

WF Reports
Dist'd 6/10.

CHEMICAL ANALYSIS
for
PAN AMERICAN PETROLEUM CORPORATION
Pan Am Beaver *YF 6-01*
Beaver River
Yukon Territories



E LABORATORIES — CANADA
PETROLEUM RESERVOIR ENGINEERING



GAS ANALYSIS

Company Pan American Petroleum Corporation Page 1 of 5
 Well Pan Am Beaver YT 4-01 File CAL-2-296
CBH-2-4755
 Field Beaver River, Yukon Territories Analyst H.P.
 Location 60°10'N, 124°10'W Elevation: K.B. _____ Grd. _____
 Formation Mississippian Depth 10170'-10220'
 Sampled from DST #2 by _____
 Sampling pressure 30 psig Sampling temp. _____ °F Ambient temp. _____ °F
 Date sampled May 29/69 Date received June 2/69 Date analyzed June 2/69
 Container pressure _____ Mud _____ Water cushion _____
 Recovery or flowrate: _____

<u>COMPONENT</u>	<u>MOLE %</u>	<u>IMP. GPM @ 14.65 psia and 60°F</u>	<u>SPECIFIC GRAVITY</u>
Hydrogen	_____	_____	Calculated <u>0.588</u> Measured _____
Helium	<u>0.04</u>	_____	
Nitrogen	<u>1.11</u>	_____	<u>GROSS B.T.U. per SCF</u> <u>997.4</u>
Carbon Dioxide	<u>3.03</u>	_____	Calculated @ 14.65 psia, 60°F, moisture and acid - gas free.
Hydrogen Sulphide	_____	_____	
Methane	<u>95.78</u>	_____	<u>VAPOR PRESSURE of PENTANES PLUS</u>
Ethane	<u>0.04</u>	_____	(calculated) _____
Propane	_____	_____	
Iso Butane	_____	_____	Critical Pressure <u>682.9</u> psia
Normal Butane	_____	_____	Critical Temperature <u>348.0</u> °R
Iso Pentane	_____	_____	
Normal Pentane	_____	_____	Remarks _____
Hexanes	_____	_____	_____
Heptanes Plus	_____	_____	_____
Total	<u>100.00</u>	_____	_____



CORE LABORATORIES - CANADA LTD.

PETROLEUM RESERVOIR ENGINEERING

WATER ANALYSIS



File CAL-2-296 CBH-2-4755 Page 2 of 5

Company Pan American Petroleum Corporation

Well Pan Am Beaver YF G-01 K.B. _____ Grd. _____

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

Formation Mississippian Interval 10170'-10220'

Sampled from DST #2 (Top of Tool) by _____

Date sampled May 30/69 Date analyzed June 4/69 Analyst M.B.

Recovery _____

Mud type _____ Water cushion _____

Resistivity 0.160 Ohm-meters @ 75 °F

Specific gravity 1.0326 @ 60°F

pH 6.65 H₂S Absent

Refractive Index 1.342 @ 75°F

Total Solids: Calculated 46,730 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 ₃	SO ₄	CO ₃	OH
13,908	3,562	296	Pres.	Abs.	-	-	28,115	849	-	-	-

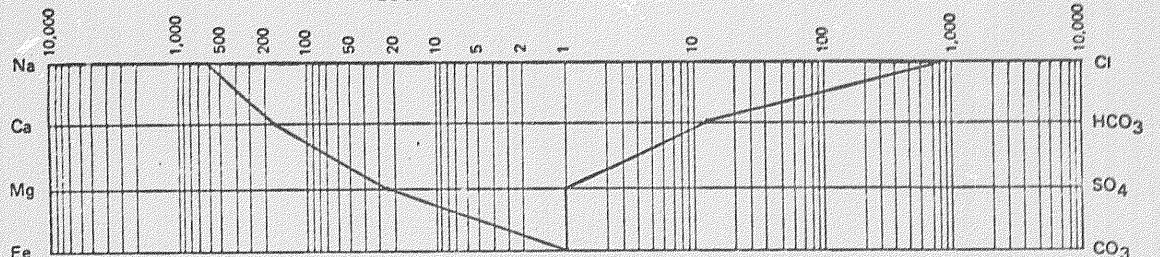
PER CENT CALCULATED SOLIDS

29.8	7.6	0.6	Pres.	Abs.	-	-	60.2	1.8	-	-	-
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MEQ PER LITER

604.7	177.7	24.3	Pres.	Abs.	-	-	792.8	13.9	-	-	-
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LOGARITHMIC PATTERN MEQ PER LITER





CORE LABORATORIES - CANADA
 PETROLEUM RESERVOIR ENGINEERING
 WATER ANALYSIS



CAL-2-296
 File CBH-2-4755 Page 3 of 5

Company: Pan American Petroleum Corporation
 Well: Pan Am Beaver YTF 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: DST #2 (Middle) by _____
 Date sampled: May 30/69 Date analyzed: June 4/69 Analyst: M.B.
 Recovery: _____
 Mud type: _____ Water cushion: _____

Resistivity: 0.160 Ohm-meters @ 75 °F
 Specific gravity: 1.0324 @ 60°F
 pH: 6.35 H₂S: Absent
 Refractive Index: 1.341 @ 75°F

Total Solids:
 Calculated: 46,030 mg/liter
 By evaporation @ 110°C: - mg/liter
 By evaporation @ 180°C: - mg/liter
 At ignition: - mg/liter

MILLIGRAMS PER LITER

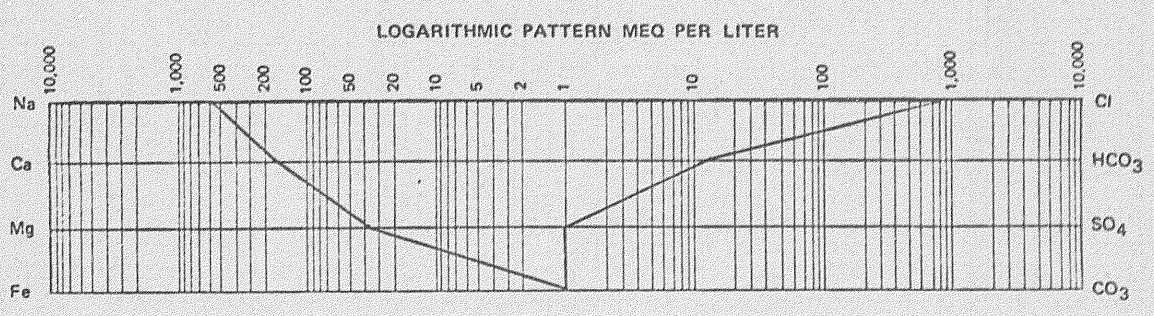
Na + K	Ca	Mg	Fe	Ba	Br	I	Cl	HCO ₃	SO ₄	CO ₃	OH
13,349	3,604	450	Pres.	Abs.	-	-	27,768	859	-	-	-

PER CENT CALCULATED SOLIDS

29.0	7.8	1.0	Pres.	Abs.	-	-	60.3	1.9	-	-	-
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MEQ PER LITER

580.4	179.8	37.0	Pres.	Abs.	-	-	783.1	14.1	-	-	-
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CORE LABORATORIES - CANADA LTD.
 PETROLEUM RESERVOIR ENGINEERING
 WATER ANALYSIS



CAL-2-296
 File CBH-2-4755 Page 4 of 5

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 DST #2 (Top of Fluid) by _____
 Date sampled May 30/69 Date analyzed June 4/69 Analyst M.B.
 Recovery _____
 Mud type _____ Water cushion _____

Resistivity 1.440 Ohm-meters @ 73 °F
 Specific gravity 1.0048 @ 60°F
 pH 8.00 H₂S Absent
 Refractive Index 1.334 @ 73 °F

Total Solids:
 Calculated 5,826 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 ₃	SO ₄	CO ₃	OH
1,559	212	41	Pres.	Abs.	-	-	1,250	275	-	-	-

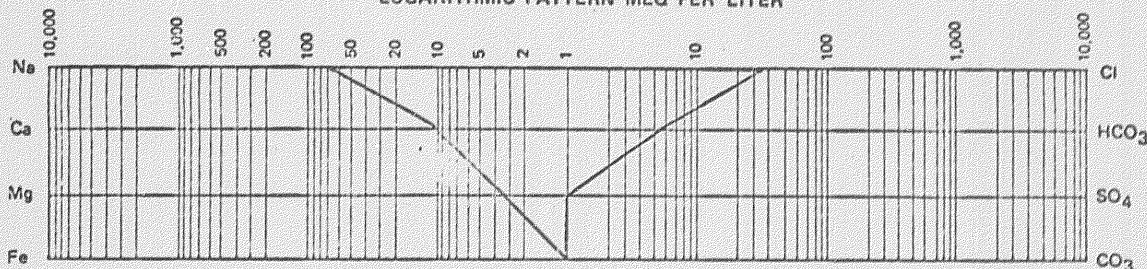
PER CENT CALCULATED SOLIDS

26.8	3.6	0.7	Pres.	Abs.	-	-	21.5	4.7	-	-	-
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MEQ PER LITER

67.8	10.6	3.4	Pres.	Abs.	-	-	35.3	5.7	-	-	-
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LOGARITHMIC PATTERN MEQ PER LITER





PETROLEUM RESERVOIR ENGINEERING
WATER ANALYSIS



CAL-2-296
File CBH-2-4755 Page 5 of 5

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 _____ Interval _____
 Sampled from Mud Tanks by _____
 Date sampled May 30/69 Date analyzed June 4/69 Analyst M.B.
 Recovery _____
 Mud type _____ Water cushion _____

Resistivity 2.200 Ohm-meters @ 73 °F Total Solids:
 Calculated 3,070 mg/liter
 Specific gravity 1.0034 @ 60°F By evaporation @ 110°C _____ mg/liter
 pH 9.35 H₂S Absent By evaporation @ 180°C _____ mg/liter
 Refractive Index 1.334 @ 73 °F At ignition _____ mg/liter

MILLIGRAMS PER LITER

Na + K	Ca	Mg	Fe	Ba	Br	I	Cl	HCO ₃	SO ₄	CO ₃	OH
1,026	30	8	Trace	Abs.	-	-	1,000	717	227	62	-

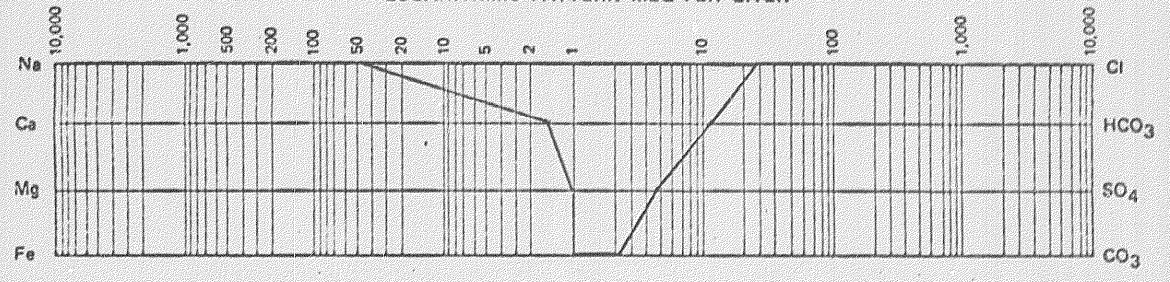
PER CENT CALCULATED SOLIDS

33.4	1.0	0.3	Trace	Abs.	-	-	32.6	23.3	7.4	2.0	-
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MEQ PER LITER

44.6	1.5	0.7	Trace	Abs.	-	-	28.2	11.8	4.7	2.1	-
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LOGARITHMIC PATTERN MEQ PER LITER





PETROLEUM RESERVOIR ENGINEERING
WATER ANALYSIS



File CAL-2-316 Page 1 of 2

Company Pan American Petroleum Corporation
 Well Pan Am Beaver ~~5~~ 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 H₂S 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 ₃	SO ₄	CO ₃	OH
18,648	32,139	5,993	Pres.	Abs.	-	-	103,089	54	-	-	-

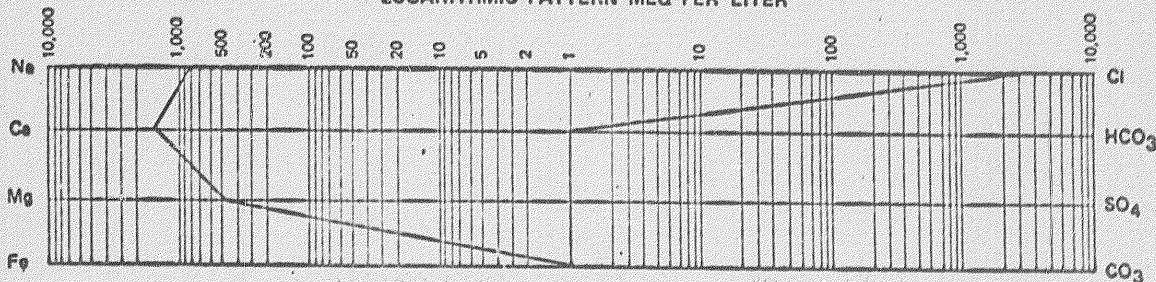
PER CENT CALCULATED SOLIDS

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





LABORATORIES - CANADA
 PETROLEUM RESERVOIR ENGINEERING
 WATER ANALYSIS



File CAL-2-316 Page 2 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 10 Hrs. Flow) by _____
 Date sampled May 31/69 Date analyzed June 6/69 Analyst M.B.
 Recovery Salt Water
 Mud type _____ Water cushion _____

Resistivity 0.140 Ohm-meters @ 70 °F
 Specific gravity 1.0388 @ 60°F
 pH 2.25 H₂S Absent
 Refractive Index 1.346 @ 70°F

Total Solids:
 Calculated 54,104 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 ₃	SO ₄	CO ₃	OH
5,580	12,361	1,453	Trace	Abs.	-	-	34,710	-	-	-	-

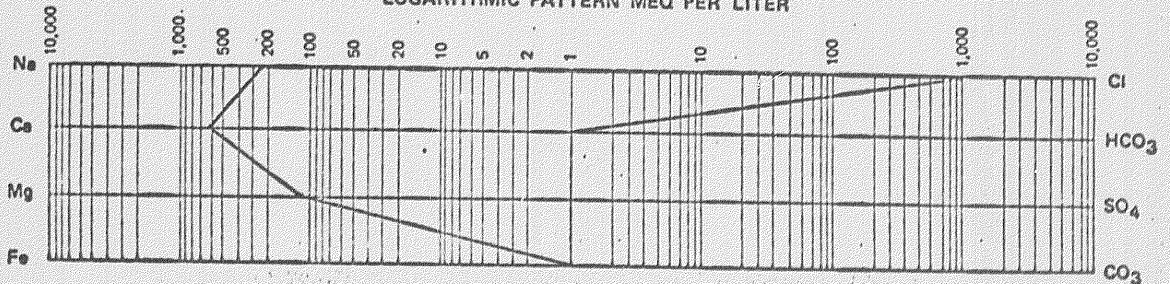
PER CENT CALCULATED SOLIDS

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



CHEMICAL & GEOLOGICAL LABORATORIES LTD.

WATER ANALYSIS

Lab No. F69-1455-1

Received: Aug. 6, 1969 Reported: Aug. 11, 1969 Well: Location: Pan Am. Beaver Y-0-01 Y-0-01
 Operator: AMOCO CANADA PETROLEUM COMPANY LTD. Field or Area: Beaver River
 Elev.: K.B. 2617 Grd. 2600 Zone/Formation: Nahanni Sample Interval: 14,650' - 14,762'
 Method of Production: D.S.T. #5 Sampled from: Top of Fluid Sampled by: Date: Aug. 6, 19

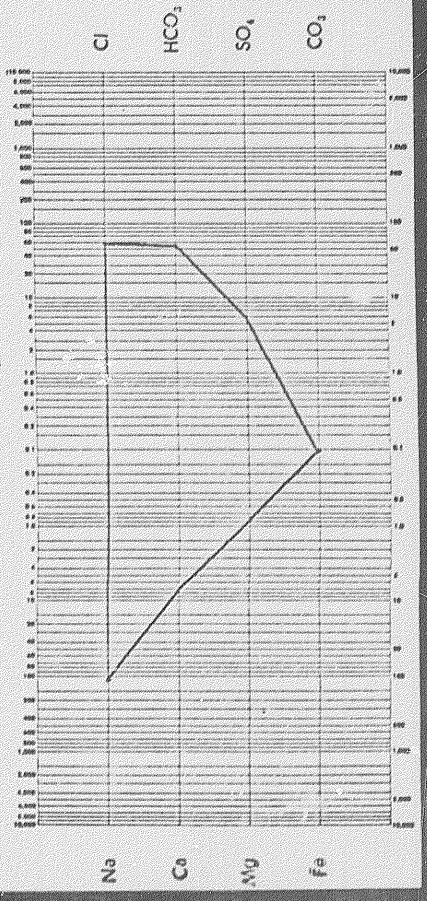
OTHER PERTINENT DATA Recovered 7200' fluid.

(Signed)

Mg/L	Na	K	Ca	Mg	SO ₄	Cl	CO ₂	HCO ₃
2,596			154	10	289	2,104		3,420
112.93			7.68	0.82	6.01	59.33		56.09
46.50			3.16	0.34	2.47	24.43		23.10

Total Solids Mg/L: By Evaporation 9,076 Fe Trace Specific Gravity 1.007 @60°F Observed pH 7.7 @ 78
 Calculated 8,573 After Ignition 6,376 H₂S --- Refractive Index 1.3330 @25°C Resistivity 1.06 ohm meters @ 68 °

Pattern Unit: Meq/L



Remarks and Conclusions

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

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

WATER ANALYSIS

Lab No. F69-1455-2

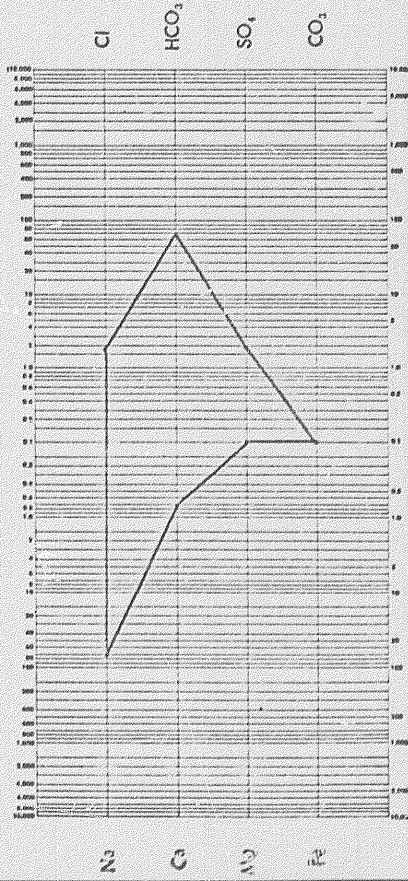
Received: Aug. 6, 1969 Reported: Aug. 11, 1969 Well: Location: Pan Am. Beaver Y-G-01 YF-C-01
 Operator: AMOCO CANADA PETROLEUM COMPANY LTD. Field or Area: Beaver River
 Elev.: K.B. 2617 Grd. 2600 Zone/Formation: Nahanni Sample Interval: 14,650' - 14,762'
 Method of Production: D.S.T. #5 Sampled from: Middle Sampled by: Date: Aug. 6, 1969
 OTHER PERTINENT DATA Recovered 7200' fluid.

(Signed)

Na	K	Ca	Mg	SO ₄	Cl	CO ₂	HCO ₃
Mg./l	1,685	15	1	95	64		4,290
meq./l	73.31	0.75	0.08	1.98	1.80		70.36
%,	49.44	0.51	0.05	1.34	1.21		47.45

Total Solids Mg/L: By Evaporation 6,344 Fe --- Specific Gravity 1.004 @60°F Observed pH 8.2 @ 78
 Calculated 6,150 After Ignition 4,296 H₂S --- Refractive index 1.3330 @25°C Resisivity 1.86 ohm meters @ 68

Pattern Unit Meq./L



Remarks and Conclusions

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

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-VI-3-01
 Operator: ANOCO CANADA PETROLEUM COMPANY LTD. Field or Area: Beaver River
 Elev.: K.B. 2517 Grd. 2500 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, 19

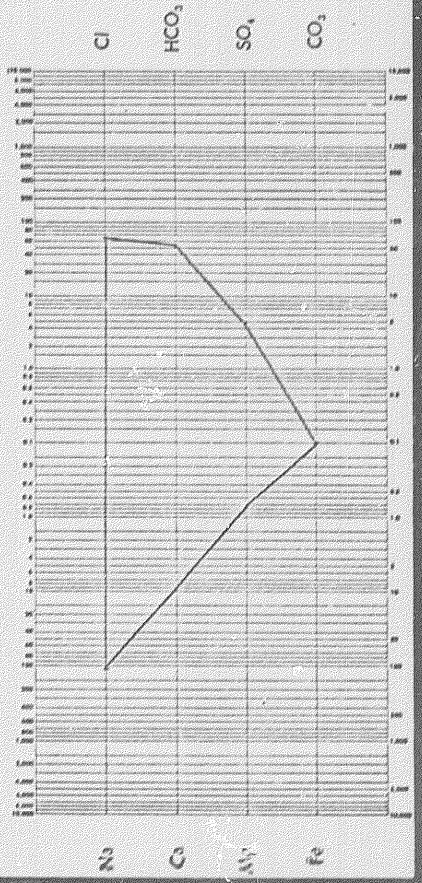
OTHER PERTINENT DATA Recovered 7200' fluid.

(Signed)

Na	K	Ca	Mg	SO ₄	Cl	CO ₂	HCO ₃
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
Eq. % 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 H₂S 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.

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

WATER ANALYSIS

Lab No. F69-1455-3

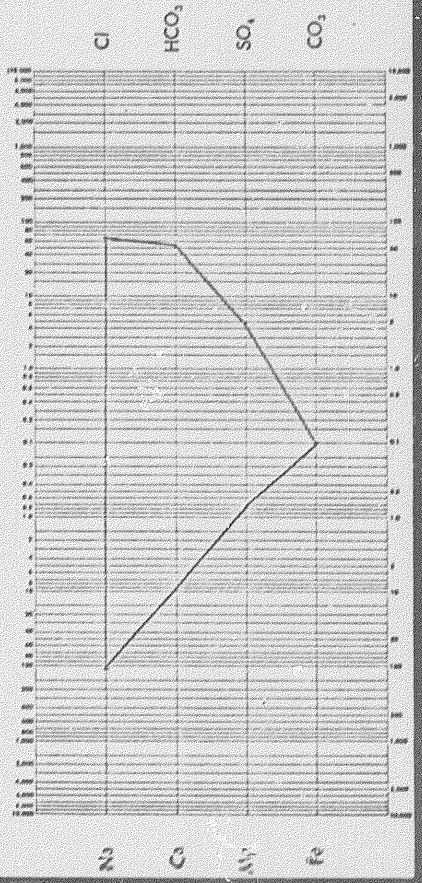
Received: Aug. 6, 1969 Reported: Aug. 11, 1969 Well: Location: Pan Am. Beaver-Y-C-01-VI-3-01
 Operator: ANOCO CANADA PETROLEUM COMPANY LTD. Field or Area: Beaver River
 Elev.: K.B. 2517 Grd. 2500 Zone/Formation: Nahanni Sample Interval: 14,650' - 14,762'
 Method of Production: D.S.T. #5 Sampled from: Top of Tool Sampled by: Date: Aug. 6, 19

OTHER PERTINENT DATA Recovered 7200' fluid.

(Signed)

Na	K	Ca	Mg	SO ₄	Cl	CO ₂	HCO ₃
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
Eq. % 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 H₂S Present Refractive Index 1.3330 @25°C Resistivity 1.01 ohm meters @ 68 °



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, L. I. D.
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

MT - APPARENTLY
SP - SPALLS
L - LENS
LS - LENS
MS - MUDSTAIN
C - COARSE SAND
CS - CONGLOMERATE
SCL - SANDSTONE
S - SHALE

AM - AMPHIBOLE
FOS - FOSSILIFEROUS
ALN - ALUMINUM
LUM - LUMINOUS
V - VESICULAR

LV - LARGE VUGS
SV - SMALL VUGS
PV - PIPED VUGS
LUN - LUMINOUS
STV - STIBOLITE

A - ANHYDRITE
FOS - FOSSILIFEROUS
ALN - ALUMINUM
LUM - LUMINOUS
V - VESICULAR

VF - VERTICAL FRACTURE
SF - SMALL SAMPLE
SL - SLIGHTLY
M - MATE

SAMPLE NUMBER	INTERVAL REPRESENTED FEET DEPTH	THICK	PERMEABILITY TO AIR MILLIDARQ'S		POROSITY %	POROSITY FEET	DENSITY		VISUAL EXAMINATION
			KMAX	K900			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	45.16	2.2	1.32	2.57	I, F
-	7162.8-7163.0	0.2	-	-	-	-	-	-	Lost Core

