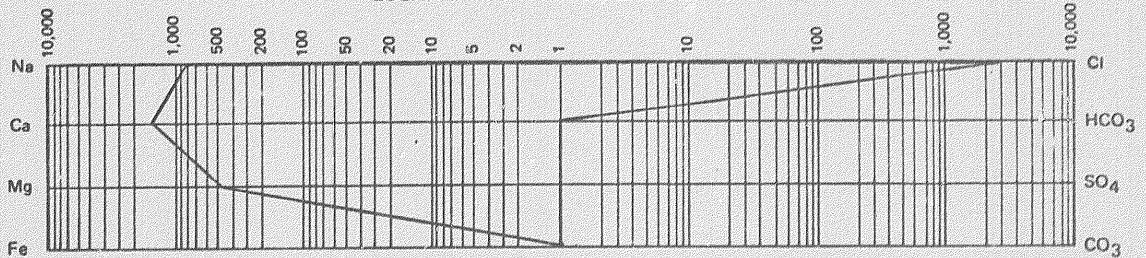
**PER CENT CALCULATED SOLIDS**

11.7	20.1	3.7	Pres.	Abs.	-	-	64.5	0.0	-	-	-
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**MEQ PER LITER**

810.8	1603.7	492.6	Pres.	Abs.	-	-	2907.1	0.9	-	-	-
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**LOGARITHMIC PATTERN MEQ PER LITER**





**CORE LABORATORIES - CANADA LTD.**  
**PETROLEUM RESERVOIR ENGINEERING**  
**WATER ANALYSIS**



File CAL-2-516 Page 2 of 2

Company Pan American Petroleum Corporation

Well Pan Am Beaver YT-6-01 K.B. \_\_\_\_\_ Grd. \_\_\_\_\_

Location 60°10'N, 124°10'W Field Beaver River Province Yukon Territories

Formation Mississippian Interval 10170'-10220'

Sampled from Flare Line (After 10 Hrs. Flow) by \_\_\_\_\_

Date sampled May 31/69 Date analyzed June 6/69 Analyst M.B.

Recovery Salt Water

\_\_\_\_\_ Mud type \_\_\_\_\_ Water cushion \_\_\_\_\_

Total Solids:

Resistivity 0.140 Ohm-meters @ 70 °F Calculated 54,104 mg/liter

Specific gravity 1.0388 @ 60°F By evaporation @ 110°C - mg/liter

pH 2.25 H<sub>2</sub>S Absent By evaporation @ 180°C - mg/liter

Refractive Index 1.346 @ 70°F At ignition - mg/liter

**MILLIGRAMS PER LITER**

Na + K	Ca	Mg	Fe	Ba	Br	I	Cl	HCO <sub>3</sub>	SO <sub>4</sub>	CO <sub>3</sub>	OH
5,580	12,361	1,453	Trace	Abs.	-	-	34,710	-	-	-	-

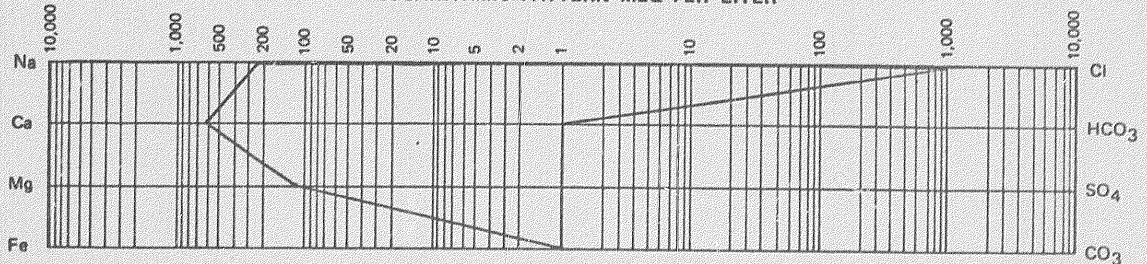
**PER CENT CALCULATED SOLIDS**

10.3	22.9	2.7	Trace	Abs.	-	-	64.1	-	-	-	-
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**MEQ PER LITER**

242.6	616.8	119.4	Trace	Abs.	-	-	978.8	-	-	-	-
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**LOGARITHMIC PATTERN MEQ PER LITER**



CORE ANALYSIS REPORT

FOR

**Amoco Canada Petroleum Company Ltd.**

PAN AM BEAVER YT G-01

WILDCAT - BEAVER RIVER AREA

YUKON TERRITORY

**CORE LABORATORIES - CANADA LTD.**

*Petroleum Reservoir Engineering*

CALGARY - EDMONTON - REGINA

CORE LABORATORIES - CANADA LTD.  
EDMONTON ALBERTA

COMPANY AMOCO CANADA PETROLEUM COMPANY LTD.  
WELL PAN AM BEAVER YT G-01  
FIELD WILDCAT-BEAVER RIVER AREA, YUKON TERR.  
LOCATION 60°00' 25.00" N; 124°15' 48.00" W.

FORMATION DEVONIAN  
DRILLING FLUID WATER BASE MUD  
ELEVATION  
ANALYSIS  
REMARKS

PAGE 1 of 10  
FILE CNP-1-9655  
DATE REPORT OCT. 28/69  
ANALYSTS GM DD MY

FULL DIAMETER  
GLAZED SURFACE ON ALL SAMPLES REMOVED  
PRIOR TO PERMEABILITY MEASUREMENTS.

SAMPLE NUMBER	INTERVAL REPRESENTED FEET		PERMEABILITY TO AIR MILLIDARCS		PERMEABILITY FEET	POROSITY %	POROSITY FEET	DENSITY			RESIDUAL SAT. PORE %		VISUAL EXAMINATION
	DEPTH	THICK	KMAX	KAV				BULK	GRAIN	OIL	TOTAL WATER		

CORED INTERVALS: 13,530.0' - 13,591.0'; 13,663.0' - 14,432.0'  
CORE NO. 12 13,530.0' - 13,568.0' (REC 33.7) (9 BOXES)

1	13530.0-13531.7	1.7	0.45	0.09	<0.01	0.77	1.0	1.70	2.76	2.79			1	STY
2	13531.7-13533.4	1.7	0.35	0.18	<0.01	0.60	0.8	0.36	2.80	2.82			1	STY
3	13533.4-13534.5	1.1	0.22	0.11	<0.01	0.24	0.8	0.88	2.75	2.77			1	STY
4	13534.5-13535.7	1.2	0.54	0.25	0.06	0.65	1.3	1.56	2.76	2.79			1	STY
5	13535.7-13537.3	1.6	0.47	0.26	0.09	0.75	1.6	2.56	2.73	2.78			1	STY
6	13537.3-13539.1	1.8	0.24	0.08	<0.01	0.43	1.5	2.70	2.76	2.80			1	STY
7	13539.1-13540.8	1.7	0.76	0.49	0.09	1.29	2.3	5.91	2.72	2.79			1	STY
8	13540.8-13542.8	2.0	*	3.32	0.53	6.64	2.3	4.60	2.74	2.80			1	HF
9	13542.8-13544.0	1.2	5.56	0.30	0.07	6.67	1.7	2.04	2.75	2.80			1	STY
10	13544.0-13545.2	1.2	*	0.33	0.66	0.40	2.1	2.52	2.75	2.81			1	STY
11	13545.2-13546.4	1.2	0.11	0.10	<0.01	0.13	1.2	1.44	2.76	2.79			1	STY
12	13546.4-13548.1	1.7	0.10	0.10	<0.01	0.17	1.4	2.38	2.76	2.79			1	STY
13	13548.1-13549.5	1.4	2.86	2.54	<0.01	4.00	1.6	2.24	2.74	2.79			1	STY
13A	13549.5-13551.3	1.8	0.06	0.03	<0.01	0.11	1.1	1.98	2.73	2.76			1	STY
13B	13551.3-13553.1	1.8	0.16	0.13	<0.01	0.29	1.0	1.80	2.75	2.78			1	STY
14	13553.1-13555.1	2.0	7.00	1.21	<0.01	14.00	1.1	2.20	2.74	2.77			1	STY
15	13555.1-13556.8	1.7	5.93	1.60	<0.01	10.08	1.3	2.21	2.75	2.79			1	STY
16	13556.8-13557.7	0.9	0.88	0.82	<0.01	0.79	1.5	1.35	2.78	2.82			1	STY
17	13557.7-13559.6	1.9	0.05	<0.01	<0.01	0.10	1.0	1.90	2.78	2.81			1	STY
18	13559.6-13561.6	2.0	17.61	0.80	<0.01	35.22	0.9	1.80	2.76	2.78			1	STY
19	13561.6-13563.7	2.1	0.21	0.06	<0.01	0.44	1.2	2.52	2.79	2.82			1	STY
-	13563.7-13568.0	4.3	-	-	-	-	-	-	-	-			1	LOST CORE

CORE NO. 13 13,568.0' - 13,591.0' (REC 23.0') (7 BOXES)

20	13568.0-13568.7	0.7	*	1.22	<0.01	0.85	1.8	1.26	2.72	2.76			1	STY
21	13568.7-13569.8	1.1	<0.01	<0.01	<0.01	-	4.7	5.17	2.64	2.78			1	HF
22	13569.8-13570.8	1.0	12.57	5.68	<0.01	12.57	1.5	1.50	2.73	2.78			1	HF

CORE LABORATORIES - CANADA, LTD.  
EDMONTON ALBERTA

COMPANY AMOCO CANADA PETROLEUM COMPANY LTD.  
WELL PAN AM BEAVER YT G-01

PAGE 2 of 10  
FILE CNP-1-9655

SAMPLE NUMBER	INTERVAL REPRESENTED FEET		PERMEABILITY TO AIR MILLIDARCY'S		PERMEABILITY FEET	POROSITY %	POROSITY FEET	DENSITY		RESIDUAL SAT PORE %		VISUAL EXAMINATION
	DEPTH	THICK	KMAX	KMIN				BULK	GRAIN	OIL	WATER	
23	13570.8-13571.4	0.6	3.74	1.18	2.24	1.6	0.96	2.61	2.65			HF
24	13571.4-13572.5	1.1	3.37	<0.01	3.71	1.2	1.32	2.76	2.79			HF
25	13572.5-13573.2	0.7	*	3.57	2.50	1.6	1.12	2.75	2.79			HF
26	13573.2-13573.9	0.7	<0.01	<0.01	-	1.3	0.91	2.73	2.77			HF
27	13573.9-13575.0	1.1	0.97	0.48	1.07	1.3	1.43	2.74	2.78			
28	13575.0-13577.0	2.0	0.31	0.26	0.62	1.4	2.80	2.77	2.81			
29	13577.0-13579.0	2.0	0.06	0.12	0.12	1.2	2.40	2.77	2.80			
30	13579.0-13579.7	0.7	0.11	0.05	0.08	1.1	0.77	2.75	2.79			
31	13579.7-13580.7	1.0	0.11	0.03	0.11	1.1	1.10	2.76	2.79			
32	13580.7-13581.8	1.1	<0.01	<0.01	-	1.3	1.43	2.75	2.78			
33	13581.8-13582.5	0.7	<0.01	<0.01	-	1.1	0.77	2.77	2.80			
34	13582.5-13583.5	1.0	0.03	<0.01	0.03	0.9	0.90	2.76	2.79			
35	13583.5-13584.6	1.1	<0.01	<0.01	-	0.9	0.99	2.76	2.79			
36	13584.6-13585.8	1.2	<0.01	<0.01	-	1.1	1.32	2.76	2.79			
37	13585.8-13587.3	1.5	<0.01	<0.01	-	1.1	1.65	2.74	2.77			
38	13587.3-13589.2	1.9	<0.01	<0.01	-	1.0	1.90	2.76	2.79			
39	13589.2-13591.0	1.8	0.80	<0.01	1.44	1.3	2.34	2.74	2.78			

CORE NO. 13 (CONT'D)

**CORE LABORATORIES - CANADA, LTD.**  
*Petroleum Reservoir Engineering*

WELL: PAN AM BEAVER YT G-01

PAGE: 3 of 10

FORMATION: DEVONIAN

FILE: CNP-1-9655

SUMMARY INTERVAL: 13530.0 - 13591.0

TOTAL FOOTAGE: 61.0

FOOTAGE ANALYZED: 56.7

FOOTAGE NOT ANALYZED: TOTAL: 4.3 DENSE .0 LOST 4.3 DRILLED .0 \*NABR .0 RUBBLE .0

SUMMARY OF ANALYZED CORE:

TOTAL

BY PERM RANGES:

LESS THAN 0.10 Md.

0.10 0.49 Md.

0.50 0.99 Md.

1.00 9.99 Md.

GREATER THAN 9.99 Md.

FOOTAGE	% OF ANALYZED CORE	WEIGHTED AVERAGE POROS. %	POROSITY FEET	WEIGHTED AVERAGE PERM. MD.	PERM. FEET	WEIGHTED RESID. OIL %	WEIGHTED TOT. WATER %
56.7	100.00	1.37	77.69	1.92	109.10	.00	.00
16.0	28.22	1.33	21.32	.02	.35	.00	.00
19.6	34.56	1.25	24.53	.26	5.02	.00	.00
6.7	11.82	1.58	10.59	.78	5.24	.00	.00
11.4	20.11	1.57	17.95	4.45	50.70	.00	.00
3.0	5.29	1.10	3.30	15.93	47.79	.00	.00

\*NOT ANALYZED BY REQUEST



**CHEMICAL & GEOLOGICAL LABORATORIES LTD.**

**WATER ANALYSIS**

Lab No. F69-1455-3

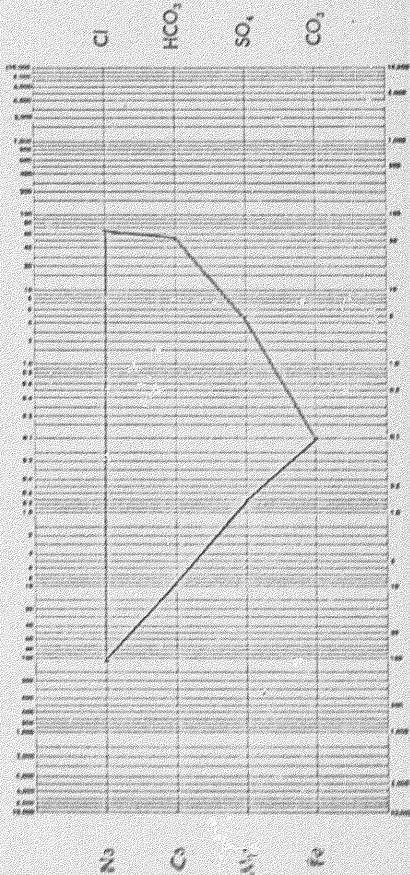
Received: Aug. 6, 1969 Reported: Aug. 11, 1969 Well: Location: Pan Am. Beaver-Y-C-01-11-0-01  
 Operator: ANOCO CANADA PETROLEUM COMPANY LTD. Field or Area: Beaver River  
 Elev.: K.B. 2517 Grd. 2600 Zone/Formation: Nahanni Sample Interval: 14,650' - 14,762'  
 Method of Production: D.S.T. #5 Sampled from: Top of Tool Sampled by: Date: Aug. 6, 1969  
 OTHER PERTINENT DATA Recovered 7200' fluid.

(Signed)

	Na	K	Ca	Mg	SO <sub>4</sub>	Cl	CO <sub>2</sub>	HCO <sub>3</sub>
Mg./L	2,689		188	9	240	2,405		3,310
Eq./L	116.97		9.38	0.74	4.99	67.82		54.28
%	46.02		3.69	0.29	1.96	26.68		21.36

Total Solids Mg./L: By Evaporation 9,113 Fe Trace Specific Gravity 1.007 @60°F Observed pH 7.2 @ 77 °  
 Calculated 8,841 After Ignition 6,616 H<sub>2</sub>S Present Refractive Index 1.3330 @25°C Resistivity 1.01 ohm meters @ 68 °

Pattern Unit Meq./L



Remarks and Conclusions

Analysis determined on pale green coloured water filtered from slightly muddy water. Organic matter detected in total solids.

CORE ANALYSIS REPORT  
FOR  
PAN AMERICAN PETROLEUM CORPORATION  
PAN AM BEAVER YT G-01  
WILDCAT - BEAVER RIVER AREA  
YUKON TERRITORY

**CORE LABORATORIES - Canada Ltd.**  
*Petroleum Reservoir Engineering*  
CALGARY - EDMONTON - REGINA

CORE LABORATORIES - CANADA, LTD.  
CALGARY, ALBERTA

COMPANY PAN AMERICAN PETROLEUM CORPORATION  
WELL PAN AM - BEAVER YT G-01  
FIELD WILDCAT, BEAVER RIVER AREA, YUKON TERRITORY  
LOCATION -  
FORMATION -  
DRILLING FLUID WATER BASE MUD  
ELEVATION -  
ANALYSIS -  
REMARKS -

PAGE 1 of 1  
FILE CNP-4-4620  
DATE REPORT APRIL 9/69  
ANALYSTS RM

MS - MEDIUM SAND  
CS - COARSE SAND  
CG - CONGLOMERATE  
SH - SHALE  
LT - LIMY  
SL - SLALY  
BR - BREAK  
CB - CARBONACEOUS

A - ANHEDRITE  
EG - EGG SHELL  
FL - FLOTTING  
V - VUGULAR

L - LARGE VUGS  
SV - SMALL VUGS  
PV - PORE VUGS  
ST - STYOLITE

H - HORIZONTAL FRACTURE  
VF - VERTICAL FRACTURE  
SS - SMALL SCALE  
SL - SLIP  
W - WITH

SAMPLE NUMBER	INTERVAL REPRESENTED FEET		PERMEABILITY TO AIR MILLIDARCY'S		PERMEABILITY FEET	POROSITY %	POROSITY FEET	DENSITY		VISUAL EXAMINATION
	DEPTH	THICK	KMAX	K500				BULK	GRAIN	
CORE No. 3	7162.0'	- 7163.0'	(Rec. 8") (1 piece)							
SS	7162.0-7162.2	0.2	0.23	-	0.05	3.0	0.60	-	-	I, F
FD	7162.2-7162.8	0.6	75.30	51.40	45.18	2.2	1.32	2.57	2.63	I, F
-	7162.8-7163.0	0.2	-	-	-	-	-	-	-	Lost Core

