

REVISED
WELL HISTORY REPORT

PAN AM BEAVER YTG-01

UNIT G SECTION 1 GRID 60°10'N, 124°15'W

YUKON TERRITORY

I N D E X

| <u>SECTION</u> | | <u>PAGE</u> |
|----------------|----------------------|-------------|
| I | Summary of Well Data | 1 |
| II | Geological Summary | 3 |
| III | Engineering Summary | 3 |
| IV | Logs | 10 |
| V | Analysis | 10 |
| VI | Completion Summary | 10 |

A T T A C H M E N T S

Core Analysis

Gas Analysis

Water Analysis

Core Description

Sample Description

WELL HISTORY
REPORT

Section I - Summary of Well Data

- (a) Well Name and Number
Pan Am Beaver YTG-01
- (b) Permittee
Pan American Petroleum Corporation
- (c) Operator
Amoco Canada Petroleum Company Limited
444 - 7th Avenue S.W., Calgary, Alberta
- (d) Location
Unit G Section 1 Grid 60°10'N, 124°15'W
Latitude 60°00'25" N Longitude 124°15'48"W
Universal Well Location 60.00694°N Lat. 124.2633°W Long.
Unique well identifier 300G016010124150
- (e) Co-ordinates
1020.20' West of East boundary & 984.99' North of South boundary of Unit G
Sec. 1 Grid 60°10'N 124°15'W
- (f) Permit No.
1002
- (g) Drilling Contractor
Name: Loffland Brothers Company of Canada
Rig: #221
Type: Rotary Unit 914A
- (h) Drilling Authority
#325 Issued October 15, 1968
- (i) Classification
Wildcat Exploratory
- (j) Elevation
Ground: 2600.3' G.L.
KB: 2616.8'
- (k) Spudded
December 6, 1968
- (l) Completed Drilling
August 3, 1969

(m) Depths
TD 14,762 PBD 14,472

(n) Well Status
Gas Producer - Suspended

(o) Rig Released
August 20, 1969

(p) Hole Size

| | | |
|----|---------|------------------|
| 1. | 17 1/2" | 0 - 1201' |
| 2. | 12 1/4" | 1201 - 10,904' |
| 3. | 8 1/2" | 10,904 - 14,650' |
| 4. | 6" | 14,650 - 14,762' |

(q) Casing

Casing Size: 13 3/8"
Grade: J-55
Weight: 54.5#
Amount: 38 jts.
Set at: 1201' KB

Casing Size: 9 5/8"
Grade: N-80 & S00-95
Weight: 40 - 43.5 - 47#
Amount: 285 jts.
Set at: 10903.8'

Casing Size: 7"
Grade: S00-95 & N-80
Weight: 23# - 26#
Amount: 345 jts.
Set at: 14,650'

Hot Oil String

Casing Size: 5 1/2"
Grade: J-55
Weight: 17#
Amount: 62 jts.
Set at: 2622.79'

Section II - Geological Summary

Formation Tops

| <u>TOPS</u> | <u>DEPTHS</u> | <u>SUB SEA</u> |
|------------------------|---------------|----------------|
| KB | 0 | 2616.5 |
| Fantasque Chert | 1428 | 1188.5 |
| Mattson Sand | 2090 | 526.5 |
| (Shale Limestone unit) | 4078 | -1461.5 |
| Mississippian Shale | 4935 | -2318.5 |
| Limestone | 9977 | -7361.5 |
| Banff | 10756 | -8139.5 |
| 1st Black | 11620 | -9003.5 |
| 2nd Black | 12955 | -10338.5 |
| Mid Devonian Carbonate | 13492 | -10875.5 |

Section III - Engineering Summary

(a) Drill Stem Tests

D.S.T. #1

Drill Stem Testing & Coring Ltd. March 14, 1969 7173' - 7220'
PF - 5 mins; Water Cushion - 1000'; VO - 60 mins; ISI - 60 mins;
FSI - 105 mins; IHP - 3873; ISIP - 3904; IFP - 2859; FFP - 3574;
FSIP - 3900; FHP - 3865; Strong blow on preflow WC to surface in 1 min;
Gas to surface in 3 mins. Est. 35 MMCF/D flow; No fluid recovery.

D.S.T. #2

Drill Stem Testing & Coring Ltd. April 8, 1969 8760 - 8868'
WC - 1000, PF - 5 mins; ISI - 60 mins; FSI - 60 mins; VO - 75 mins;
IHP - 4919; FHP - 4866; plugged recorder, packers leaked during shut-in,
false reading fluid recovery 350' mud.

D.S.T. #3

Drill Stem Testing & Coring Ltd. May 29, 1969 Mississippian 10,170 - 10,220'
WC 2000'; PF - 5 mins; VO - 540 mins; ISI - 60 mins; FSI - 480 mins;
IHP - 5652; ISIP - 5427; IFP - 965; FFP - 1845; FSIP - 4051; FHP - 5435;
Good blow. Gas to surface in 10 mins. TSTM, fluid recovery 1870' mud
2000' Water cushion.

D.S.T #4

Halliburton Services Ltd. August 5, 1969
Nahanni 14,575 - 14,762' Misrun.
Stinger did not enter packer thus no seat

D.S.T. #5

Halliburton Services Ltd. August 6, 1969 Nahanni 14,575 - 14,762'
PF - 15 mins; WC - 3000'; VO - 510 mins; ISI - 60 mins; FSI - 180 mins;
IHP - 6102; ISIP - 5400; IFP - 1745' FFP - 3949; FSIP - 5860; FHP - 6102;
Weak blow. Gas to surface in 6 hours, total fluid recovery - 7290'
fluid 3000' water cushion, 4290' formation water.

(b) Casing Record

Surface Casing

Hole size: 17 1/2"
Conductor Size: 13 3/8"
Weight: 54.5#
Grade: J-55
Joints run: 38
KB setting depth 1201'
Cement & Additives 1150 sx + 2% CaCl₂
Date run: Dec. 23/68
Date Cemented Dec. 24/68

Intermediate Casing

Hole size: 12 1/4"
Casing Size: 9 5/8"
Weight: 40#, 43.5# 47#
Grade: N-80, S00-95
S-95
Joints run: 285
KB setting depth 10903.80'
Cement & Additives 500 sx O.W. +
.4% HR-4 plus
2000 sxs OW + 12%
Gel + .8% HR-7
Date Run: May 23, 1969
Date Cemented May 23 & 24, 1969

Production Casing

Hole Size: 8 1/2"
Casing Size: 7"
Weight: 23 & 26#
Grade: S00-95 N-80
Joints Run: 345
KB Setting depth: 14650'
Cement & Additives 850 sx OW + 20% silica + 4% gel + 1.5% HR-12, 200 sx OW
+ 20% silica + 1.25% HR-12.
Date Run: July 31, 1969
Date Cemented: July 31, 1969

Hot Oil String

Hole Size: inside 7" casing
Casing Size: 5 1/2"
Weight: 17#
Grade: J-55
Joints Run: 62
KB setting depth 2622.79'
Cement & Additives: suspended
Date run: Aug. 9/69
Date cemented: NA

(c) Bit Record

| BIT | SIZE | TYPE | MAKE | IN | OUT | FOOTAGE | HOURS |
|-----------|---------|---------|----------|------|------|---------|--------|
| 1 | 12 1/4" | M4NG-J | Security | Rat | Hole | | |
| 2 | 17 1/2" | YH | Reed | 0 | 133 | 133 | 23 1/4 |
| 3 | 17 1/2" | YSI-J | Reed | 133 | 353 | 220 | 40 3/4 |
| 4 | 17 1/2" | YSI-J | Reed | 353 | 495 | 142 | 39 1/4 |
| 5 | 12 1/4" | YSI-J | Reed | 495 | 583 | 88 | 30 1/2 |
| 6 | 17 1/2" | YH-J | Reed | 583 | 698 | 115 | 32 1/2 |
| 7 | 17 1/2" | YH-J | Reed | 698 | 967 | 269 | 52 |
| 8 | 17 1/2" | YJ-J | Reed | 967 | 1201 | 234 | 41 3/4 |
| 9 | 12 1/4" | STI4G-J | Reed | 1201 | 1489 | 288 | 12 1/4 |
| 10 | 12 1/4" | H7G-J | Security | 1489 | 1534 | 45 | 7 1/2 |
| 11 | 12 1/4" | L4H-J | Smith | 1534 | 1540 | 6 | 1 |
| 12 | 12 1/4" | 5JS-J | Smith | 1540 | 1540 | 0 | 0 |
| 13 | 12 1/4" | 5JS-J | Smith | 1540 | 2074 | 534 | 50 1/4 |
| 14 | 12 1/4" | SC5G-J | Reed | 2074 | 2111 | 37 | 8 1/4 |
| 15 | 12 1/4" | H7G-J | Security | 2111 | 2144 | 33 | 9 |
| 16 | 12 1/4" | H7G-J | Security | 2144 | 2228 | 84 | 11 |
| 17 (13RR) | 12 1/4" | SC5G-J | Reed | 2228 | 2462 | 234 | 44 |
| 18 | 12 1/4" | H10-J | Security | 2462 | 2821 | 359 | 43 |
| 19 | 12 1/4" | YC2G-J | Reed | 2821 | 2957 | 136 | 34 1/4 |
| 20 | 12 1/4" | YC2G-J | Reed | 2957 | 3125 | 168 | 34 1/4 |
| 21 | 12 1/4" | YC2G-J | Reed | 3125 | 3333 | 208 | 37 3/4 |
| 22 | 12 1/4" | YC2G-J | Reed | 3333 | 3613 | 280 | 46 1/2 |
| 23 | 12 1/4" | YC2G-J | Reed | 3613 | 3891 | 278 | 53 |
| 24 | 12 1/4" | YC2G-J | Reed | 3891 | 4274 | 383 | 72 1/4 |
| 25 | 12 1/4" | X55R | Hughes | 4274 | 5005 | 731 | 79 1/2 |
| 26 | 12 1/4" | SCM-J | Reed | 5005 | 5079 | 74 | 22 3/4 |
| 27 | 12 1/4" | M4NG-J | Security | 5079 | 5197 | 118 | 8 |
| 28 | 12 1/4" | M4NG-J | Security | 5197 | 5497 | 300 | 33 1/4 |
| 29 | 12 1/4" | Y2H-J | Smith | 5497 | 5555 | 58 | 12 1/2 |

| BIT | SIZE | TYPE | MAKE | IN | OUT | FOOTAGE | HOURS |
|------------|----------|--------|-------------|-------|-------|-----------|-------------|
| 30 | 12 1/4" | M4NG-J | Security | 5555 | 5824 | 169 | 20 1/2 |
| 31 | 12 1/4" | M4NG-J | Security | 5824 | 5862 | 38 | 5 1/4 |
| 32 | 12 1/4" | M4NG-J | Security | 5862 | 5862 | 0 | 56 1/2 |
| 33 | 12 1/4" | M4NG-J | Security | 5862 | 5893 | 31 | 56 3/4 |
| 34 | 12 1/4" | OWV | Hughes | 5893 | 6054 | 161 | 38 1/4 |
| 35 | 12 1/4" | SSIG-J | Reed | 6054 | 6190 | 136 | 33 1/2 |
| 36 | 12 1/4" | M4LC-J | Security | 6190 | 6347 | 157 | 33 3/4 |
| 37 | 12 1/4" | M4LC-J | Security | 6347 | 6650 | 303 | 46 |
| 38 | 12 1/4" | SSIG-J | Reed | 6650 | 7073 | 423 | 74 |
| 39 | 12 1/4" | SSIG-J | Reed | 7073 | 7160 | 87 | 13 |
| 40 (CB-1) | 8 1/2" | Dia. | Christensen | 7160 | 7160 | 1 | 3/4 |
| 41 (CB-2) | 8 1/2" | Dia. | Christensen | 7160 | 7163 | 3 | 7 |
| 42 | 8 1/2" | H-10-J | Security | 7163 | 7202 | 39 | 18 3/4 |
| 43 | 8 1/2" | YHG-J | Reed | 7202 | 7220 | 18 | 6 1/2 |
| 44 | 12 1/4" | H7UG-J | Security | 7160 | 7199 | 39R | 10 3/4 |
| 45 | 12 1/4" | H7UG-J | Security | 7199 | 7222 | 29R (2D) | 14 3/4 |
| 46 | 12 1/4" | H7UG-J | Security | 7222 | 7235 | 13 | 5 3/4 |
| 47 | 12 1/4" | X55R-J | H.W. | 7235 | 7385 | 150 | 57 1/2 |
| 48 | 12 1/4" | X55R-J | H.W. | 7385 | 7498 | 213 | 50 1/4 |
| 49 | 12 1/4" | SC5G-J | Reed | 7598 | 7781 | 183 | 59 1/2 |
| 50 | 12 1/4" | SSIG-J | Reed | 7781 | 8342 | 561 | 70 1/2 |
| 51 | 12 1/4" | SSIG-J | Reed | 8342 | 8740 | 398 | 60 1/2 |
| 52 | 8 1/2" | YM-J | Reed | 8740 | 8770 | 30 | 3 1/4 |
| 53 (CB-3) | 8 7/16" | Dia. | Christensen | 8764 | 8808 | 6R (38) | 30 |
| 54 (50RR) | 8 1/2" | YMJ | Reed | 8808 | 8868 | 60 | 6 |
| 55 | 12 1/4" | SSIG-J | Reed | 8740 | 8875 | 128R (7D) | 11 3/4 |
| 56 | 12 1/4" | SSIF-J | Reed | 8875 | 9185 | 310 | 30 1/2 |
| 57 | 12 1/4" | L4H-J | Smith | 9185 | 9314 | 129 | 30 1/4 |
| 58 (55RR) | 12 1/4" | SSIF-J | Reed | 9314 | 9763 | 449 | 64 1/4 |
| 59 | 12 1/4" | M4NG-J | Security | 9763 | 9954 | 191 | 39 3/4 |
| 60 | 12 1/4" | M4NG-J | Security | 9954 | 9991 | 37 | 9 |
| 61 | 12 1/4" | H7UF-J | Security | 9991 | 10003 | 12 | 6 1/2 |
| 62 | 12 1/4" | X55R-J | H.W. | 10003 | 10045 | 42 | 10 |
| 63 (CB-3) | 8 7/16" | Dia. | Christensen | 10045 | 10080 | 35 | 29 |
| 64 | 12 1/4" | X55R-J | H.W. | 10045 | 10093 | 35R (13D) | 10 1/4 |
| 65 (CB 4) | 8 7/16" | Dia. | Christensen | 10093 | 10143 | 50 | 36 1/4 |
| 66 | 12 1/4" | SC5G-J | Reed | 10118 | 10143 | 25R | 7 1/4 |
| 67 | 12 1/4" | 7J-S | Smith | 10143 | 10150 | 7 | 12 1/2 |
| 68 (CB-5) | 8 11/16" | Dia. | Christensen | 10150 | 10187 | 37 | 16 1/4 |
| 69 (CB5RR) | 8 11/16" | Dia. | Christensen | 10187 | 10197 | 10 | 3 3/4 |
| 70 (CB5RR) | 8 11/16" | Dia. | Christensen | 10197 | 10220 | 23 | 6 |
| 71 (CB5RR) | 8 11/16" | Dia. | Christensen | 10220 | 10223 | 3 | 2 |
| 72 (CB4RR) | 8 11/16" | Dia. | Christensen | 10223 | 10257 | 34 | 15 3/4 |
| 73 | 12 1/4" | X55R-J | H.W. | 10150 | 10293 | 107R 36D | 33 3/4 & 14 |
| 74 | 12 1/4" | SCM-J | Reed | 10293 | 10309 | 16 | 12 |
| 75 | 12 1/4" | YHG | Reed | 10309 | 10411 | 102 | 27 1/2 |
| 76 | 12 1/4" | M4LG-J | Security | 10411 | 10509 | 98 | 23 3/4 |
| 77 | 12 1/4" | M4LG-J | Security | 10509 | 10580 | 71 | 23 1/4 |
| 78 | 12 1/4" | M4LG-J | Security | 10580 | 10696 | 116 | 34 1/2 |
| 79 | 12 1/4" | VZH-J | Smith | 10696 | 10755 | 59 | 10 3/4 |

| BIT | SIZE | TYPE | MAKE | IN | OUT | FOOTAGE | HOURS |
|-----------|---------|---------|-----------------|--------|-------|---------|-----------------|
| 80 | 12 1/4" | H7G-J | Security | 10755 | 10770 | 15 | 7 1/4 |
| 81 | 12 1/4" | H7G-J | Security | 10770 | 10904 | 134 | 35 1/2 |
| 82 (77RR) | 12 1/4" | M4LG-J | Security | 10904 | 10904 | 0 | Circ. |
| 83 | 8 1/2" | S4-J | Security | 10904 | | | " |
| 84 | 8 1/2" | YM-J | Reed | 10127 | 10127 | 0* | 6 1/2 |
| 85 | 8 1/2" | H7G-J | Security | 10127 | 10127 | 0* | 14 1/2 |
| 86 | | Nil | | 10127 | 10184 | 57* | 13 1/2 |
| 87 | 8 1/2" | YM-J | Reed | 10184 | 10192 | 8* | 11 1/4 |
| 88 (86RR) | | Mill | | 10192 | 10242 | 50* | 12 1/2 |
| 89 | 8 1/2" | YSIF-J | Reed | 10242 | 10272 | 30* | 1/2 |
| 90 (89RR) | 8 1/2" | QSIG-J | Reed | 10272 | 10904 | 632* | |
| 91 | 8 1/2" | YSIG-J | Reed | 10904 | 11121 | 217 | 32 1/2 |
| 92 | 8 1/2" | K2H-J | Smith | 11121 | 11384 | 263 | 27 1/4 |
| 93 | 8 1/2" | SIG-J | Reed | 11384 | 11671 | 287 | 27 3/4 |
| 94 | 8 1/2" | YSIF-J | Reed | 11671 | 11873 | 202 | 21 1/2 |
| 95 | 8 1/2" | YHG-J | Reed | 11873 | 11899 | 26 | 12 |
| 96 | 8 1/2" | W4H-J | Smith | 11899 | 11928 | 29 | 7 1/2 |
| 97 | 8 1/2" | X55R-J | H.W. | 11928 | 11958 | 30 | 5 1/4 |
| 98 | 8 1/2" | X55R-J | H.W. | 11958 | 12152 | 194 | 34 |
| 99 | 8 1/2" | X55R-J | H.W. | 12152 | 12286 | 134 | 24 1/2 |
| 100 | 8 1/2" | M8J-SB | Security | 12286 | 12503 | 217 | 20 3/4 |
| 101 | 8 1/2" | SS5-J | Smith | 12503 | 12659 | 156 | 19 3/4 |
| 102 | 8 1/2" | SS6-J | Smith | 12659 | 12760 | 101 | 20 3/4 |
| 103 | 8 1/2" | M88-J | Security | 12760 | 13019 | 259 | 32 1/2 |
| 104 | 8 2/3" | M88-J | Security | 13019 | 13291 | 272 | 34 1/2 |
| 105 | 8 1/2" | SCM-J | Reed | 13298 | 13437 | 139 | 18 3/4 |
| | | | Corrected depth | 13298' | | 7 | |
| 106 | 8 1/2" | SS5-J | Smith | 13437 | 13514 | 77 | 10 3/4 |
| 107 | 8 1/2" | H-8-J | Security | 13514 | 13530 | 16 | 2 1/4 |
| 108 | 8 7/16" | Dia. | Christensen | 13530 | 13591 | 61 | 23 |
| 109 | 8 1/2" | H8-J | Security | 13591 | 13663 | 72 | 10 1/2 |
| 110 | 8 7/16" | Dia. | Christensen | 13663 | 13723 | 60 | 19 |
| 111 | 8 1/2" | Dia. | Christensen | 13723 | 13765 | 42 | 12 1/4 |
| 112 | 8 1/2" | Dia D27 | Christensen | 13765 | 13927 | 162 | 51 |
| 113 | 8 1/2" | Dia. | Christensen | 13927 | 13964 | 37 | 14 3/4 |
| 114 | 8 1/2" | Dia. | Christensen | 13964 | 13973 | 9 | 5 1/2 |
| 115 | 8 1/2" | H8-J | Secueity | 13973 | 14049 | 76 | 9 3/4 |
| 116 | 8 1/2" | H8-J | Security | 14049 | 14175 | 126 | 16 1/4 |
| 117 | 8 1/2" | Dia. | Christensen | 14175 | 14208 | 33 | 6 3/4 |
| 118 | 8 1/2" | H8-J | Security | 14208 | 14336 | 128 | 10 1/2 |
| 119 | 8 1/2" | SS-7 | Smith | 14336 | 14410 | 74 | 7 |
| 120 | 8 1/2" | Dia. | Christensen | 14410 | 14434 | 24 | 2 3/4 |
| 121 | 8 1/2" | YC4G-J | Reed | 14434 | 14650 | 216 | 17 1/4 |
| 122 | 8 1/2" | H8-J | Security | | | | for circulating |

Total number of bits used - 111

* Drill out cement and run in

(d) Mud Report

Type - (a) Milbar (b) Milgel
Quantity (a) 9773, 100# units
(b) 2937, 100# units

(e) Deviation Record

| <u>DEPTH</u> | <u>DEVIATION (Degrees)</u> | <u>DEPTH</u> | <u>DEVIATION (Degrees)</u> |
|--------------|----------------------------|--------------|----------------------------|
| 30 | 1/8 | 3125 | 1 3/4 |
| 95 | 1/2 | 3239 | 1 3/4 |
| 130 | 1/8 | 3333 | 1 |
| 160 | 1/8 | 3613 | 1 1/4 |
| 185 | 1/8 | 3893 | 2 3/4 |
| 285 | 1/2 | 3945 | 2 1/2 |
| 343 | 1/2 | 4017 | 2 1/4 |
| 374 | 3/4 | 4264 | 4 |
| 416 | 1/2 | 4290 | 4 |
| 437 | 1 | 4766 | 3 3/4 |
| 482 | 1 3/4 | 5000 | 3 1/2 |
| 522 | 1 | 5450 | 1 |
| 543 | 1 | 5816 | 5 1/2 |
| 583 | 1 1/4 | 5824 | 5 1/4 |
| 606 | 3/4 | 5847 | 6 3/4 |
| 646 | 3/4 | 5893 | 6 |
| 730 | 1 | 5932 | 6 1/4 |
| 764 | 3/4 | 6000 | 7 |
| 895 | 3/4 | 6116 | 7 |
| 993 | 3/4 | 6180 | 6 1/4 |
| 1050 | 1 | 6217 | 6 1/2 |
| 1087 | 1 | 6275 | 6 1/2 |
| 1112 | 3/4 | 6340 | 6 |
| 1280 | 3/4 | 6400 | 5 7/8 |
| 1355 | 3/4 | 6458 | 6 1/4 |
| 1477 | 1/2 | 6529 | 7 |
| 1515 | 1 1/8 | 6713 | 8 1/2 |
| 1546 | 3/4 | 6745 | 9 |
| 1675 | 1/4 | 6804 | 9 3/4 |
| 1733 | 1 | 6870 | 9 1/2 |
| 1799 | 1 | 6930 | 9 1/2 |
| 1830 | 7/8 | 6992 | 9 1/4 |
| 1922 | 1 | 7056 | 8 |
| 2050 | 7/8 | 7108 | 7 |
| 2074 | 1 1/8 | 7160 | 7 1/4 |
| 2100 | 1 1/2 | 7192 | 8 |
| 2105 | 1 1/2 | 7220 | 8 |
| 2202 | 1 1/4 | 7232 | 7 3/4 |
| 2330 | 1 | 7279 | 9 1/4 |
| 2450 | 1 1/4 | 7305 | 7 1/4 |
| 2608 | 1 1/2 | 7336 | 7 1/2 |
| 2738 | 1 3/4 | 7367 | 7 |
| 2810 | 1 1/2 | 7420 | 7 1/2 |
| 2957 | 1 1/2 | 7546 | 8 |

| <u>DEPTH</u> | <u>DEVIATION (Degrees)</u> | <u>DEPTH</u> | <u>DEVIATION (Degrees)</u> |
|--------------|----------------------------|--------------|----------------------------|
| 7594 | 8 | 10293 | 12 |
| 7645 | 8 | 10411 | 10 1/2 |
| 7700 | 7 | 10693 | 8 1/2 |
| 7775 | 6 1/8 | 10953 | 6 |
| 7835 | 6 | 11115 | 5 1/2 |
| 7924 | 6 | 11380 | 6 |
| 8050 | 6 1/2 | 11814 | 11 1/2 |
| 8270 | 7 1/2 | 12150 | 13 |
| 8460 | 7 3/4 | 12284 | 10 |
| 8583 | 7 1/2 | 12654 | 15 1/2 |
| 8709 | 7 3/4 | 12750 | 16 |
| 8765 | 7 1/2 | 13019 | 16 |
| 8868 | 7 1/4 | 13435 | 18 |
| 8990 | 7 3/4 | 13512 | 18 |
| 9124 | 8 3/4 | 13663 | 16 1/2 |
| 9185 | 9 1/4 | 13920 | 16 3/4 |
| 9218 | 9 1/4 | 14173 | 14 3/4 |
| 9406 | 8 1/2 | 14333 | 11 |
| 9525 | 10 | 14405 | 9 |
| 9590 | 9 | | |
| 9748 | 10 1/4 | | |
| 9761 | 11 | | |
| 9867 | 11 | | |
| 9950 | 11 | | |
| 9990 | 11 1/2 | | |
| 10040 | 11 | | |
| 10088 | 11 1/2 | | |
| 10150 | 12 | | |

(f) Abandonment Plugs

Not applicable

(g) Lost Circulation Zones

2780' - 2813' partial loss - Corrected with the use of Kwik Seal and Milgel
3070' - 3092' lost 80 bbls. mud
6520' - lost 25 bbls. mud, corrected with the use of sawdust.

(h) Report of Blowouts

5005' gas kick - controlled, no additional problem
10735' gas kick - no indication of gas on following trip.

Section IV - Logs

| <u>DATE</u> | <u>RUN NO.</u> | <u>TYPE</u> | <u>INTERVAL</u> |
|-------------|----------------|--|-----------------|
| May 16/69 | 1 | Dual Induction - Laterolog | 10883 - 1201 |
| May 17/69 | 1 | Sonic Amplitude | 10860 - 6800 |
| May 17/69 | 1 | 4 Arm High Resolution Continuous Dipmeter | 10904 - 10854 |
| May 17/69 | 1 | Directional (Computed) | 10853 - 1201 |
| May 17/69 | 1 | Borehole Compensated Sonic | 10860 - 1202 |
| May 24/69 | 2 | Temperature | 10164 - 800 |
| May 27/69 | | Completion Record | 10845 - 4800 |
| July 1/69 | 2 | Directional (Computed) | 13181 - 10896 |
| July 1/69 | 2 | Borehole Compensated Sonic | 13191 - 10600 |
| July 25/69 | 2 | Synergetic Log System | |
| July 25/69 | 2 | Dual Induction - Laterolog | 14599 - 10896 |
| July 25/69 | 3 | * Borehole Compensated Sonic | 14604 - 13191 |
| July 26/69 | 1 | Sidewall Neutron Porosity | 14562 - 10896 |
| July 26/69 | 1 | Formation Density (Compensated) | 14602 - 10895 |
| July 27/69 | 1 | 4 Arm High Resolution Continuous Dipmeter | 14624 - 10896 |
| July 27/69 | 3 | Directional (Computed) | 14624 - 10896 |
| Aug. 4/69 | | Completion Record | 13550 - 13320 |
| | | * Amplitude w/BHC-SGR log | 14590 - 10894 |

Section V - Analysis

- (a) Core Analysis - See Attached Analysis
- (b) Water Analysis - See Attached Analysis
- (c) Gas Analysis - See Attached Analysis
- (d) Oil Analysis - Nil

Section VI - Completion Summary

(a) Tubing Record

Size: 3 1/2" Joints run: 431
 Weight: 9.3# KB setting depth 14,059'
 Grade: C-75 Date Run: Aug. 11/69
 Packer: 7" Baker Model "D" set @14,046'.

(b) Perforation Record

1. May 28, 1969, (10,170' - 10,220') 1 SP2F w/ 3 3/8" Hyperjet.
(perforations cemented off - see below)
2. August 14, 1969 (14,150' - 14,210') 1 SP3F w/ 2" scallop
Hyperjet.

(c) Cementation Record

May 31, 1969 (10,170' - 10,220') squeeze off perforations with 200 sx O.W. cement + 0.7% HR-7 + 1.5% CFR-2.

June 7, 1969 (10,170' - 10,220') squeeze off perforations with 75 sx N.O.W. cement + 9 bbls. H₂O + 0.1% HR-12 + 1.5% CFR-2. First cementing unsuccessful.

August 7, 1969 (14,475' - 14,672') close open hole with 100 sx O.W. cement + 1.75% HR-12 + 10 bbls H₂O.

(d) Acidization and Fracturing Record

May 30, 1969 (10,170' - 10,220') Acidized with 4,000 gals. acid and 10 gals./1000 gals. inhibitor, type HAI-50.

August 18, 1969 (14,150' - 14,210') Acidized with (1) 1000 gals. 15% HCl followed by 400 bbls. water, followed by 5,000 gals. 28% HCl, tail in with 5,000 gals. water.

REVISED

WELL HISTORY REPORT

PAN AM BEAVER YTG-01

UNIT G SECTION 1 GRID 60°10'N, 124°15'W

YUKON TERRITORY

by:
N. Greer
Professional Assistant
Approved by:



A.F. Holan
Area Foreman

K.B. 2616 Ground 2600

SAMPLE DESCRIPTIONS :

- 0 - 4600 Not Logged
- 4600 - 4640 Shale, medium/dark grey, blocky and splintery, silty to limey in part, pyritic.
- 4650 - 4670 Sandstone, very fine grained, grading into siltstone, limey in part, tight, no shows.
- 4680 - 4750 Sandstone, very fine grained, tight, limey in part, interbedded grey shale, blocky and platy, pyritic.
- 4760 - 4820 Sandstone, very fine grained, tight, grading into siltstone, shaley to limey in part, scattered calcite.
- 4830 - 4880 Shale, light to dark grey/black, blocky and platy, some bituminous and soft, pyritic.
- 4890 - 4930 Sandstone, grey/off white, very fine grained, silty, shaley, limey, tight, no shows.
- 4940 - 5030 Shale, medium grey, blocky and platy, micaceous, pyritic, silty in part, traces of crinoid stems.
- 5040 Sandstone, grey, shaley, very fine grained, grading into siltstone, no shows.
- 5050 - 5530 Shale, grey, blocky and platy, some siltstone, micaceous, pyritic, scattered calcite and crinoids; occasionally limey; occasional traces of anhydrites and ironstone.
- 5540 - 5580 Sandstone, grey/brown, very fine grained, grading into siltstone, shaley, quartzose, tight, trace of ironstone.
- 5590 - 5690 Shale, grey, blocky and platy, micaceous, pyritic, streak of sandstone as above; silty.
- 5700 - 5850 Shale, grey/brown, occasionally black and bituminous, traces of grey brown siltstone, pyritic, trace of ironstone.
- 5860 - 6100 Shale, medium grey/brown, soft, platy, calcareous in part, thin stringers of dark brown, lithographic dolomite, with stringers of quartz sandstone and limestone, occasional trace of crinoids and pyrite.
- 6100 - 6330 Shale, light/medium grey, silty and slightly dolomitic, abundant dense crypto-crystalline dolomite, stringers of quartz sandstone and siltstone, abundant calcite and pyrite.

SAMPLE DESCRIPTIONS con't

- 6340 - 6630 Shale, light grey, very silty and dolomitic, medium brown/grey siltstone. Stringers of dark brown crypto-crystalline dolomite and limestone; occasional traces of anhydrite and quartz sandstone, abundant calcite and pyrite.
- 6640 - 7150 Shale, light/medium grey, flaky, soft, micaceous, abundant stringers of quartz sandstone and dolomite as above. Abundant calcite and siltstone, occasional crinoid fragments.
- CORE #1 7160 - 7162 no recovery
- CORE #2 7162 - 7163 see Core Analysis. *Sandstone*
- 7164 - 7212 Quartz sandstone, very fine/fine grained (fractured), well consolidated, sub-round/sub-angular, abundant light grey dolomitic shale, pyrite and calcite cavings.
- 7213 - 7550 Shale, light/medium grey, slightly dolomitic and slightly micaceous, soft; abundant siltstone, interbedded quartz sandstone, very fine grained porosity, live and dead oil shows, abundant calcite lined fractures with occasional traces of anhydrite and crinoids. Occasional traces of dark brown crypto-crystalline dolomite.
- 7560 - 7850 Shale, light/medium grey, flaky/blocky with abundant anhydrite and pyrite, occasional trace of calcareous light brown siltstone and thin stringers of very fine grained quartz sandstone, pyritic.
- 7860 - 8070 Shale, light grey, platy, slightly micaceous, abundant grey brown siltstone. Occasional thin interbeds of very fine grained quartz sandstone and light/medium brown crypto-crystalline dolomite. Abundant anhydrite and calcite, pyrite.
- 8080 - 8150 Shale, light grey, platy, soft, calcareous in part, calcite lined fractures, trace of pyrite.
- 8160 - 8270 Shale, light/medium grey, abundant anhydrite, trace calcite lined fractures, occasional trace of very fine grained quartz sandstone grading to siltstone.
- 8280 - 8764 Shale, light grey, platy and slightly micaceous, trace of black blocky shale, abundant calcite with occasional traces of anhydrite, interbedded siltstone and dark brown crypto- to micro-crystalline dolomite, calcite lined fractures, occasional pyrite.
- CORE #3 8764 - 8808 see Core Analysis.

SAMPLE DESCRIPTIONS con't

- 8809 - 9180 Shale, light grey, slightly calcareous, micaceous, soft, platy, occasional interbeds of black blocky shale, abundant siltstone and very fine grained quartz sandstone, thin interbeds of medium/dark brown crypto-crystalline dolomite, traces of anhydrite and calcite lined fractures, pyritic.
- 9190 - 10,012 Shale, dark grey/black, micro-micaceous, platy; interbedded brown/dark reddish brown, lithographic/micro-crystalline dolomite, occasional traces of quartz sandstone. Thin occasional interbeds of slightly calcareous siltstone. Calcite lined fractures with occasional secondary dolomite lined fractures, abundant anhydrite stringers. Occasional traces of brachiopods, ostracods and crinoids, and a trace of monaxon spicules.
- 10,013 - 10,045 Limestone, brown/white, grey, very fine - crypto-crystalline speckled, very silty, cherty, slightly argillaceous, tight with interbeds of shale, dark grey/black, trace of calcite crystals fractured.
- CORE #4 10,045 - 10,080 see Core Analysis.
- 10,081 - 10,093 Limestone, dark grey/brown, crypto-very fine crystalline, siliceous, argillaceous, hard, trace of siltstone and limey dolomite.
- CORE #5 10,093 - 10,143 see Core Analysis.
- 10,144 - 10,150 Limestone as above.
- CORE #6 10,150 - 10,178 see Core Analysis.
- CORE #7 10,178 - 10,187 see Core Analysis.
- CORE #8 10,187 - 10,197 see Core Analysis.
- CORE #9 10,197 - 10,220 see Core Analysis.
- CORE #10 10,220 - 10,223 see Core Analysis.
- CORE #11 10,223 - 10,257 see Core Analysis.
- 10,257 - 10,400 Limestone and dolomitic limestone, dark grey/brown crypto-crystalline to very fine crystalline, very siliceous, argillaceous, secondary calcite filled fractures. Shale, medium grey/black, carbonaceous, micro-micaceous, trace of pyrite.

SAMPLE DESCRIPTIONS con't

- 10,410 - 10,750 Shale, dark grey/black, blocky, brittle, micro-micaceous, slightly calcareous in part, thin interbeds of limestone, light grey/brown, very fine/fine crystalline, argillaceous, occasional stringers of brown siltstone and dark reddish brown lithographic dolomite, very dense, argillaceous. Calcite lined fractures, slight trace of anhydrite, pyritic.
- 10,760 - 10,900 Shale, medium/dark grey, calcareous, interbeds of limestone, light grey/brown, very fine crystalline, mottled, argillaceous, badly fractured secondary calcite lined stringers of anhydrite, abundant clear quartz crystals, stringers of dolomite as above, pyritic, trace of occasional crinoid.
- 10,910 - 11,210 Shale, light grey, trace of black shale, slightly calcareous in part, occasional white anhydrite and pyrite.
- 11,220 - 11,250 Shale, grey, calcareous, interbedded brown argillaceous limestone, trace of black shale.
- 11,250 - 11,620 Shale, dark grey, calcareous, occasional stringers of black shale, pyritic, with slight trace of quartz crystals.
- 11,630 - 12,180 Shale, black/dark grey, slightly calcareous in part, occasional trace of calcite and pyrite.
- 12,190 - 12,955 Shale, dark grey, occasional trace of black shale, occasional thin interbeds dark grey micro-crystalline, argillaceous dolomite, trace of calcite, traces of brown chert and crinoid fragments, pyrite.
- 12,966 - 13,260 Shale, black, pyritic, calcareous in part, trace of dark grey shale with occasional trace of dolomite as above.
- 13,270 - 13,490 Shale, black, pyritic, thin interbeds of greyish brown argillaceous limestone and black micro-crystalline dolomite, calcite lined fractures, traces of monaxon spicules and crinoids, trace of graphite.
- 13,500 - 13,530 Dolomite, white/medium grey, micro-crystalline, trace of black calcareous shale & secondary calcite lined fractures, trace of pyrite and some porosity.
- CORE #12 13,530 - 13,568 see Core Analysis.
- CORE #13 13,568 - 13,591 see Core Analysis.
- 13,591 - 13,663 Dolomite, medium grey/light brown, micro- to fine crystalline, trace of argillaceous and siliceous quartzitic siltstone, secondary calcite and secondary dolomite lined fractures, trace of vuggy and inter-crystalline porosity.

SAMPLE DESCRIPTIONS con't

CORE #14 13,663 - 13,723 see Core Analysis.

CORE #15 13,723 - 13,764 see Core Analysis.

13,764 - 13,927 Dolomite, light/medium grey, micro- to very fine crystalline, very argillaceous, silica cemented quartz siltstone, abundant milky white coarse crystalline secondary dolomite filled fractures, vuggy porosity, trace of disseminated pyrite, occasional traces of clear quartz crystals and secondary calcite filled fractures, shale cavings.

CORE #16 13,927 - 13,964 see Core Analysis.

CORE #17 13,964 - 13,970 see Core Analysis.

CORE #18 13,970 - 13,973 see Core Analysis.

13,974 - 14,175 Dolomite, light/medium grey, micro- to very fine crystalline, very argillaceous, abundant secondary white coarse crystalline dolomite lined vugs, secondary calcite lined fractures, occasional trace of clear quartz crystals, thin stringers of dark grey/black shale, trace of pyrite and fossil fragments.

CORE #19 14,175 - 14,208 see Core Analysis.

14,208 - 14,410 Dolomite as above.

CORE #20 14,410 - 14,435 see Core Analysis.

14,435 - 14,650 Dolomite, medium dark grey with buff interbeds, sub-lithographic/micro-crystalline, abundant coarse crystalline milky white secondary dolomite, stringers of carbonaceous shale and trace of bitumen, trace of euhedral quartz crystals; secondary calcite lined fractures, traces of disseminated pyrite and gilsonite, stylolina present along with traces of crinoids. Vuggy and inter-crystalline porosity.

14,650 Driller's T.D.

PAN AM ~~6-1~~ BEAVER RIVER ~~6-1~~ YTG-01
60°10'N 124°15'W

K.B. 2616 Ground 2600

CORE ANALYSIS SUMMARY :

- CORE #1 7160 - 7162 No recovery
- CORE #2 7162 - 7163 Recovered 8"
- Quartz sandstone, very fine grained, consolidated, siliceous, slightly dolomitic, horizontal fractures filled with argillaceous material, porosity 5 - 8%.
- CORE #3 8764 - 8808 Recovered 44'
- 8764 - 8772 Shale, light grey, platy, soft, slightly dolomitic and micaceous with stringers of dark brown, micro-crystalline argillaceous dolomite, beds ranging from 2 - 3".
- 8772 - 8772.5 Stringer fine/medium crystalline limey dolomite, good vuggy porosity, secondary dolomite lined vugs.
- 8772.5 - 8808 Shale, medium/dark grey, blocky, slightly micaceous, calcite filled fractures, stringers of dolomite, dark brown, micro-crystalline, very argillaceous, beds 2 - 3" thick, no visible porosity.
- CORE #4 10,045 - 10,080 Recovered 35'
- Limestone, mottled, dark grey/brown/white crypto-crystalline to very fine crystalline, siliceous, dense, tight; occasional shale partings, very carbonaceous, few thin secondary calcite lined fractures. Stringers of dark grey, sub-lithographic dolomite, occasional stylolites, crinoids, gas kick at 10,069'.
- CORE #5 10,093 - 10,143 Recovered 50'
- Limestone, mottled, dark grey/brown/white crypto-crystalline, very siliceous, dolomitic, occasional thin to hairline fractures secondary calcite lined, occasional thin shale partings, black carbonaceous, occasional stylolites and thin open fractures, occasional trace crinoids. Traces of slickensides, pyrite and feldspar. Trace of inter-crystalline porosity at 10,133'.
- CORE #6 10,150 - 10,178 Recovered 28'
- Limestone, wispy banded black/grey white, mottled, crypto/very fine crystalline, siliceous, argillaceous in part, thin interbeds limey dolomite, crypto-crystalline, very siliceous, with interbeds of shale, black, carbonaceous, calcareous to dolomitic. Hairline secondary calcite filled fractures, fossiliferous near base of cored interval with light grey limestone inclusions, pyritic. Last foot of core showed some bleeding gas.

CORE ANALYSIS SUMMARY con't

CORE #7 10,178 - 10,187

Recovered 9'

Shale, dark grey/black, carbonaceous, micro-micaceous, soft, dolomitic, thin interbeds of limestone and dolomite inclusions. Trace of pyrite monaxon spicules. Middle part of interval contains thin interbeds of limey dolomite and limestone, dark grey, sub-lithographic/micro-crystalline, very argillaceous, siliceous, badly fractured.

CORE #8 10,187 - 10,197

Recovered 10'

Limestone, dolomitic, micro-crypto-crystalline, argillaceous, occasional black shale partings, carbonaceous, calcareous and penecontemporaneous. Stringers of dolomite, sub-lithographic, brown/grey, very argillaceous; 10,189 thin horizontal fracture with gas bleeding from fracture, occasional thin hairline fractures with secondary calcite fill.

CORE #9 10,197 - 10,220

Recovered 23'

Limestone, dolomitic, finely laminated, dark grey/grey white, argillaceous, micro-crystalline, shaley, siliceous, some horizontal bedding fractures, shale, black, carbonaceous, waxy to shiny, slightly calcareous with finely laminated limestone, crypto-crystalline to very fine crystalline; 10,209 - 10,210 open vertical and horizontal fractures, bleeding gas. Near base of cored interval badly fractured bleeding gas, limestone beds of very fine/coarse crystalline, very crinoidal with shell fragments. Occasional hairline secondary calcite lined fractures.

CORE #10 10,220 - 10,223

Recovered 3'

Dolomite, lithographic, dark brown grey, argillaceous, very siliceous, dense, interbedded shale, black, carbonaceous, waxy, calcareous, thin stringers of dolomitic limestone, dark grey, micro-crystalline, very siliceous, dense, cherty with abundant shell fragments, becomes very shaley near base.

CORE #11 10,223 - 10,257

Recovered 34'

Whispy interbedded limestone, grey white, micro-crystalline to coarse crystalline, crinoidal in part, shell fragments, pyritic, occasional thin shale partings, black, carbonaceous, vertical and horizontal fractures, trace of slickensides, occasional interbeds of dolomite, argillaceous, very shaley, occasional hairline calcite filled fractures. Near base of cored interval limey dolomite to dolomitic limestone, micro- to very fine crystalline, earthy with shale stringers, scattered crinoids and shell fragments, fair inter-crystalline to vuggy porosity from 10,250 - 10,251.

CORE ANALYSIS SUMMARY con't

- CORE #12 13,530 - 13,568 Recovered 38'
Dolomite, white to medium grey, secondary calcite lined fractures, dark grey shale stringers, some small vugs, tight, no porosity.
- CORE #13 13,568 - 13,591 Recovered 23'
Dolomite, white to medium grey, secondary calcite lined fractures, dark grey shale stringers, some small vugs, tight, no porosity.
- CORE #14 13,663 - 13,723 Recovered 60'
Dolomite, medium grey, crypto- to micro-crystalline, abundant small fractures with calcite fill; 13,673 pinpoint vuggy porosity, trace of quartz in vugs; 13,680 - 13,686 35% fractured, dense, calcite filled, small to medium vugs 4% est. porosity. Last 13' of core becomes slightly shaley with trace of siltstone, tight, dense, some slightly ribboned calcite filled fractures, no porosity.
- CORE #15 13,724 - 13,764 Recovered 40'
Dolomite, medium grey 90% lithoclast with 10% calcite filled fractures, dense, occasional stringers of dark grey dolomitic shale, trace of vertical fractures with pyrite; from 13,743 - 13,751, dolomite as above, some good horizontal fractures with fracture porosity of 7%, trace of shale stringers, some small vugs 1% porosity, large vugs 2%. Last 10' of cored interval has some good small/medium vugs and abundant vertical fractures with large/medium vugs, fair to good porosity.
- CORE #16 13,927 - 13,964 Recovered 37'
Dolomite, medium grey, crypto-fine crystalline, with mottling of milky white coarse crystalline dolomite, abundant thin hairline white dolomite filled fractures, few vugs $\frac{1}{2}$ " to 1", occasional carbonaceous partings with shell fragments and crinoids, occasional stylolites; 13,948 - 13,950 badly brecciated and infilled with white dolomite, several small vugs to $\frac{1}{4}$ "; 13,953 - 13,957 badly fractured and brecciated infilled with coarse crystalline dolomite, occasional vugs to 1" with euhedral quartz crystals. Last 4' of core is badly fractured at angle to core with abundant black carbonaceous partings, trace of sulphur and galena, small vugs to $\frac{1}{4}$ ", contains crinoids and shell fragment.
- CORE #17 13,964 - 13,970 Recovered 5'
Dolomite, dark grey, very argillaceous, micro- to fine crystalline, abundant secondary white milky dolomite as patchy and fracture infilling, fossiliferous with occasional stylolites; abundant open fractures 10° to vertical, pinpoint to $\frac{1}{4}$ " vugs, occasional vugs to 1".

CORE ANALYSIS SUMMARY con't

CORE #18 13,970 - 13,973

Recovered 2'

Dolomite, dark grey, very argillaceous, micro- to fine crystalline, abundant secondary white milky dolomite as patchy and fracture infilling, fossiliferous with occasional stylolites, abundant open fractures 10° to vertical, pin-point to $\frac{1}{4}$ " vugs, occasional vugs to 1". Core badly shattered.

CORE #19 14,175 - 14,208

Recovered 33'

14,175 - 14,187 Dolomite, medium grey, fine to medium crystalline with approximately 40% white coarse crystalline dolomite filling fracture planes. Numerous vertical fractures with some displacement, some open. Scattered vertical stylolites. No matrix or vug type porosity, only fracture plane porosity, fairly tight.

14,187 - 14,203 Dolomite, medium grey and white as above, however very highly brecciated to fault gouge. Some porosity in gouge, plus good fracture porosity, approximately 1 - 2.6% with very good permeability.

14,203 - 14,208 Fine to medium crystalline medium grey dolomite matrix with white, coarse crystalline dolomite filling vugs and fractures. Breccia pieces are larger than above, 1 - 2 inches and matrix dolomite is darker and more argillaceous. Fairly tight with fracture porosity fairly to poorly developed, plus some nonconnective scattered vugs in the last 2' of core.

CORE #20 14,410 - 14,435

Recovered 25'

Dolomite, light/dark grey, micro- to very fine crystalline, trace of clear quartz crystal in vugs and white secondary dolomite, occasional carbonaceous shale partings, very good vuggy porosity and much fracturing, open to secondary calcite filled, trace of disseminated pyrite.

CHEMICAL RESEARCH AND DEVELOPMENT DEPARTMENT

HALLIBURTON COMPANY

DUNCAN, OKLAHOMA

LABORATORY REPORT

No. S30-B003-70

To Mr. Jim Boyd

Date January 27, 1970

Halliburton Services, Ltd.

11507 120th Street

Edmonton 19, Alberta, Canada

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

We give below results of our examination of the submitted cores.

Submitted by Mr. Jim Boyd for Amoco Canada, Ltd.

Marked

Amoco Canada, Ltd.

Beaver River YTCG-01

Temperature - 360°F BHT *WSTU 2/23*

| Core | Depth | Porosity | Perm. (air) |
|------|----------------|----------|-------------|
| 82 | 14,187.3-88.0' | 8.6% | 65.3 md |
| 87 | 14,192.4-93.4' | 5.4% | 31.8 md |

| | |
|---------------------|------------------|
| GRANDE PRAIRIE AREA | |
| FEB 12 1970 | |
| 1 - | <i>WSTU</i> |
| 2 - | <i>WSTU</i> |
| | AMHS |
| | ENG. |
| 3 - | <i>WSTU 2/23</i> |
| | AMHS |
| 4 - | <i>WSTU</i> |
| | FILE |

PURPOSE

These cores were submitted for x-ray analysis, solubility tests, reaction time tests, fluid loss tests and acid etched fracture flow capacity tests with specified acids.

RESULTS

The requested laboratory test information is included in the data section of this report.

Core #82 was used for reaction time tests and Core #87 was used for acid etched fracture flow capacity tests. Fluid loss tests were run on Cores #82 and #87.

JSB

DATA

X-ray Analysis

#82 (14,187.3-88.0') #87 (14,192.4-93.4')

| | | |
|-------------------|------------|------------|
| Quartz | Small | Small |
| Feldspar | Very Small | Very Small |
| Dolomite | Major | Major |
| Mixed Layer Clays | Very Small | Very Small |
| Solubility* | 99.4% | 99.0% |

*Solubility by weight loss in 15% HCl.

Static Reaction Time Tests

Conditions:

Core-----#82(14,167.3-88.0')
 Temperature-----300°F
 Pressure-----1500 psi
 Fracture Width-----0.24"
 Core Size-----3/4" OD x 1" long

| <u>Acid</u> | <u>Additive</u> | <u>Reaction Time (Min.)</u> |
|---|----------------------------|-----------------------------|
| 20% HCl Mod Acid Core was saturated in kerosene | 1.0% HAI-50 | 88 |
| 20% HCl Mod Acid Core was saturated in kerosene | 1.0% HAI-50 1.0% HLX-92 | 123 |
| 20% HCl Mod Acid Core was saturated in water | 1.0% HAI-50 1.0% HLX-92 | 105 |
| 28% HCl Core was saturated in kerosene | 1.0% HAI-50 | 20 |
| 28% HCl Core was saturated in kerosene | 1.0% HAI-50 1.0% HLX-92 | 17 |
| 28% HCl Core was saturated in water | 1.0% HAI-50 1.0% HLX-92 | 33 |

DATA CONT'D

Acid Etched Fracture Flow Capacity Tests

| <u>Core</u> | <u>Acid and Additive</u> | <u>Etching Time (Min.)</u> | <u>Core Removed and Crushed (in.)</u> | <u>Fracture Flow Capacity (md. ft.)</u> |
|-------------------------------|--------------------------|----------------------------|---------------------------------------|---|
| 87-1 Saturated in kerosene | 20% HCl Mod Acid | 20 | .018 | 1,116 |
| | 1.0% HAI-50 | 40 | .025 | 72,032 |
| | 1.0% HLX-92 | 60 | .029 | 118,890 |
| 87-2 Saturated in water | 20% HCl Mod Acid | 20 | .029 | 48 |
| | 1.0% HAI-50 | 40 | .047 | 15,322 |
| | 1.0% HLX-92 | 60 | .053 | 36,810 |
| 87-3 Saturated in kerosene | 28% HCl | 20 | .049 | 1,074 |
| | 1.5% HAI-50 | 40 | .074 | 26,354 |
| | 1.0% HLX-92 | 60 | .113 | 85,616 |
| 87-4 Saturated in water | 28% HCl | 20 | .025 | 14,212 |
| | 1.5% HAI-50 | 40 | .072 | 27,536 |
| | 1.0% HLX-92 | 60 | .136 | 8,720 |
| 87-5 Saturated in kerosene | 28% HCl | 20 | .028 | 93,040 |
| | 1.5% HAI-50 | 40 | .045 | 132,622 + |
| | | 60 | .060 | 132,622 + |

Procedure: The acid was flowed past the simulated vertical fracture face of Core #87 (14,192.4'-93.4') at 1000 psi and 280-290°F. A fracture width of 0.05" was used. The fracture flow capacity was determined using a closure pressure of 1/3 psi per foot of depth or 4731 psi.

NOTE: Etching of Core #87-5 produced extremely large flow channels. Much of the core face and core body were dissolved by the acid.

DATA CONT'D

Fluid Loss Tests

Test #1

Conditions:

Core Size-----1" OD x 1.4" long
Temperature-----200°F
Pressure-----1000 psi
Core-----#82 at 14,187.3-88.0'

Procedure:

- Step #1 - Original permeability to fresh water-----1.04 md.
- Step #2 - Fluid loss with fresh water contain-
ing 20# WG-6 and 30# WAC-10 per 1000
gallons----- $E_w = 0.0021$
- Step #3 - No fluid loss control with 10% HCl. The acid
blew through in 1 minute 50 seconds.

Test #2

Conditions:

Core Size-----1" OD x 2" long
Temperature-----200°F
Pressure-----1000 psi
Core-----#87 at 14,192.4-93.4'

Procedure:

- Step #1 - Original permeability to fresh water-----0.40 md.
- Step #2 - Fluid loss with fresh water contain-
ing 100# WAC-9 and 20# WG-6 per 1000
gallons----- $E_w = .00078$
- Step #3 - No fluid loss control with 10% HCl. The
acid blew through the core in 1 minute
12 seconds.

Data contained in Book #1579, pages 59 and 60; Book #1509, page 63 and Book #1622, page 43.

cc: Mr. F. M. Anderson Mr. J. K. Reynolds
 Mr. J. A. Knox
 Mr. F. N. Harris
 Mr. W. H. Beecroft

Respectfully submitted,

Laboratory Analyst

HALLIBURTON COMPANY

Ewing-Fredrickson-Crowell
gs

By *S. E. Fredrickson*
S. E. Fredrickson

CORE LABORATORIES - CANADA, LTD.
CALGARY, ALBERTA

COMPANY PAN AMERICAN PETROLEUM CORPORATION
 WELL PAN AM C-1 BEAVER YT G-01
 FIELD WILDCAT, BEAVER RIVER AREA, YUKON
 LOCATION - TERRITORY

FORMATION -
 DRILLING FLUID WATER BASE MUD
 ELEVATION -
 ANALYSIS -
 REMARKS

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

AST - APPEARS SIMILAR TO
 * - BROKEN CORE
 *RC - USED FOR SUMMARY PURPOSES
 ** - PERMEABILITY 3000 MD
 *S - FINE SAND
 MS - MEDIUM SAND
 CS - COARSE SAND
 CONG - CONGLOMERATE
 DOL - DOLOMITE
 SH - SHALE
 LMY - LIMY
 SHY - SHALY
 /BK - BREAK
 BIT - PYROBITUMEN
 CARB - CARBONACEOUS
 A - ANHYDRITE
 FOSS - FOSSILIFEROUS
 XLN - CRYSTALLINE
 LAM - LAMINATIONS
 V - VUGULAR
 LV - LARGE VUGS
 SV - SMALL VUGS
 PPV - PINPOINT VUGS
 I - INTERGRANULAR
 STY - STYOLITIC
 HF - HORIZONTAL FRACTURE
 VF - VERTICAL FRACTURE
 SS - SMALL SAMPLE
 SL - SLIGHTLY
 V - VERY
 WI - WITH

| SAMPLE NUMBER | INTERVAL REPRESENTED FEET | | PERMEABILITY TO AIR MILLIDARCYS | | | PERMEABILITY FEET | POROSITY % | POROSITY FEET | DENSITY | | VISUAL EXAMINATION |
|---------------|---------------------------|-------|---------------------------------|------|----|-------------------|------------|---------------|---------|-------|--------------------|
| | DEPTH | THICK | KMAX | K90P | KV | | | | 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 | 3.74 | 45.18 | 2.2 | 1.32 | 2.57 | 2.63 | I, F |
| - | 7162.8-7163.0 | 0.2 | - | - | - | - | - | - | - | - | Lost Core |

COMPANY - PAN AMERICAN PETROLEUM CORPORATION
WELL - PAN AM BEAVER YT G-01
FIELD - WILDCAT-BEAVER RIVER AREA, YUKON TERRITORY
LOCATION - 60°00' 25.00" NL
124°15' 48.00" WL

FORMATION -
DRILLING FLUID - WATER BASE MUD
ELEVATION -
ANALYSIS - FULL DIAMETER
REMARKS

PAGE - 1 of 3
FILE - CNP-4-4680
DATE REPORT - JUNE 16, 1969
ANALYSTS - BK MH AD

AST - APPEARS SIMILAR TO
* - BROKEN CORE
KCO - USED FOR SUMMARY PURPOSES
** - PERMEABILITY > 3000 MD.
FS - FINE SAND
MS - MEDIUM SAND
CS - COARSE SAND
CONG - CONGLOMERATE
DOL - DOLOMITE
SH - SHALE
LMY - LIMY
SHY - SHALY
/BK - BREAK
BIT - PYROBITUMEN
CARB - CARBONACEOUS
A - ANHYDRITE
FOS - FOSSILIFEROUS
XLR - CRYSTALLINE
LAM - LAMINATIONS
V - VUGULAR
LV - LARGE VUGS
SV - SMALL VUGS
PPV - PIN POINT VUGS
I - INTERGRANULAR
STY - STYOLITIC
HF - HORIZONTAL FRACTURE
VF - VERTICAL FRACTURE
SS - SHALL SAMPLE
SL - SLIGHTLY
VJ - VERY
WJ - WITH

| SAMPLE NUMBER | INTERVAL REPRESENTED FEET | | PERMEABILITY TO AIR MILLIDARCYS | | | PERMEABILITY FEET | POROSITY % | POROSITY FEET | DENSITY | | RESIDUAL SAT. PORE % | | VISUAL EXAMINATION |
|---------------|---------------------------|-------|---------------------------------|------|----|-------------------|------------|---------------|---------|-------|----------------------|-------------|--------------------|
| | DEPTH | THICK | KMAX | KBOP | KV | | | | BULK | GRAIN | OIL | TOTAL WATER | |

CORED INTERVAL 8764.0' - 10257.0'

CORE NO. 3 8764.0' - 8808.0' (REC. 44.0') (11 BOXES)

| | | | | | | | | | | | | | |
|---|----------------|--------|---|---|---|---|---|---|---|---|---|---|---------|
| - | 8764.0-8808.0 | 44.0 | - | - | - | - | - | - | - | - | - | - | Dense |
| - | 8808.0-10045.0 | 1237.0 | - | - | - | - | - | - | - | - | - | - | Drilled |

CORE NO. 4 10045.0' - 10080.0' (REC. 35.0') (9 BOXES)

| | | | | | | | | | | | | | |
|---|-----------------|------|-------|-------|-------|------|-----|------|------|------|---|---|-------------------------|
| - | 10045.0-10051.3 | 6.3 | - | - | - | - | - | - | - | - | - | - | Appears Dense, F |
| - | 10051.3-10053.0 | 1.7 | - | - | - | - | - | - | - | - | - | - | Appears Dense |
| 1 | 10053.0-10054.2 | 1.2 | 0.12 | 0.02 | <0.01 | 0.14 | 0.1 | 0.12 | 2.68 | 2.69 | - | - | Dense, F |
| - | 10054.2-10060.0 | 5.8 | - | - | - | - | - | - | - | - | - | - | Appears Dense |
| 2 | 10060.0-10061.2 | 1.2 | <0.01 | <0.01 | <0.01 | - | 0.3 | 0.36 | 2.65 | 2.66 | - | - | Dense |
| - | 10061.2-10067.8 | 6.6 | - | - | - | - | - | - | - | - | - | - | Appears Dense |
| 3 | 10067.8-10069.0 | 1.2 | 2.27 | 0.47 | <0.01 | 2.72 | 0.1 | 0.12 | 2.66 | 2.67 | - | - | Dense F |
| - | 10069.0-10075.4 | 6.4 | - | - | - | - | - | - | - | - | - | - | Appears Dense |
| - | 10075.4-10078.1 | 2.7 | - | - | - | - | - | - | - | - | - | - | Dense Vertical Fracture |
| 4 | 10078.1-10079.0 | 0.9 | 0.16 | 0.08 | <0.01 | 0.14 | 0.2 | 0.18 | 2.65 | 2.66 | - | - | Dense F |
| - | 10079.0-10080.0 | 1.0 | - | - | - | - | - | - | - | - | - | - | Appears Dense |
| - | 10080.0-10093.0 | 13.0 | - | - | - | - | - | - | - | - | - | - | Drilled |

CORE NO. 5 10093.0' - 10144.0' (REC. 51.0') (13 BOXES)

| | | | | | | | | | | | | | |
|---|-----------------|------|------|-------|-------|------|-----|------|------|------|---|---|---------------|
| - | 10093.0-10129.6 | 36.6 | - | - | - | - | - | - | - | - | - | - | Appears Dense |
| 5 | 10129.6-10130.6 | 1.0 | 0.08 | <0.01 | <0.01 | 0.08 | 2.5 | 2.50 | 2.60 | 2.67 | - | - | PPV |
| - | 10130.6-10133.7 | 3.1 | - | - | - | - | - | - | - | - | - | - | Appears Dense |
| 6 | 10133.7-10134.7 | 1.0 | 2.35 | 1.03 | <0.01 | 2.35 | 0.4 | 0.40 | 2.66 | 2.67 | - | - | Dense F |

WELL: PAN AM BEAVER YT G-01

PAGE: 3 of 3

FORMATION:

SUMMARY INTERVAL: 10045.0 - 10257.0

FILE: CNP-4-4680

TOTAL FOOTAGE: 212.0

FOOTAGE ANALYZED 8.0

FOOTAGE NOT ANALYZED: TOTAL: 204.0 DENSE 185.0 LOST .0 DRILLED 19.0 *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 AVERAGE RESID. OIL % | WEIGHTED AVERAGE TOT. WATER |
|---------|--------------------|---------------------------|---------------|----------------------------|------------|-------------------------------|-----------------------------|
| 8.0 | 100.00 | .55 | 4.43 | 2.67 | 21.38 | .00 | .00 |
| 2.2 | 27.50 | 1.30 | 2.86 | .04 | .08 | .00 | .00 |
| 2.1 | 26.25 | .14 | .30 | .14 | .29 | .00 | .00 |
| .0 | .00 | .00 | .00 | .00 | .00 | .00 | .00 |
| 3.1 | 38.75 | .25 | .79 | 4.26 | 13.21 | .00 | .00 |
| .6 | 7.50 | .80 | .48 | 13.00 | 7.80 | .00 | .00 |

*NOT ANALYZED BY REQUEST



CORE LABORATORIES - CANADA LTD.

Petroleum Reservoir Engineering

Pan American

COMPANY Petroleum Corporation FIELD Wildcat FILE CNP-4-4680

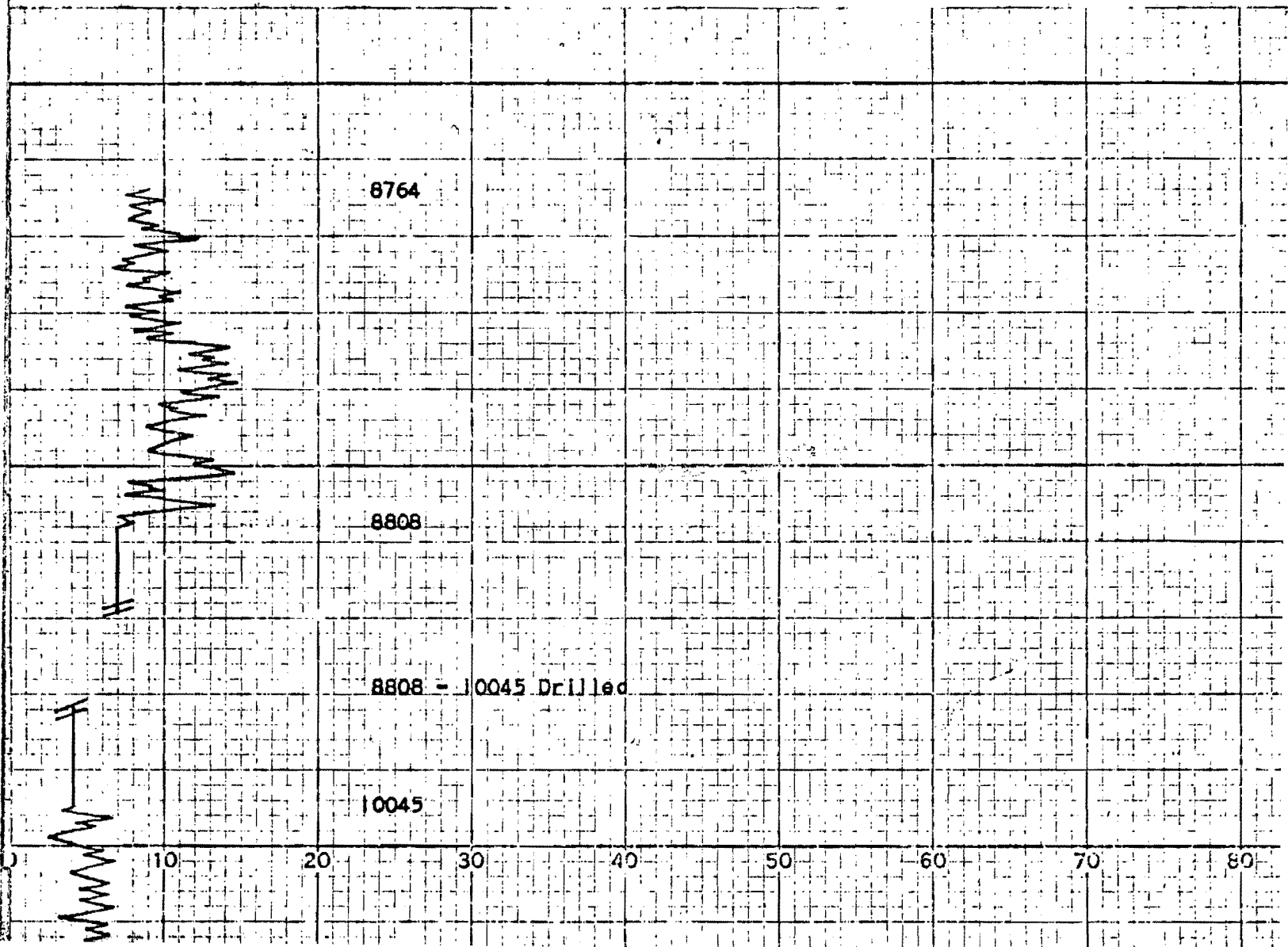
WELL Pan Am Beaver YT G-01 DATE _____

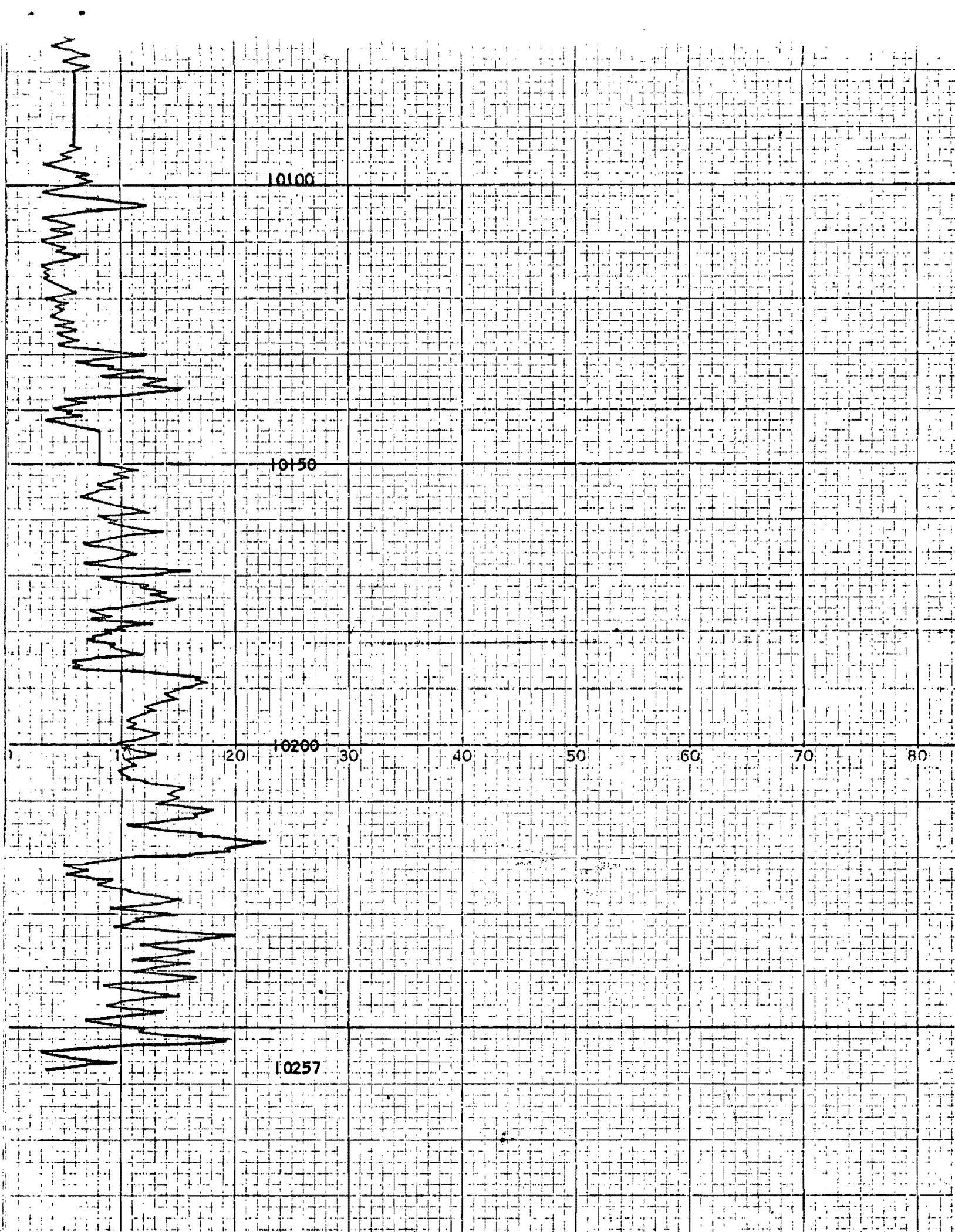
LOCATION Beaver River Area PROV Yukon Territories ELEV. _____

CORE-GAMMA CORRELATION

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T.C. 11 Sec. VERTICAL SCALE: 5" = 100' Sens. 5000 CPM





10100

10150

20 10200 30 40 50 60 70 80

10257

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

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

| | | | | | |
|-----------------------------------|---------------------|---------------------|----------------------|----------------------|--------------------------|
| AST - APPEARS SIMILAR TO | MS - MEDIUM SAND | LMY - LIMY | A - ANHYDRITE | LV - LARGE VUGS | HF - HORIZONTAL FRACTURE |
| * - BROKEN CORE | CS - COARSE SAND | BHY - SHALY | FOSS - FOSSILIFEROUS | SV - SMALL VUGS | VF - VERTICAL FRACTURE |
| IK90 - USED FOR SUMMARY PURPOSES! | COHG - CONGLOMERATE | BRK - BREAK | XLH - CRYSTALLINE | PPV - PIN POINT VUGS | SS - SMALL SAMPLE |
| ** - PERMEABILITY > 30000. MD. | DOL - DOLOMITE | BIT - PYROBITUMEN | LAM - LAMINATIONS | I - INTERGRANULAR | SLJ - SLIGHTLY |
| FS - FINE SAND | SH - SHALE | CARB - CARBONACEOUS | V - VUGULAR | STY - STYOLITIC | VI - VERY |
| | | | | | W - WITH |

| SAMPLE NUMBER | INTERVAL REPRESENTED FEET | | PERMEABILITY TO AIR MILLIDARCYS | | | PERMEABILITY FEET | POROSITY % | POROSITY FEET | DENSITY | | RESIDUAL SAT. PORE % | | VISUAL EXAMINATION |
|---|---------------------------|-------|---------------------------------|-------|-------|-------------------|------------|---------------|---------|-------|----------------------|-------------|--------------------|
| | DEPTH | THICK | KMAX | K90° | KV | | | | 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 | | | STY |
| 2 | 13531.7-13533.4 | 1.7 | 0.35 | 0.18 | <0.01 | 0.60 | 0.8 | 0.36 | 2.80 | 2.82 | | | STY |
| 3 | 13533.4-13534.5 | 1.1 | 0.22 | 0.11 | <0.01 | 0.24 | 0.8 | 0.88 | 2.75 | 2.77 | | | STY |
| 4 | 13534.5-13535.7 | 1.2 | 0.54 | 0.25 | 0.06 | 0.65 | 1.3 | 1.56 | 2.76 | 2.79 | | | STY |
| 5 | 13535.7-13537.3 | 1.6 | 0.47 | 0.26 | 0.09 | 0.75 | 1.6 | 2.56 | 2.73 | 2.78 | | | STY |
| 6 | 13537.3-13539.1 | 1.8 | 0.24 | 0.08 | <0.01 | 0.43 | 1.5 | 2.70 | 2.76 | 2.80 | | | STY HF |
| 7 | 13539.1-13540.8 | 1.7 | 0.76 | 0.49 | 0.09 | 1.29 | 2.3 | 3.91 | 2.72 | 2.79 | | | STY HF |
| 8 | 13540.8-13542.8 | 2.0 | * | 3.32 | 0.53 | 6.64 | 2.3 | 4.60 | 2.74 | 2.80 | | | HF |
| 9 | 13542.8-13544.0 | 1.2 | 5.56 | 0.30 | 0.07 | 6.67 | 1.7 | 2.04 | 2.76 | 2.80 | | | STY HF |
| 10 | 13544.0-13545.2 | 1.2 | * | 0.33 | 0.66 | 0.40 | 2.1 | 2.52 | 2.75 | 2.81 | | | STY HF |
| 11 | 13545.2-13546.4 | 1.2 | 0.11 | 0.10 | <0.01 | 0.13 | 1.2 | 1.44 | 2.76 | 2.79 | | | STY |
| 12 | 13546.4-13548.1 | 1.7 | 0.10 | 0.10 | <0.01 | 0.17 | 1.4 | 2.38 | 2.76 | 2.79 | | | STY HF |
| 13 | 13548.1-13549.5 | 1.4 | 2.86 | 2.54 | <0.01 | 4.00 | 1.6 | 2.24 | 2.74 | 2.79 | | | STY HF |
| 13A | 13549.5-13551.3 | 1.8 | 0.06 | 0.03 | <0.01 | 0.11 | 1.1 | 1.98 | 2.73 | 2.76 | | | STY |
| 13B | 13551.3-13553.1 | 1.8 | 0.16 | 0.13 | <0.01 | 0.29 | 1.0 | 1.80 | 2.75 | 2.78 | | | STY |
| 14 | 13553.1-13555.1 | 2.0 | 7.00 | 1.21 | <0.01 | 14.00 | 1.1 | 2.20 | 2.74 | 2.77 | | | STY HF |
| 15 | 13555.1-13556.8 | 1.7 | 5.93 | 1.69 | <0.01 | 10.08 | 1.3 | 2.21 | 2.75 | 2.79 | | | STY HF |
| 16 | 13556.8-13557.7 | 0.9 | 0.88 | 0.82 | <0.01 | 0.79 | 1.5 | 1.35 | 2.78 | 2.82 | | | STY HF |
| 17 | 13557.7-13559.6 | 1.9 | 0.05 | <0.01 | <0.01 | 0.10 | 1.0 | 1.90 | 2.78 | 2.81 | | | STY HF |
| 18 | 13559.6-13561.6 | 2.0 | 17.61 | 0.80 | <0.01 | 35.22 | 0.9 | 1.80 | 2.76 | 2.78 | | | STY HF |
| 19 | 13561.6-13563.7 | 2.1 | 0.21 | 0.06 | <0.01 | 0.44 | 1.2 | 2.52 | 2.79 | 2.82 | | | STY |
| - | 13563.7-13568.0 | 4.3 | - | - | - | - | - | - | - | - | | | 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 | | | STY HF |
| 21 | 13568.7-13569.8 | 1.1 | <0.01 | <0.01 | <0.01 | - | 4.7 | 5.17 | 2.64 | 2.78 | | | |
| 22 | 13569.8-13570.8 | 1.0 | 12.57 | 5.68 | <0.01 | 12.57 | 1.5 | 1.50 | 2.73 | 2.78 | | | HF |

NO. 21

6' net

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 MILLIDARCYS | | | PERMEABILITY FEET | POROSITY % | POROSITY FEET | DENSITY | | RESIDUAL SAT. PORE % | | VISUAL EXAMINATION |
|---------------|---------------------------|-------|---------------------------------|------|----|-------------------|------------|---------------|---------|-------|----------------------|-------------|--------------------|
| | DEPTH | THICK | KMAX | K90P | KV | | | | BULK | GRAIN | OIL | TOTAL WATER | |

CORE NO. 13 (CONT'D)

| | | | | | | | | | | | | | |
|----|-----------------|-----|-------|-------|-------|------|-----|------|------|------|--|--|----|
| 23 | 13570.8-13571.4 | 0.6 | 3.74 | 1.18 | <0.01 | 2.24 | 1.6 | 0.96 | 2.61 | 2.65 | | | HF |
| 24 | 13571.4-13572.5 | 1.1 | 3.37 | <0.01 | <0.01 | 3.71 | 1.2 | 1.32 | 2.76 | 2.79 | | | HF |
| 25 | 13572.5-13573.2 | 0.7 | * | 3.57 | <0.01 | 2.50 | 1.6 | 1.12 | 2.75 | 2.79 | | | HF |
| 26 | 13573.2-13573.9 | 0.7 | <0.01 | <0.01 | <0.01 | - | 1.3 | 0.91 | 2.73 | 2.77 | | | |
| 27 | 13573.9-13575.0 | 1.1 | 0.97 | 0.48 | <0.01 | 1.07 | 1.3 | 1.43 | 2.74 | 2.78 | | | |
| 28 | 13575.0-13577.0 | 2.0 | 0.31 | 0.26 | <0.01 | 0.62 | 1.4 | 2.80 | 2.77 | 2.81 | | | |
| 29 | 13577.0-13579.0 | 2.0 | 0.06 | 0.06 | <0.01 | 0.12 | 1.2 | 2.40 | 2.77 | 2.80 | | | |
| 30 | 13579.0-13579.7 | 0.7 | 0.11 | 0.05 | <0.01 | 0.08 | 1.1 | 0.77 | 2.75 | 2.79 | | | |
| 31 | 13579.7-13580.7 | 1.0 | 0.11 | 0.03 | <0.01 | 0.11 | 1.1 | 1.10 | 2.76 | 2.79 | | | |
| 32 | 13580.7-13581.8 | 1.1 | <0.01 | <0.01 | <0.01 | - | 1.3 | 1.43 | 2.75 | 2.78 | | | |
| 33 | 13581.8-13582.5 | 0.7 | <0.01 | <0.01 | <0.01 | - | 1.1 | 0.77 | 2.77 | 2.80 | | | |
| 34 | 13582.5-13583.5 | 1.0 | 0.03 | <0.01 | <0.01 | 0.03 | 0.9 | 0.90 | 2.76 | 2.79 | | | |
| 35 | 13583.5-13584.6 | 1.1 | <0.01 | <0.01 | <0.01 | - | 0.9 | 0.99 | 2.76 | 2.79 | | | |
| 36 | 13584.6-13585.8 | 1.2 | <0.01 | <0.01 | <0.01 | - | 1.1 | 1.32 | 2.76 | 2.79 | | | |
| 37 | 13585.8-13587.3 | 1.5 | <0.01 | <0.01 | <0.01 | - | 1.1 | 1.65 | 2.74 | 2.77 | | | |
| 38 | 13587.3-13589.2 | 1.9 | <0.01 | <0.01 | <0.01 | - | 1.0 | 1.90 | 2.76 | 2.79 | | | |
| 39 | 13589.2-13591.0 | 1.8 | 0.80 | <0.01 | <0.01 | 1.44 | 1.3 | 2.34 | 2.74 | 2.78 | | | |

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 PORCS. % | POROSITY FEET | WEIGHTED AVERAGE PERM. MD. | PERM. FEET | WEIGHTED AVERAGE RESID. OIL % | WEIGHTED AVERAGE TOT. WATER % |
|-----------------------|---------|--------------------|---------------------------|---------------|----------------------------|------------|-------------------------------|-------------------------------|
| TOTAL | 56.7 | 100.00 | 1.37 | 77.69 | 1.92 | 109.10 | .00 | .00 |
| BY PERM RANGES: | | | | | | | | |
| LESS THAN 0.10 Md. | 16.0 | 28.22 | 1.33 | 21.32 | .02 | .35 | .00 | .00 |
| 0.10 0.49 Md. | 19.6 | 34.56 | 1.25 | 24.53 | .26 | 5.02 | .00 | .00 |
| 0.50 0.99 Md. | 6.7 | 11.82 | 1.58 | 10.59 | .78 | 5.24 | .00 | .00 |
| 1.00 9.99 Md. | 11.4 | 20.11 | 1.57 | 17.95 | 4.45 | 50.70 | .00 | .00 |
| GREATER THAN 9.99 Md. | 3.0 | 5.29 | 1.10 | 3.30 | 15.93 | 47.79 | .00 | .00 |

*NOT ANALYZED BY REQUEST

CORE LABORATORIES - CANADA, LTD.
CALGARY, 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 FULL DIAMETER
REMARKS All samples sandblasted prior to analysis

PAGE 4 of 10
FILE CNP-4-4774
DATE REPORT AUG. 20, 1969
ANALYSTS CC MH

AST - APPEARS SIMILAR TO
 * - BROKEN CORE
 IK90 - USED FOR SUMMARY PURPOSES!
 ** - PERMEABILITY 30000 MD
 FS - FINE SAND

MS - MEDIUM SAND
 CS - COARSE SAND
 CONG - CONGLOMERATE
 DOL - DOLOMITE
 SH - SHALE

LMY - LIMY
 BMY - SHALY
 /BK - BREAK
 BIT - PYROBITUMEN
 CARB - CARBONACEOUS

A - ANHYDRITE
 FOSS - FOSSILIFEROUS
 XLN - CRYSTALLINE
 LAM - LAMINATIONS
 V - VUGULAR

LV - LARGE VUGS
 SV - SMALL VUGS
 PPV - PIN POINT VUGS
 I - INTERGRANULAR
 STY - STYOLITIC

HF - HORIZONTAL FRACTURE
 VF - VERTICAL FRACTURE
 SS - SMALL SAMPLE
 SL - SLIGHTLY
 V/ - VERY
 W/ - WITH

| SAMPLE NUMBER | INTERVAL REPRESENTED FEET | | PERMEABILITY TO AIR MILLIDARCYS | | | PERMEABILITY FEET | POROSITY % | POROSITY FEET | DENSITY | | VISUAL EXAMINATION |
|---------------|---------------------------|-------|---------------------------------|------|----|-------------------|------------|---------------|---------|-------|--------------------|
| | DEPTH | THICK | KMAX | K90° | KV | | | | BULK | GRAIN | |

CORE NO. 14 13663' - 13732 (Rec. 59.0') (16 boxes)

| | | | | | | | | | | | |
|----|-----------------|-----|-------|------|------|-------|-----|------|------|------|-------------------|
| 1 | 13663.0-13665.2 | 2.2 | 5.58 | 0.43 | 0.35 | 12.28 | 0.8 | 1.76 | 2.79 | 2.81 | Dense F. |
| 2 | 13665.2-13667.5 | 2.3 | 0.63 | 0.50 | -0.1 | 1.45 | 1.1 | 2.53 | 2.79 | 2.83 | Few PPV. F. |
| 3 | 13667.5-13669.3 | 1.8 | 0.51 | 0.46 | 0.25 | 0.92 | 0.8 | 1.44 | 2.79 | 2.81 | Dense, Sty. F. |
| - | 13669.3-13671.3 | 2.0 | - | - | - | - | - | - | - | - | Dense |
| 4 | 13671.3-13672.8 | 1.5 | 0.93 | 0.35 | -0.1 | 1.40 | 0.9 | 1.35 | 2.79 | 2.82 | Dense F. |
| 5 | 13672.8-13674.0 | 1.2 | 1.60 | 0.84 | 0.78 | 1.92 | 1.9 | 2.28 | 2.79 | 2.85 | Few SV. F. |
| 6 | 13674.0-13675.3 | 1.3 | 0.87 | 0.77 | 0.19 | 1.13 | 1.8 | 2.34 | 2.79 | 2.84 | 1. few SV. F. |
| 7 | 13675.3-13676.6 | 1.3 | 0.70 | 0.64 | 0.41 | 0.91 | 1.0 | 1.30 | 2.80 | 2.83 | 1. Scatt. PPV. F. |
| 8 | 13676.6-13678.0 | 1.4 | 6.18 | 2.19 | 1.48 | 8.65 | 2.8 | 3.92 | 2.75 | 2.83 | SV. F. |
| 9 | 13678.0-13679.5 | 1.5 | 1.78 | 0.83 | 0.14 | 2.67 | 1.5 | 2.25 | 2.79 | 2.83 | SV. F. |
| 10 | 13679.5-13680.9 | 1.4 | 0.53 | 0.32 | 0.07 | 0.74 | 0.5 | 0.70 | 2.78 | 2.80 | Scattered SV. |
| 11 | 13680.9-13682.4 | 1.5 | 1.12 | 0.99 | 0.19 | 1.68 | 0.8 | 1.20 | 2.79 | 2.81 | Scattered PPV. F. |
| 12 | 13682.4-13684.0 | 1.6 | 1.26 | 1.11 | -0.1 | 2.02 | 1.5 | 2.40 | 2.78 | 2.82 | Few SV, Sty. F. |
| 13 | 13684.0-13685.4 | 1.4 | 3.80 | 2.07 | -0.1 | 5.32 | 2.5 | 3.50 | 2.76 | 2.83 | 1. SV. Sty. F. |
| 14 | 13685.4-13686.9 | 1.5 | 2.04 | 0.88 | 0.15 | 3.06 | 1.1 | 1.65 | 2.77 | 2.80 | Few SV. Sty. F. |
| 15 | 13686.9-13688.2 | 1.3 | 2.48 | 1.53 | 0.23 | 3.22 | 2.0 | 2.60 | 2.77 | 2.83 | SV. Sty. F. |
| 16 | 13688.2-13689.7 | 1.5 | 2.59 | 2.57 | 2.96 | 3.89 | 2.3 | 3.45 | 2.75 | 2.81 | SV. F. |
| 17 | 13689.7-13691.0 | 1.3 | 3.15 | 3.09 | 0.18 | 4.10 | 1.5 | 1.95 | 2.78 | 2.82 | SV. F. |
| 18 | 13691.0-13692.5 | 1.5 | 3.25 | 3.15 | 0.52 | 4.88 | 1.8 | 2.70 | 2.78 | 2.83 | Few SV. |
| 19 | 13692.5-13694.2 | 1.7 | 5.85 | 1.71 | 0.41 | 9.95 | 1.6 | 2.72 | 2.77 | 2.82 | Few SV. F. |
| 20 | 13694.2-13695.8 | 1.6 | 0.39 | 0.22 | -0.1 | 0.62 | 0.3 | 0.48 | 2.79 | 2.80 | Dense Sty. F. |
| 21 | 13695.8-13697.3 | 1.5 | 3.61 | 3.15 | 0.11 | 5.42 | 2.0 | 3.00 | 2.77 | 2.82 | SV. F. |
| 22 | 13697.3-13698.7 | 1.4 | 12.80 | 6.20 | 0.53 | 17.92 | 1.8 | 2.52 | 2.77 | 2.82 | Few SV. F. |
| 23 | 13698.7-13700.4 | 1.7 | 3.44 | 0.90 | -0.1 | 5.85 | 0.5 | 0.85 | 2.78 | 2.80 | Dense Sty. F. |
| - | 13700.4-13704.4 | 4.0 | - | - | - | - | - | - | - | - | Dense |
| 24 | 13704.4-13706.3 | 1.9 | 1.61 | 1.44 | 0.19 | 3.06 | 0.2 | 0.38 | 2.79 | 2.80 | Dense F. |

CORE LABORATORIES - CANADA, LTD.
CALGARY, ALBERTA

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

PAGE 5 of 10
FILE CNP-4-4774

| SAMPLE NUMBER | INTERVAL REPRESENTED FEET | | PERMEABILITY TO AIR MILLIDARCY | | | PERMEABILITY FEET | POROSITY % | POROSITY FEET | DENSITY | | VISUAL EXAMINATION |
|---|---------------------------|-------|--------------------------------|-------|-------|-------------------|------------|---------------|---------|-------|--------------------|
| | DEPTH | THICK | KMAX | K90° | KV | | | | BULK | GRAIN | |
| Core No. 14 (cont'd) | | | | | | | | | | | |
| - | 13706.3-13712.8 | 6.5 | - | - | - | - | - | - | - | - | Dense |
| 25 | 13712.8-13714.8 | 2.0 | 1.80 | 0.42 | -0.1 | 3.60 | 0.1 | 0.20 | 2.79 | 2.79 | Dense, F. |
| - | 13714.8-13722.0 | 7.2 | - | - | - | - | - | - | - | - | Dense |
| - | 13722.0-13723.0 | 1.0 | - | - | - | - | - | - | - | - | Lost core |
| CORE NO. 15 13723' - 13765' (Rec. 37.0') (10 boxes) <i>Avg 23% 2.1' net</i> | | | | | | | | | | | |
| - | 13723.0-13738.2 | 15.2 | - | - | - | - | - | - | - | - | Dense |
| 26 | 13738.2-13740.0 | 1.8 | 12.30 | 4.91 | -0.1 | 22.14 | 0.7 | 1.26 | 2.81 | 2.83 | Dense Sty. F. |
| 27 | 13740.0-13741.8 | 1.8 | 7.71 | 7.29 | 0.33 | 13.88 | 0.7 | 1.26 | 2.81 | 2.83 | Dense Sty. F. |
| 28 | 13741.8-13743.4 | 1.6 | 1.11 | 0.93 | 0.13 | 1.78 | 0.5 | 0.80 | 2.82 | 2.83 | Dense F. |
| 29 | 13743.4-13745.2 | 1.8 | 19.70 | 11.20 | 0.60 | 35.46 | 0.8 | 1.44 | 2.81 | 2.83 | I. Sty. F. |
| 30 | 13745.2-13747.1 | 1.9 | 4.66 | 1.42 | 0.23 | 8.85 | 0.8 | 1.52 | 2.81 | 2.83 | Scattered PPV. F. |
| 31 | 13747.1-13748.9 | 1.8 | * | -0.1 | * | - | 1.8 | 3.24 | 2.75 | 2.80 | Few SV. F. |
| 32 | 13748.9-13750.7 | 1.8 | 64.00 | 29.80 | 2.18 | 115.20 | 2.0 | 3.60 | 2.78 | 2.83 | SV. F. |
| 33 | 13750.7-13752.4 | 1.7 | 5.33 | 1.78 | 0.08 | 9.06 | 0.8 | 1.36 | 2.79 | 2.82 | Scattered PPV. F. |
| 34 | 13752.4-13754.0 | 1.6 | 3.91 | 1.10 | 0.13 | 6.26 | 0.5 | 0.80 | 2.81 | 2.83 | Dense F. |
| 35 | 13754.0-13755.7 | 1.7 | 4.11 | 0.96 | -0.1 | 6.99 | 1.5 | 2.55 | 2.79 | 2.83 | SV. F. |
| 36 | 13755.7-13758.0 | 2.3 | * | 7.37 | * | 16.95 | 1.2 | 2.76 | 2.79 | 2.82 | Few SV. VF. |
| 37 | 13758.0-13760.0 | 2.0 | * | 9.34 | * | 18.68 | 1.7 | 3.40 | 2.79 | 2.83 | Few SV. VF. |
| - | 13760.0-13765.0 | 5.0 | - | - | - | - | - | - | - | - | Lost core |
| - | 13765.0-13927.0 | 162.0 | - | - | - | - | - | - | - | - | Drilled |
| CORE NO. 16 13,927' - 13,963 (Rec. 36.0') (10 boxes) <i>1.8' net @ 20%</i> | | | | | | | | | | | |
| 38 | 13927.0-13928.1 | 1.1 | 15.00 | 14.60 | 5.29 | 16.50 | 2.3 | 2.53 | 2.76 | 2.82 | SV. F. |
| 39 | 13928.1-13928.9 | 0.8 | 215.00 | 96.40 | 84.00 | 172.00 | 1.8 | 1.44 | 2.78 | 2.83 | Few SV. VF. |
| 40 | 13928.9-13930.3 | 1.4 | 16.30 | 15.80 | 0.83 | 22.82 | 1.0 | 1.40 | 2.80 | 2.83 | Few SV. F. |
| 41 | 13930.3-13931.3 | 1.0 | 4.48 | 1.47 | 1.32 | 4.48 | 0.6 | 0.60 | 2.79 | 2.81 | Dense F. |
| 42 | 13931.3-13932.2 | 0.9 | 27.60 | 7.92 | 0.61 | 24.84 | 1.1 | 0.99 | 2.77 | 2.81 | Few SV. F. |
| 43 | 13932.2-13933.4 | 1.2 | 4.81 | 3.62 | 0.55 | 5.77 | 0.2 | 0.24 | 2.79 | 2.80 | Dense F. |

CORE LABORATORIES - CANADA, LTD.
CALGARY, ALBERTA

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

PAGE 6 of 10
FILE CNP-4-4774

| SAMPLE NUMBER | INTERVAL REPRESENTED FEET | | PERMEABILITY TO AIR MILLIDARCYS | | | PERMEABILITY FEET | POROSITY % | POROSITY FEET | DENSITY | | VISUAL EXAMINATION |
|-----------------------------|---------------------------|-------|---------------------------------|--------|------|-------------------|------------|---------------|---------|-------|--------------------|
| | DEPTH | THICK | KMAX | K90° | KV | | | | BULK | GRAIN | |
| <u>Core No. 16 (cont'd)</u> | | | | | | | | | | | |
| 44 | 13933.4-13934.7 | 1.3 | 2.66 | 2.23 | 0.73 | 3.46 | 0.7 | 0.91 | 2.80 | 2.82 | Few SV. F. |
| 45 | 13934.7-13936.0 | 1.3 | 8.31 | 7.17 | 0.72 | 10.80 | 1.6 | 2.08 | 2.78 | 2.83 | Few SV. F. |
| 46 | 13936.0-13937.0 | 1.0 | 169.00 | 154.00 | 1.54 | 169.00 | 0.7 | 0.70 | 2.81 | 2.83 | Dense F. |
| 47 | 13937.0-13938.2 | 1.2 | 5.10 | 5.10 | 0.52 | 6.12 | 0.9 | 1.08 | 2.80 | 2.82 | Scattered SV. F. |
| 48 | 13938.2-13939.5 | 1.3 | 71.20 | 51.90 | 1.50 | 92.56 | 1.1 | 1.43 | 2.79 | 2.82 | Few SV. F. |
| 49 | 13939.5-13941.0 | 1.5 | 67.90 | 33.90 | 2.91 | 101.85 | 0.7 | 1.05 | 2.78 | 2.80 | Dense F. |
| 50 | 13941.0-13942.2 | 1.2 | 6.16 | 2.16 | 0.32 | 7.39 | 1.6 | 1.92 | 2.77 | 2.82 | Few SV. F. |
| 51 | 13942.2-13943.5 | 1.3 | 6.03 | 2.59 | 0.74 | 7.84 | 0.6 | 0.78 | 2.78 | 2.80 | Scattered SV. F. |
| 52 | 13943.5-13944.4 | 0.9 | 70.70 | 28.10 | 0.50 | 63.63 | 0.7 | 0.63 | 2.80 | 2.82 | SV. F. |
| - | 13944.4-13945.0 | 0.6 | - | - | - | - | - | - | - | - | Dense |
| 53 | 13945.0-13946.0 | 1.0 | 13.20 | 8.02 | 0.36 | 13.20 | 0.1 | 0.10 | 2.80 | 2.80 | Dense F. |
| 54 | 13946.0-13947.2 | 1.2 | 4.41 | 2.65 | 0.97 | 5.29 | 1.0 | 1.20 | 2.80 | 2.83 | Scattered SV. F. |
| 55 | 13947.2-13948.3 | 1.1 | 3.26 | 1.45 | 0.40 | 3.59 | 1.1 | 1.21 | 2.79 | 2.82 | Scattered SV. F. |
| 56 | 13948.3-13949.3 | 1.0 | 38.10 | 8.51 | 0.71 | 38.10 | 1.1 | 1.10 | 2.80 | 2.83 | SV. F. |
| 57 | 13949.3-13950.8 | 1.5 | 25.00 | 19.20 | 3.10 | 37.50 | 1.1 | 1.65 | 2.80 | 2.83 | Scattered PPV. F. |
| 58 | 13950.8-13952.2 | 1.4 | 18.00 | 14.90 | 1.05 | 25.20 | 0.5 | 0.70 | 2.81 | 2.83 | Dense F. |
| 59 | 13952.2-13953.8 | 1.6 | 10.80 | 2.24 | 0.30 | 17.28 | 1.3 | 2.08 | 2.79 | 2.82 | SV. F. |
| 60 | 13953.8-13954.9 | 1.1 | 1.54 | 0.77 | -0.1 | 1.69 | 0.7 | 0.77 | 2.80 | 2.82 | Dense F. |
| 61 | 13954.9-13955.9 | 1.0 | 1.32 | 1.08 | 0.17 | 1.32 | 1.3 | 1.30 | 2.78 | 2.81 | Few SV. F. |
| - | 13955.9-13956.5 | 0.6 | - | - | - | - | - | - | - | - | Dense |
| 62 | 13956.5-13957.4 | 0.9 | 16.60 | 3.65 | 0.86 | 14.94 | 1.6 | 1.44 | 2.78 | 2.82 | I. F. |
| 63 | 13957.4-13959.0 | 1.6 | 4.86 | 2.84 | 1.05 | 7.78 | 1.1 | 1.76 | 2.77 | 2.80 | Few PPV. F. |
| SS64 | 13959.0-13960.2 | 1.2 | 5.81 | - | - | 6.96 | 2.8 | 3.36 | - | - | I. F. |
| SS65 | 13960.2-13961.6 | 1.4 | 7.60 | - | - | 10.63 | 2.6 | 3.64 | - | - | I. F. |
| SS66 | 13961.6-13963.0 | 1.4 | 9.67 | - | - | 13.53 | 3.4 | 4.76 | - | - | I. F. |
| - | 13963.0-13964.0 | 1.0 | - | - | - | - | - | - | - | - | Drilled |

5.1 net @ 2.8% (Aug)

CORE LABORATORIES — CANADA, LTD.
CALGARY, ALBERTA

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

PAGE 7 of 10
FILE CNP-4-4774

| SAMPLE NUMBER | INTERVAL REPRESENTED FEET | | PERMEABILITY TO AIR MILLIDARCYS | | | PERMEABILITY FEET | POROSITY % | POROSITY FEET | DENSITY | | VISUAL EXAMINATION |
|---|---------------------------|-------|---------------------------------|-------|--------|-------------------|------------|---------------|---------|-------|--------------------|
| | DEPTH | THICK | KMAX | K90P | KV | | | | BULK | GRAIN | |
| CORE NO. 17 13964' - 13968' (Rec. 4.0') (1 box) | | | | | | | | | | | |
| 67 | 13964.0-13965.2 | 1.2 | 312.00 | 25.80 | 60.30 | 374.40 | 3.7 | 4.44 | 2.71 | 2.81 | SV. VF. |
| 68 | 13965.2-13966.8 | 1.6 | 56.70 | 4.48 | 34.60 | 90.72 | 1.8 | 2.88 | 2.76 | 2.81 | Few SV. VF. |
| SS69 | 13966.8-13968.0 | 1.2 | 107.00 | - | - | 128.39 | 2.6 | 3.12 | - | - | I. F. |
| <i>2.4 net @ 3.15</i> | | | | | | | | | | | |
| CORE NO. 18 13968' - 13973' (Rec. 5.0') (2 boxes) | | | | | | | | | | | |
| SS70 | 13968.0-13970.0 | 2.0 | 1.75 | - | - | 3.49 | 2.6 | 5.20 | - | - | I. F. |
| 71 | 13970.0-13971.4 | 1.4 | 5.80 | 1.91 | 1.39 | 8.12 | 3.4 | 4.76 | 2.70 | 2.80 | SV. VF. |
| 72 | 13971.4-13973.0 | 1.6 | 5.42 | 2.15 | 1.34 | 8.67 | 2.3 | 3.68 | 2.75 | 2.81 | Few SV. VF. |
| <i>5' net @ 2.13</i> | | | | | | | | | | | |
| - | 13973.0-14175.0 | 202.0 | - | - | - | - | - | - | - | - | Drilled |
| CORE NO. 19 14175' - 14208' (Rec. 31.0) (9 boxes) | | | | | | | | | | | |
| 73 | 14175.0-14176.5 | 1.5 | 16.80 | 8.93 | 6.44 | 25.20 | 1.4 | 2.10 | 2.79 | 2.83 | I. few SV. F. |
| 74 | 14176.5-14178.1 | 1.6 | 3.33 | 3.19 | 3.01 | 5.33 | 1.7 | 2.72 | 2.79 | 2.84 | I. F. |
| 75 | 14178.1-14179.8 | 1.7 | 8.48 | 4.47 | 1.61 | 14.42 | 1.8 | 3.06 | 2.79 | 2.84 | I. Stylol. F. |
| 76 | 14179.8-14181.7 | 1.9 | 5.44 | 1.00 | 0.26 | 10.34 | 1.4 | 2.66 | 2.80 | 2.84 | I. F. |
| 77 | 14181.7-14183.0 | 1.3 | 0.55 | 0.53 | 0.21 | 0.72 | 1.1 | 1.43 | 2.79 | 2.81 | I. Stylol. |
| 78 | 14183.0-14184.0 | 1.0 | 0.95 | 0.41 | 0.17 | 0.95 | 1.2 | 1.20 | 2.79 | 2.82 | I. Stylol. |
| 79 | 14184.0-14184.9 | 0.9 | 117.00 | 8.89 | 173.00 | 105.30 | 5.2 | 4.68 | 2.66 | 2.81 | I. F. |
| SS80 | 14184.9-14186.4 | 1.5 | 1.93 | - | - | 2.89 | 5.3 | 7.95 | - | - | I. F. |
| 81 | 14186.4-14187.3 | 0.9 | 28.90 | 18.30 | 6.16 | 26.01 | 6.8 | 6.12 | 2.63 | 2.82 | I. F. |
| 82 | 14187.3-14188.2 | 0.9 | 65.30 | 40.50 | 7.64 | 58.77 | 8.6 | 7.74 | 2.59 | 2.84 | I. F. |
| 83 | 14188.2-14189.2 | 1.0 | 16.30 | 11.20 | 6.50 | 16.30 | 4.0 | 4.00 | 2.70 | 2.81 | I. F. |
| 84 | 14189.2-14190.3 | 1.1 | 21.10 | 18.40 | 4.93 | 23.21 | 6.0 | 6.60 | 2.66 | 2.83 | I. F. |
| 85 | 14190.3-14191.4 | 1.1 | 13.70 | 10.20 | 7.09 | 15.07 | 4.5 | 4.95 | 2.70 | 2.83 | I. F. |
| 86 | 14191.4-14192.4 | 1.0 | 69.70 | 51.60 | 12.70 | 69.70 | 6.1 | 6.10 | 2.65 | 2.82 | I. F. |
| 87 | 14192.4-14193.4 | 1.0 | 21.80 | 16.40 | 12.10 | 21.80 | 5.4 | 5.40 | 2.68 | 2.83 | I. few PPV. F. |
| 88 | 14193.4-14194.4 | 1.0 | 19.20 | 9.94 | 4.20 | 19.20 | 5.0 | 5.00 | 2.68 | 2.82 | I. F. |
| 89 | 14194.4-14195.3 | 0.9 | 9.63 | 6.16 | 0.49 | 8.67 | 4.5 | 4.05 | 2.69 | 2.82 | I. few PPV. F. |
| 90 | 14195.3-14196.4 | 1.1 | 40.60 | 21.40 | 0.47 | 44.66 | 5.1 | 5.61 | 2.67 | 2.82 | I. F. |
| 91 | 14196.4-14197.2 | 0.8 | 19.90 | 16.10 | 16.70 | 15.92 | 5.0 | 4.00 | 2.67 | 2.81 | I. F. |

CORE LABORATORIES - CANADA, LTD.
CALGARY, ALBERTA

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

PAGE 8 of 10
FILE CNP-4-4774

| SAMPLE NUMBER | INTERVAL REPRESENTED FEET | | PERMEABILITY TO AIR MILLIDARCY | | | PERMEABILITY FEET | POROSITY % | POROSITY FEET | DENSITY | | VISUAL EXAMINATION |
|---|---------------------------|-------|--------------------------------|--------|-------|-------------------|------------|---------------|---------|-------|--------------------|
| | DEPTH | THICK | KMAX | K90° | KV | | | | BULK | GRAIN | |
| Core No. 19 (cont'd) | | | | | | | | | | | |
| 92 | 14197.2-14198.0 | 0.8 | 19.90 | 13.80 | 16.20 | 15.92 | 5.2 | 4.16 | 2.67 | 2.82 | I. few PPV. F. |
| 93 | 14198.0-14199.0 | 1.0 | 38.30 | 32.80 | 10.00 | 38.30 | 3.6 | 3.60 | 2.72 | 2.82 | I. few PPV. F. |
| 94 | 14199.0-14200.6 | 1.6 | 2.00 | 1.58 | 0.25 | 3.20 | 1.0 | 1.60 | 2.79 | 2.82 | Dense Sty. F. |
| 95 | 14200.6-14201.7 | 1.1 | 7.57 | 6.82 | 0.43 | 8.33 | 0.8 | 0.88 | 2.82 | 2.84 | Dense F. |
| 96 | 14201.7-14203.1 | 1.4 | 19.10 | 16.80 | 0.16 | 26.74 | 0.7 | 0.98 | 2.82 | 2.84 | Dense F. |
| 97 | 14203.1-14204.4 | 1.3 | 1.43 | 1.36 | 0.23 | 1.86 | 0.3 | 0.39 | 2.82 | 2.83 | Dense F. |
| 98 | 14204.4-14206.0 | 1.6 | 10.50 | 4.22 | 0.74 | 16.80 | 1.5 | 2.40 | 2.79 | 2.83 | Few SV. F. |
| - | 14206.0-14208.0 | 2.0 | - | - | - | - | - | - | - | - | Lost core |
| - | 14208.0-14410.0 | 202.0 | - | - | - | - | - | - | - | - | Drilled |
| CORE NO. 20 14410' - 14432' (Rec. 21.0') (6 boxes) | | | | | | | | | | | |
| 99 | 14410.0-14411.0 | 1.0 | 24.80 | 10.60 | 0.55 | 24.80 | 3.3 | 3.30 | 2.74 | 2.84 | PPV. few SV. F. |
| SS100 | 14411.0-14412.5 | 1.5 | 1.00 | - | - | 1.49 | 1.7 | 2.55 | - | - | I. rubble |
| SS101 | 14412.5-14413.6 | 1.1 | 0.47 | - | - | 0.51 | 6.8 | 7.48 | - | - | I. SV. rubble |
| 102 | 14413.6-14414.5 | 0.9 | 18.80 | 4.35 | 0.80 | 16.92 | 5.3 | 4.77 | 2.68 | 2.83 | PPV. few SV. |
| 103 | 14414.5-14415.5 | 1.0 | 34.20 | 33.00 | 0.09 | 34.20 | 2.2 | 2.20 | 2.77 | 2.83 | SV. |
| 104 | 14415.5-14416.2 | 0.7 | 12.00 | 4.58 | 0.17 | 8.40 | 2.2 | 1.54 | 2.74 | 2.81 | I. |
| 105 | 14416.2-14417.3 | 1.1 | 10.70 | 2.72 | 0.08 | 11.87 | 1.4 | 1.54 | 2.78 | 2.82 | Few SV. |
| 106 | 14417.3-14418.2 | 0.9 | 1209.00 | 274.00 | 9.59 | 1088.10 | 3.8 | 3.42 | 2.67 | 2.77 | SV. few LV. |
| 107 | 14418.2-14419.2 | 1.0 | 28.90 | 28.60 | 0.12 | 28.90 | 1.6 | 1.60 | 2.75 | 2.80 | Few SV. F. |
| 108 | 14419.2-14420.2 | 1.0 | 17.00 | 10.60 | 0.29 | 17.00 | 1.5 | 1.50 | 2.74 | 2.78 | Few SV. |
| SS109 | 14420.2-14421.1 | 0.9 | 0.18 | - | - | 0.15 | 1.4 | 1.26 | - | - | I. F. |
| SS110 | 14421.1-14422.2 | 1.1 | 0.18 | - | - | 0.19 | 1.5 | 1.65 | - | - | I. F. |
| 111 | 14422.2-14423.1 | 0.9 | 1.66 | 1.14 | 0.08 | 1.49 | 1.7 | 1.53 | 2.79 | 2.84 | Few SV. |
| 112 | 14423.1-14423.8 | 0.7 | 37.40 | 14.60 | 5.70 | 26.18 | 1.3 | 0.91 | 2.80 | 2.83 | Few SV. F. |
| 113 | 14423.8-14424.9 | 1.1 | 193.00 | 137.00 | 0.84 | 212.30 | 0.5 | 0.55 | 2.80 | 2.81 | Few PPV. F. |
| 114 | 14424.9-14425.9 | 1.0 | 10.50 | 4.21 | 0.06 | 10.50 | 1.3 | 1.30 | 2.76 | 2.80 | Few SV. F. |
| 115 | 14425.9-14427.0 | 1.1 | 2.29 | 0.96 | 0.10 | 2.52 | 2.3 | 2.53 | 2.74 | 2.80 | Few SV. F. |
| 116 | 14427.0-14427.7 | 0.7 | 50.20 | 24.10 | 0.09 | 35.14 | 4.2 | 2.94 | 2.67 | 2.79 | Few SV. LV. |

CORE LABORATORIES - CANADA, LTD.
CALGARY, ALBERTA

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

PAGE 9 of 10
FILE CNP-4-4774

| SAMPLE NUMBER | INTERVAL REPRESENTED FEET | | PERMEABILITY TO AIR MILLIDARCYS | | | PERMEABILITY FEET | POROSITY % | POROSITY FEET | DENSITY | | VISUAL EXAMINATION | |
|-----------------------------|---------------------------|-------|---------------------------------|-------|------|-------------------|------------|---------------|---------|-------|--------------------|--|
| | DEPTH | THICK | KMAX | K90° | KV | | | | BULK | GRAIN | | |
| <u>Core No. 20 (cont'd)</u> | | | | | | | | | | | | |
| 117 | 14427.7-14428.7 | 1.0 | 79.40 | 63.20 | 0.01 | 79.40 | 2.9 | 2.90 | 2.72 | 2.80 | Few SV. | |
| SS118 | 14428.7-14429.9 | 1.2 | 0.06 | - | - | 0.06 | 1.3 | 1.56 | - | - | I. F. | |
| SS119 | 14429.9-14431.0 | 1.1 | 0.18 | - | - | 0.19 | 1.8 | 1.98 | - | - | I. F. | |
| - | 14431.0-14432.0 | 1.0 | - | - | - | - | - | - | - | - | Lost core | |

CORE LABORATORIES - CANADA, LTD.

Petroleum Reservoir Engineering

WELL: PAN AM BEAVER YT G-01

PAGE: 10 of 10

FORMATION: DEVONIAN

FILE: CNP-4-4774

SUMMARY INTERVAL: 13663.0 - 14432.0

TOTAL FOOTAGE: 769.0

FOOTAGE ANALYZED 156.9

FOOTAGE NOT ANALYZED: TOTAL: 612.1 DENSE 36.1 LOST 9.0 DRILLED 567.0 *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 AVERAGE RESID. OIL % | WEIGHTED AVERAGE TDT. WATER % |
|---------|--------------------|---------------------------|---------------|----------------------------|------------|-------------------------------|-------------------------------|
| 156.9 | 100.00 | 1.84 | 288.78 | 25.99 | 4077.65 | .00 | .00 |
| 3.0 | 1.91 | 1.60 | 4.80 | .02 | .07 | .00 | .00 |
| 5.8 | 3.70 | 2.22 | 12.85 | .29 | 1.70 | .00 | .00 |
| 11.9 | 7.58 | 1.03 | 12.29 | .69 | 8.21 | .00 | .00 |
| 79.9 | 50.93 | 1.51 | 120.43 | 4.27 | 341.50 | .00 | .00 |
| 56.3 | 35.88 | 2.46 | 138.41 | 66.18 | 3726.17 | .00 | .00 |

*NOT ANALYZED BY REQUEST

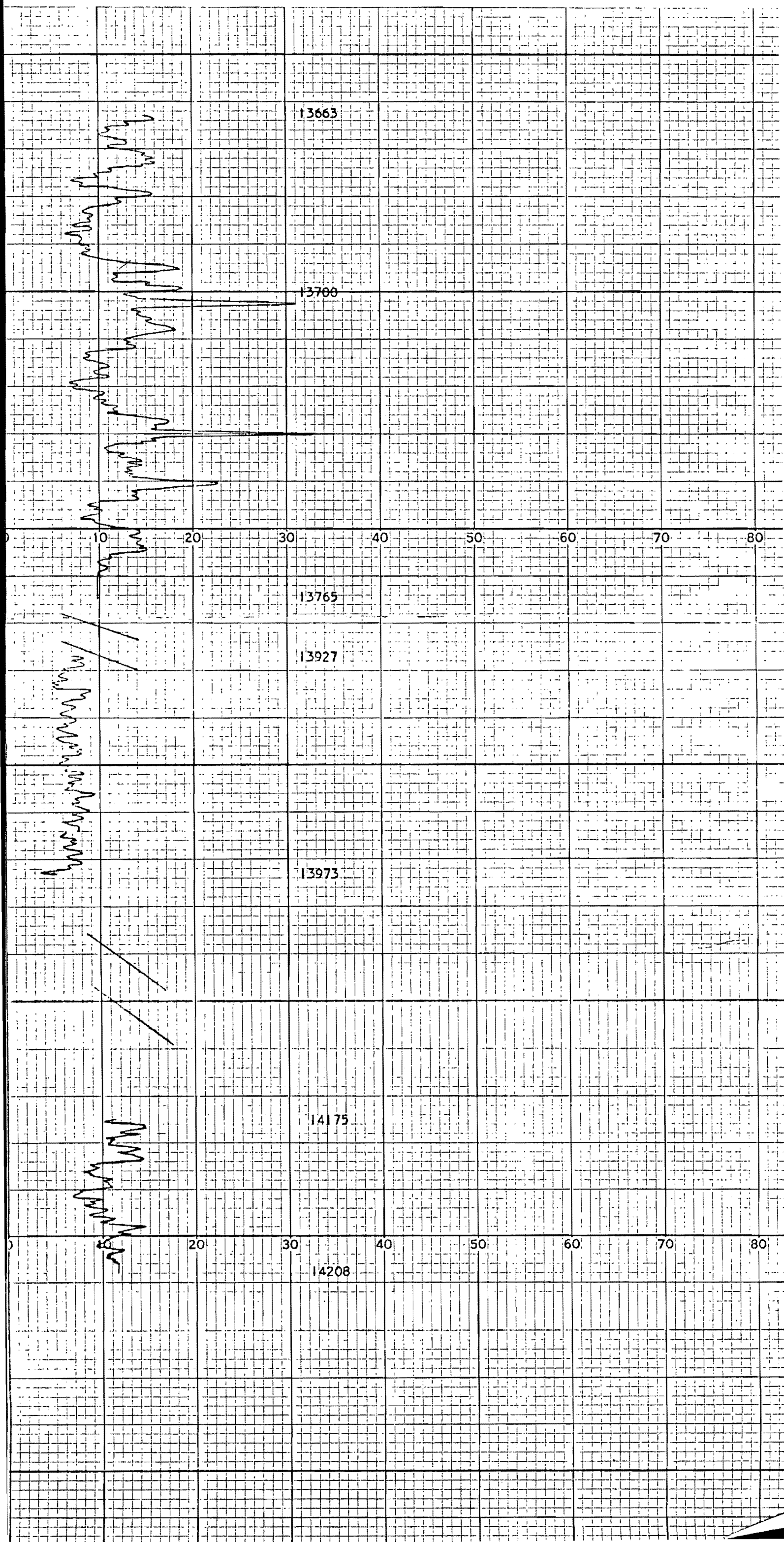
CORE-GAMMA CORRELATION

These analyses, reports or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories Canada Ltd. (all errors and omissions excepted); but Core Laboratories Canada Ltd. and its officers and employees, assume no responsibility and make no warranty or representation, as to the productivity, gross operating, or performance of any oil, gas or other mineral well or used in connection with such report or used or relied upon.

VERTICAL SCALE: 5" = 100'

T.C. 11 SECS

SENS. 5000 CPM.





CORE LABORATORIES - CANADA LTD.

Petroleum Reservoir Engineering

AMOCO CANADA PETROLEUM
COMPANY LTD.

COMPANY _____ FIELD WILDCAT - BEAVER RIVER AREA FILE CNP-1-9655

WELL PAN AM BEAVER YT G-01 DATE JULY 8/69

LOCATION 60°00' 25.00"N; 124°15'48.00W PROV YUKON TERRITORY ELEV. _____

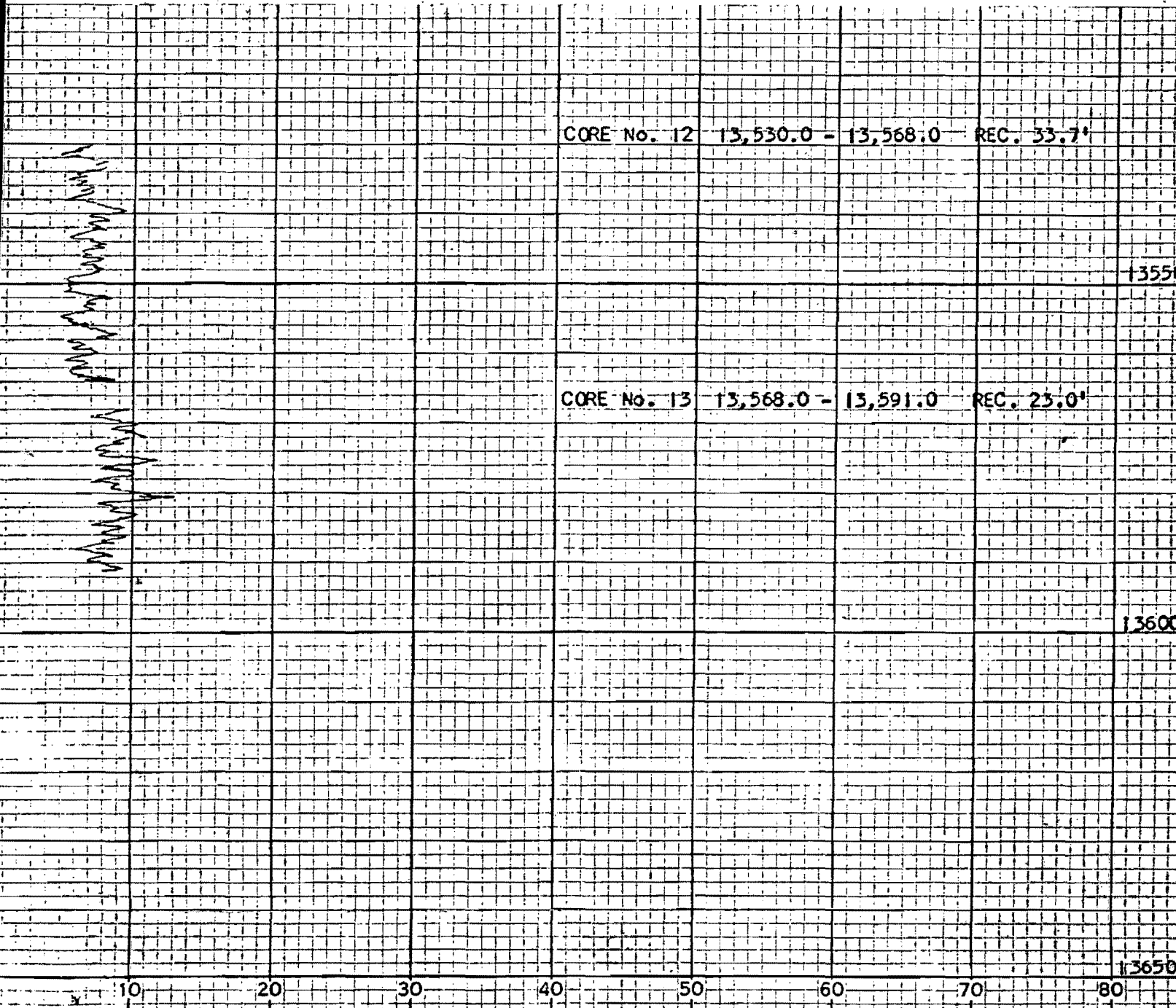
CORE-GAMMA CORRELATION

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories - Canada Ltd. (all errors and omissions excepted); but Core Laboratories - Canada Ltd. and its officers and employees, assume no responsibility and make no warranty or representation, as to the productivity, proper operation, or practicability of any well or other mineral well or sand in connection with such report or with any other well.

TC 11 SECS

VERTICAL SCALE: 5" = 100'

SENS 5000 CPM



GAS ANALYSIS REPORT: Lab. No. E69-9531 Received: Mar. 18, 1969 Reported: March 21, 1969

Well: Pan Am. Beaver River C-1 Operator: Pan American Petroleum Corporation

Field or Area: _____ Location: _____ Elev.: K.B. Grd. _____

Zone and Formation: _____ Sample Interval: _____

Well production at sampling time: Oil _____ bpd; Gas _____ MCFD; Water _____ bpd.

Sampled from: _____ Sampled by: _____ Date: _____

Pressure: (a) at point of sampling _____ psig (b) Gas Bomb pressure _____ psig

Temperature: (a) at point of sampling _____ °F (b) Separator _____ °F

Pressures: Reservoir _____ Tubing _____ Casing _____ Separator _____

OTHER PERTINENT DATA ----- Container: GL-215

(Signed)

| COMPOSITION | % by Volume | G.P.M. in Imp. Gal. @ 60°F. & 14.65 PSIA | G.P.M. (Calculated) | SPECIFIC GRAVITY |
|------------------|-------------|--|--|--|
| Helium | .02 | | pentanes + .000 | Calculated .569 |
| Hydrogen sulfide | .00 | | at 12 lbs. .000 | by Weight .572 |
| Carbon dioxide | 1.03 | | at 15 lbs. .000 | CRITICALS (Calculated) Pc 675.1 Tc 345.3 |
| Nitrogen | 1.08 | | at 22 lbs. .000 | |
| Methane | 97.54 | | at 26 lbs. .000 | |
| Ethane | .31 | | VAPOR PRESSURE (Calc.) @ 100°F. Pentanes + .00 | |
| Propane | .02 | .005 | H ₂ S Grains per 100 cu. ft. @ 60°F. & 14.65 p.s.i.a. 0 | |
| Isobutane | .00 | .000 | GROSS B.T.U. (Calc.) @ 60°F. & 14.65 p.s.i.a. (dry) 988.0 | |
| N-butane | .00 | .000 | Acid Gas Free 998.3 (sat.) 970.7 | |
| Isopentane | .00 | .000 | DEW POINT (Calc.) p.s.i. 950 1050 1200 | |
| N-pentane | .00 | .000 | FAH -56 -56 -56 | |
| Hexanes | .00 | .000 | Mol. Wt. Total Gas 16.506 | Heptanes + .000 |
| Heptanes | .00 | .000 | | |
| Octanes | .00 | .000 | | |
| Nonanes | .00 | .000 | | |
| Decanes + | .00 | .000 | | |
| TOTAL | 100.00 | .005 | | |

Dist'd 9/15

GAS ANALYSIS REPORT: Lab. No. C69-5177 Received: AUG. 25, 1969 Reported: August 27, 1969

Well: Oil on Beaver River #3 YTG-01 Operator: AMOCO CANADA PETROLEUM COMPANY LTD.

Field or Area: _____ Location: _____ Elev.: K.B. _____ Grd. _____

Zone and Formation: _____ Sample Interval: _____

Well production at sampling time: Oil _____ bpd; Gas _____ MCFD; Water _____ bpd.

Sampled from: _____ Sampled by: _____ Date: _____

Pressure: (a) at point of sampling _____ psig (b) Gas Bomb pressure _____ psig

Temperature: (a) at point of sampling _____ °F (b) Separator _____ °F

Pressures: Reservoir _____ Tubing _____ Casing _____ Separator _____

OTHER PERTINENT DATA... Sample Containers: HA 8, SS20

(Signed)

| COMPOSITION | % by Volume | G.P.M. in Imp. Gal. @ 60°F. & 14.65 PSIA | G.P.M. (Calculated) | SPECIFIC GRAVITY |
|------------------|-------------|--|--|------------------------|
| Helium | .01 | | pentanes + .000 | Calculated .644 |
| Hydrogen sulfide | .63 | | at 12 lbs. .000 | by Weight .645 |
| Carbon dioxide | 7.35 | | at 15 lbs. .000 | CRITICALS (Calculated) |
| Nitrogen | 3.67 | | at 22 lbs. .000 | Pc 699.6 |
| Methane | 88.25 | | at 26 lbs. .000 | Tc 356.7 |
| Ethane | .09 | | VAPOR PRESSURE (Calc.) @ 100°F. Pentanes + | .00 |
| Propane | .00 | .000 | H ₂ S Grains per 100 cu. ft. @ 60°F. & 14.65 p.s.i.a. | 395 |
| Isobutane | .00 | .000 | GROSS B.T.U. (Calc.) @ 60°F. & 14.65 p.s.i.a. (dry) | 894.1 |
| N-butane | .00 | .000 | Acid Gas Free 967.3 | (sat.) 878.4 |
| Isopentane | .00 | .000 | DEW POINT (Calc.) p.s.i. | 950 1050 1200 |
| N-pentane | .00 | .000 | FAH -56 | -56 -59 |
| Hexanes | .00 | .000 | Mol. Wt. Total Gas 18.662 | Heptanes + .000 |
| Heptanes | .00 | .000 | Sample received with a pressure of 225 psig. at 78°F. | |
| Octanes | .00 | .000 | | |
| Nonanes | .00 | .000 | | |
| Decanes + | .00 | .000 | | |
| TOTAL | 100.00 | .000 | | |

DIVISION LABORATORY REPORT

No. C-108/69DATE August 7, 1969

TO Mr. J. Towers,
Halliburton Services Limited,
Fort Nelson, B. C.

This report is the property of Halliburton Oil Well Cementing Co. Ltd. and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Oil Well Cementing Co. Ltd.

WE GIVE BELOW RESULTS OF OUR EXAMINATION OF Surface water and cement blends

SUBMITTED BY Amoco Canada Petroleum Company Ltd.

MARKED Amoco Beaver River C-1

PURPOSE:

One sample of water and two cement blends were submitted for Thickening Time Tests. The cement blends were identified as:

- A. Inland Halliburton Oilwell Cement plus 20% Silica Flour and 1.25% HR-12.
- B. Inland Halliburton Oilwell Cement plus 20% Silica Flour, 4% Gel and 1.25% HR-12.

NOTE: Most of the mixing water leaked from the container in transit. Sample B also leaked from the container and could not be tested.

CONCLUSIONS:

A thickening time of 2 hours, 30 minutes was determined for a 15.7 pound per gallon slurry using the submitted water and cement blend A when evaluated for 14,000 casing cementing schedule with the bottom hole circulating temperature adjusted to 280°F (BHST is assumed to be 360°F).

PROCEDURE:

The cement slurry was prepared and evaluated in accordance with procedures outlined in API RP-10B. The static temperature of the test was adjusted from a standard 206°F to 280°F.

COMPANY Amoco Canada
 WFL C-1
 FIELD Beaver River
 LAB
 SEC
 TW/P
 RGE
 W

LABORATORY REPORT

DATA:

Cement slurry properties: Inland Halliburton Oilwell Cement plus 20% Silica Flour and 1.25% HR-12 mixed with 5.21 gallons of surface water per 80 pounds cement.

| | |
|---------------|------------------------|
| Slurry weight | 15.7 pounds per gallon |
| Slurry volume | 1.21 cubic feet. |

Thickening Time: 3 hours, 30 minutes at 14,000 foot casing cementing conditions with a BHCT of 280°F.

Data of the above tests are recorded in Workbook No. 32, Page 61.

Laboratory Analyst:
Beecroft 4:00

Respectfully submitted,

W. H. Beecroft

WHB:eb

W. H. Beecroft,
Division Chemist

cc: F. M. Anderson
L. F. Maier
V. H. Timmins
Amoco Canada (Grande Prairie)

DIVISION LABORATORY REPORT

No. C-120/69

DATE August 12, 1969

TO Mr. T.H. Timmins
Halliburton Services Limited
Fort St. John, B.C.

This report is the property of Halliburton Oil Well Cementing Co. Ltd. and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Oil Well Cementing Co. Ltd.

WE GIVE BELOW RESULTS OF OUR EXAMINATION OF Surface Water and Cement Blend

SUBMITTED BY Amoco Canada Petroleum Company Ltd.

MARKED Amoco Beaver River C-1

PURPOSE

One gallon of surface water and two pints of cement blend, identified as Inland Halliburton Oilwell Cement plus 1.75% HR-12, were submitted for a thickening time test.

CONCLUSIONS

A thickening time of 5 hours 25 minutes was recorded for a 15.6 pound per gallon slurry, prepared with the submitted samples, when evaluated at a 14,000 foot squeeze cementing schedule with the bottom hole circulating temperature adjusted to 320°F.

PANY Amoco Canada Petroleum Company Ltd. WLL C-1 FIELD Beaver River LBD SEC TWP RGR W

File

C-120-69
August 12, 1969

PROCEDURE

A 15.6 pound per gallon slurry was prepared in accordance with procedures outlined in API RP-10B. API thickening time schedule No. 19 (14,000 foot squeeze and plug back cementing schedule) was modified to an estimated bottom hole circulating temperature of 320°F. (Bottom hole static temperature reported to be 350°F).

DATA

Thickening Time Modified Schedule No. 19
5 hours 25 minutes

Data of the above tests are recorded in Workbook No. 32, Page 67.

Laboratory Analyst:
W.H. Beecroft 6:00

Respectfully submitted,

W.H. Beecroft

W.H. Beecroft,
Division Chemist

cc: F.M. Anderson
L.F. Maier
G.C. Shaw
Amoco of Canada
Ltd., Grand Prairie

Received: April 16, 1969 Reported: April 21, 1969 Well: Location: Pan Am. Beaver River C-1

Operator: PAN AMERICAN PETROLEUM CORPORATION Field or Area: Beaver River - Yukon

Elev.: K.B. Grd. Zone/Formation: Sample Interval:

Method of Production: D.S.T. #2 Sampled from: Top of Tool Sampled by: --- Date: April 8, 1969

OTHER PERTINENT DATA

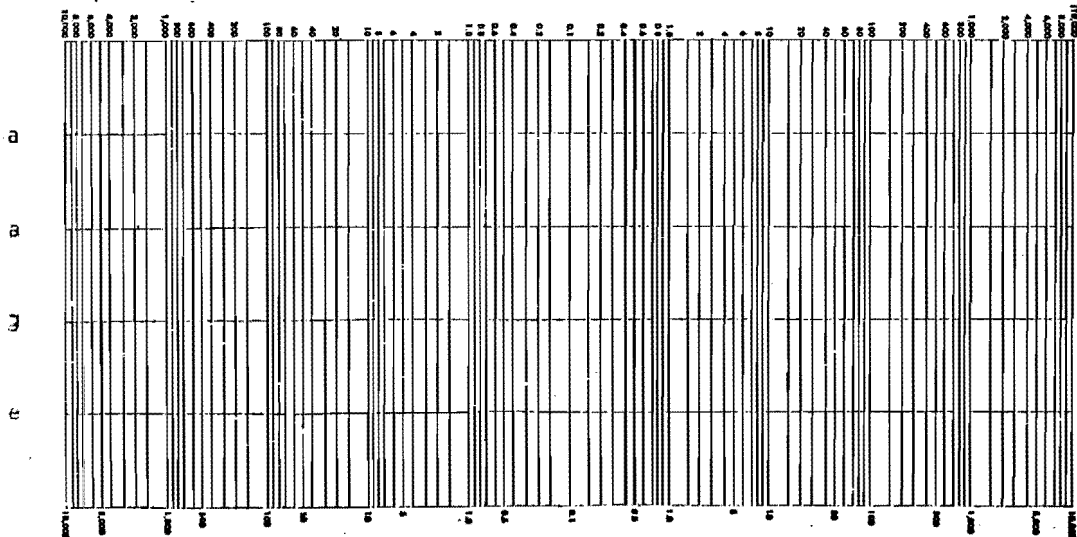
DST interval 8700 - 8868

(Signed)

| | Na | K | Ca | Mg | | | | SO ₄ | Cl | | | CO ₃ | HCO ₃ | |
|----|----|---|----|----|--|--|--|-----------------|-----|--|--|-----------------|------------------|--|
| /L | | | | | | | | | 622 | | | | | |
| /L | | | | | | | | | | | | | | |
| % | | | | | | | | | | | | | | |

Total Solids Mg/L: By Evaporation. Fe Specific Gravity @60°F Observed pH 9.2 @ 72 °F
 Calculated After Ignition H₂S Refractive Index @25°C Resistivity 2.51 ohm meters @ 68 °F

Pattern Unit Meq./L



Remarks and Conclusions Colourless water filter mud. The water is mud filtrate water.
 E69-9956-1: Top of cushion.
 RESISTIVITY: 23.99 Ohm-Meters @ 68°F.
 HCO₃ Colourless water with some sediment and fine suspended matter.
 SO₄ E69-9956-2: Sampled from 352' above tool.
 RESISTIVITY: 2.77 Ohm-Meters @ 68°F.
 CO₃ Colourless water filtered from mud.

WF REPORTS
Dist'd 6/10.

CHEMICAL ANALYSIS

for

PAN AMERICAN PETROLEUM CORPORATION

Pan Am Beaver C-1
Beaver River
Yukon Territories



LABORATORIES — CANADA
PETROLEUM RESERVOIR ENGINEERING



GAS ANALYSIS

Company Pan American Petroleum Corporation Page 1 of 5
 Well Pan Am Beaver C-1 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



CAL-2-296

File CBH-2-4755 Page 2 of 5

Company Pan American Petroleum Corporation

Well Pan Am Beaver C-1 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 Total Solids: Calculated 46,730 mg/liter
Specific gravity 1.0326 @ 60°F By evaporation @ 110°C - mg/liter
pH 6.65 H2S Absent By evaporation @ 180°C - mg/liter
Refractive Index 1.342 @ 75°F At ignition - mg/liter

MILLIGRAMS PER LITER

Table with 12 columns: Na + K, Ca, Mg, Fe, Ba, Br, I, Cl, HCO3, SO4, CO3, OH. Values: 13,908, 3,562, 296, Pres., Abs., -, -, 28,115, 849, -, -, -

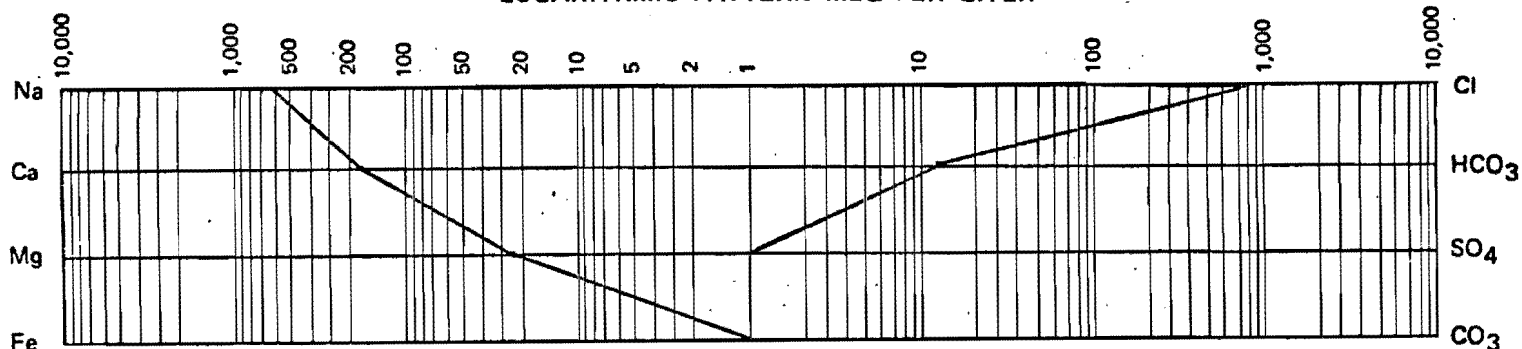
PER CENT CALCULATED SOLIDS

Table with 12 columns: Na + K, Ca, Mg, Fe, Ba, Br, I, Cl, HCO3, SO4, CO3, OH. Values: 29.8, 7.6, 0.6, Pres., Abs., -, -, 60.2, 1.8, -, -, -

MEQ PER LITER

Table with 12 columns: Na + K, Ca, Mg, Fe, Ba, Br, I, Cl, HCO3, SO4, CO3, OH. Values: 604.7, 177.7, 24.3, Pres., Abs., -, -, 792.8, 13.9, -, -, -

LOGARITHMIC PATTERN MEQ PER LITER





E 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 C-1 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 | - | - | - |

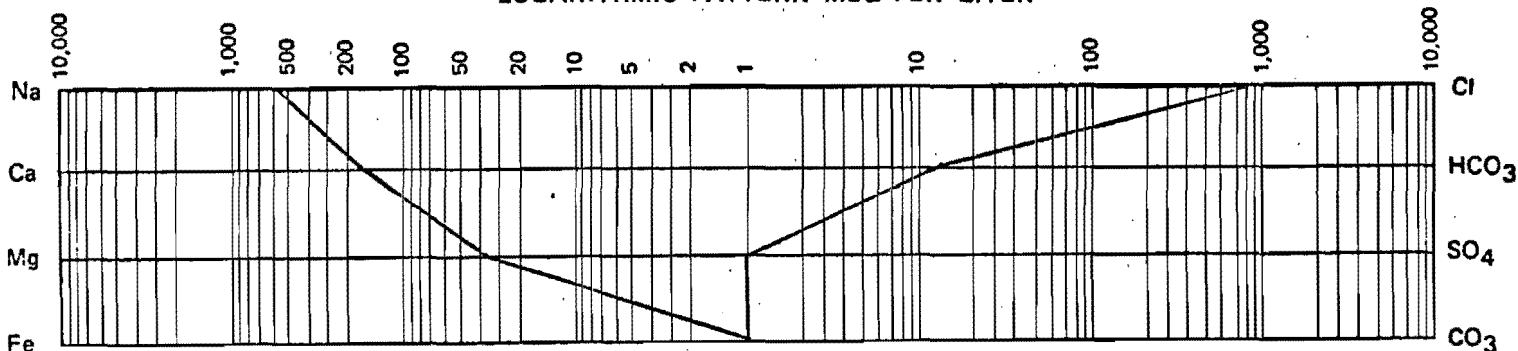
PER CENT CALCULATED SOLIDS

| | | | | | | | | | | | |
|------|-----|-----|-------|------|---|---|------|-----|---|---|---|
| 29.0 | 7.8 | 1.0 | Pres. | Abs. | - | - | 60.3 | 1.9 | - | - | - |
|------|-----|-----|-------|------|---|---|------|-----|---|---|---|

MEQ PER LITER

| | | | | | | | | | | | |
|-------|-------|------|-------|------|---|---|-------|------|---|---|---|
| 580.4 | 179.8 | 37.0 | Pres. | Abs. | - | - | 783.1 | 14.1 | - | - | - |
|-------|-------|------|-------|------|---|---|-------|------|---|---|---|

LOGARITHMIC PATTERN MEQ PER LITER





E LABORATORIES - CANADA L.
 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 C-1 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 Data 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 | - | - | - |

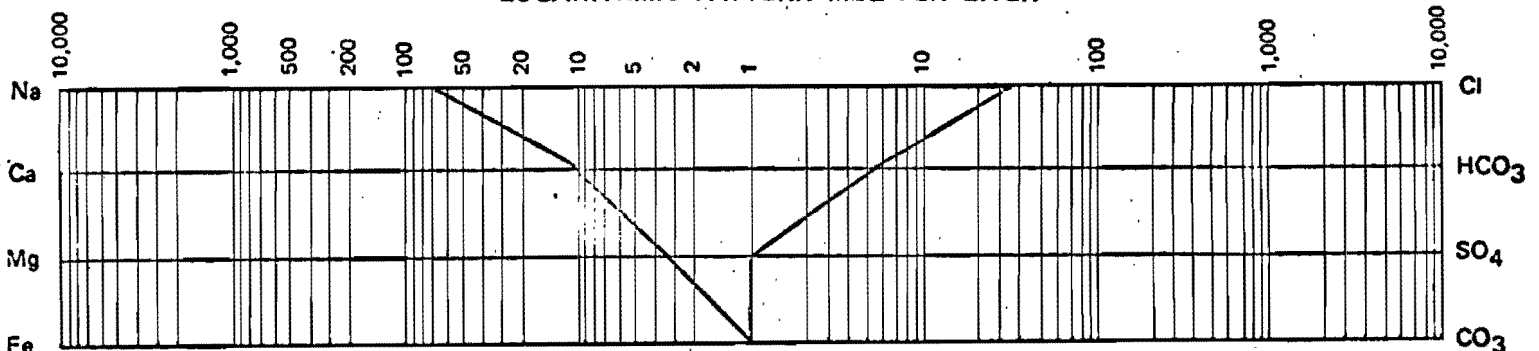
PER CENT CALCULATED SOLIDS

| | | | | | | | | | | | |
|------|-----|-----|-------|------|---|---|------|-----|---|---|---|
| 26.8 | 3.6 | 0.7 | Pres. | Abs. | - | - | 21.5 | 4.7 | - | - | - |
|------|-----|-----|-------|------|---|---|------|-----|---|---|---|

MEQ PER LITER

| | | | | | | | | | | | |
|------|------|-----|-------|------|---|---|------|-----|---|---|---|
| 67.8 | 10.6 | 3.4 | Pres. | Abs. | - | - | 35.3 | 5.7 | - | - | - |
|------|------|-----|-------|------|---|---|------|-----|---|---|---|

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 C-1 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

Specific gravity 1.0034 @ 60°F

pH 9.35 H₂S Absent

Refractive Index 1.334 @ 73° F

Total Solids:

Calculated 3,070 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 |
|--------|----|----|-------|------|----|---|-------|------------------|-----------------|-----------------|----|
| 1,026 | 30 | 8 | Trace | Abs. | - | - | 1,000 | 717 | 227 | 62 | - |

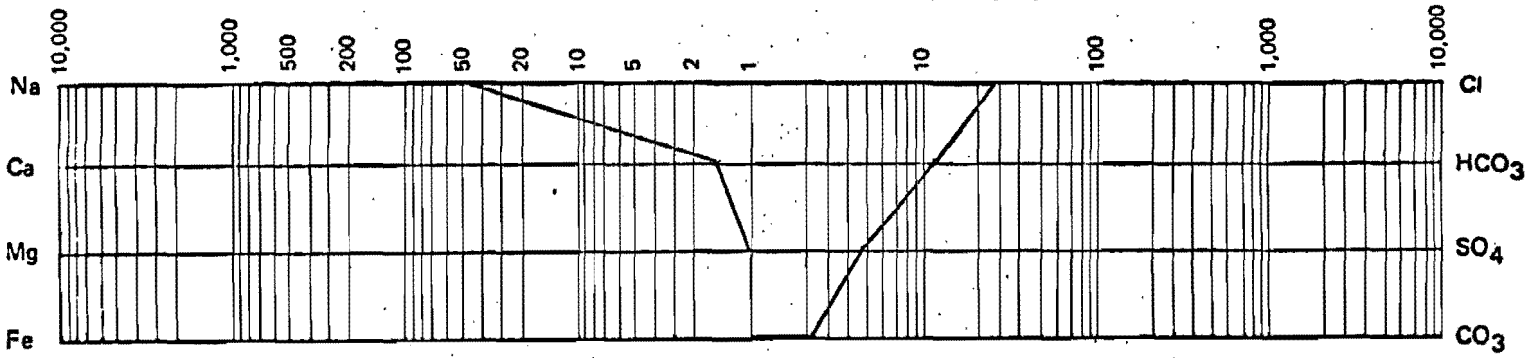
PER CENT CALCULATED SOLIDS

| | | | | | | | | | | | |
|------|-----|-----|-------|------|---|---|------|------|-----|-----|---|
| 33.4 | 1.0 | 0.3 | Trace | Abs. | - | - | 32.6 | 23.3 | 7.4 | 2.0 | - |
|------|-----|-----|-------|------|---|---|------|------|-----|-----|---|

MEQ PER LITER

| | | | | | | | | | | | |
|------|-----|-----|-------|------|---|---|------|------|-----|-----|---|
| 44.6 | 1.5 | 0.7 | Trace | Abs. | - | - | 28.2 | 11.8 | 4.7 | 2.1 | - |
|------|-----|-----|-------|------|---|---|------|------|-----|-----|---|

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 | - | - | - |

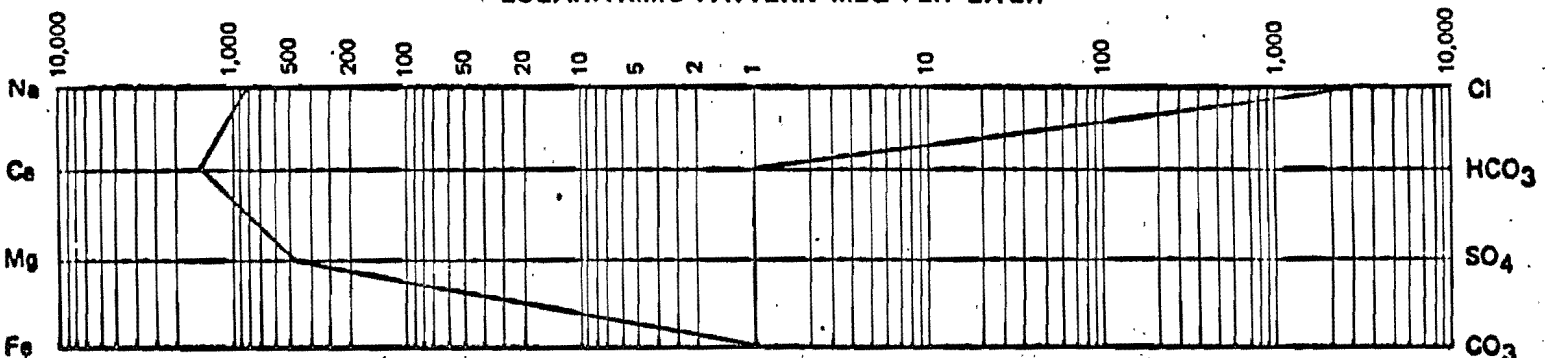
PER CENT CALCULATED SOLIDS

| | | | | | | | | | | | |
|------|------|-----|-------|------|---|---|------|-----|---|---|---|
| 11.7 | 20.1 | 3.7 | Pres. | Abs. | - | - | 64.5 | 0.0 | - | - | - |
|------|------|-----|-------|------|---|---|------|-----|---|---|---|

MEQ PER LITER

| | | | | | | | | | | | |
|-------|--------|-------|-------|------|---|---|--------|-----|---|---|---|
| 810.8 | 1603.7 | 492.6 | Pres. | Abs. | - | - | 2907.1 | 0.9 | - | - | - |
|-------|--------|-------|-------|------|---|---|--------|-----|---|---|---|

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 | - | - | - | - |

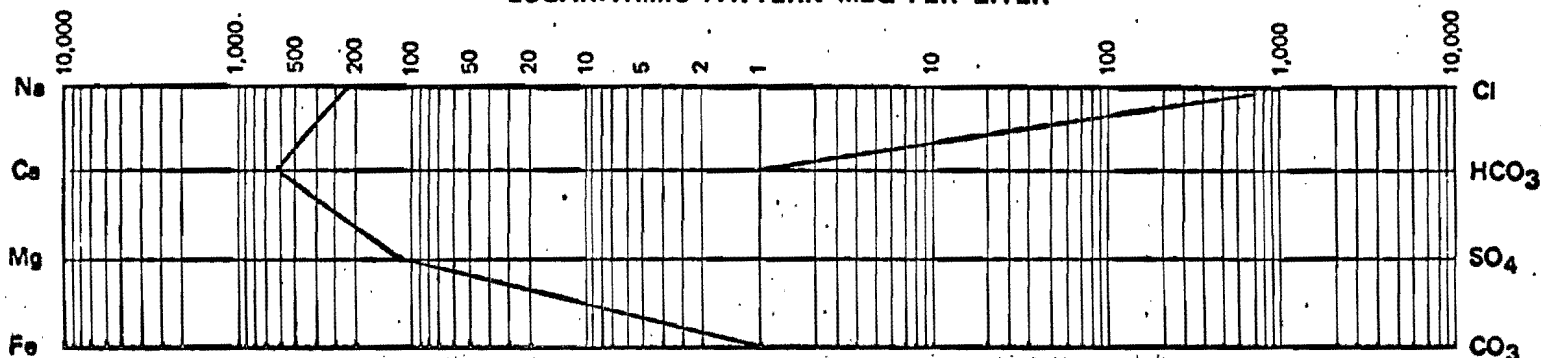
PER CENT CALCULATED SOLIDS

| | | | | | | | | | | | |
|------|------|-----|-------|------|---|---|------|---|---|---|---|
| 10.3 | 22.9 | 2.7 | Trace | Abs. | - | - | 64.1 | - | - | - | - |
|------|------|-----|-------|------|---|---|------|---|---|---|---|

MEQ PER LITER

| | | | | | | | | | | | |
|-------|-------|-------|-------|------|---|---|-------|---|---|---|---|
| 242.6 | 616.8 | 119.4 | Trace | Abs. | - | - | 978.8 | - | - | - | - |
|-------|-------|-------|-------|------|---|---|-------|---|---|---|---|

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-G-01~~ YT-G-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, 1969

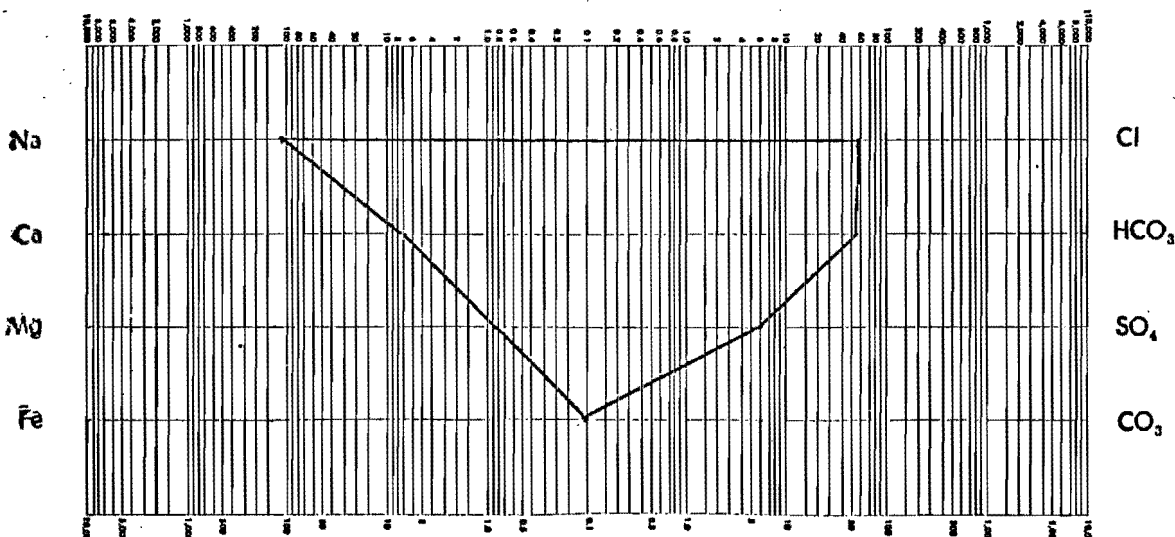
OTHER PERTINENT DATA Recovered 7200' fluid.

(Signed)

| | Na | K | Ca | Mg | | | | SO ₄ | Cl | | | CO ₂ | HCO ₃ | | |
|--------|--------|---|------|------|--|--|--|-----------------|-------|--|--|-----------------|------------------|--|--|
| Mg./L | 2,596 | | 154 | 10 | | | | 289 | 2,104 | | | | 3,420 | | |
| Meq./L | 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 6,576 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~~ YT-G-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

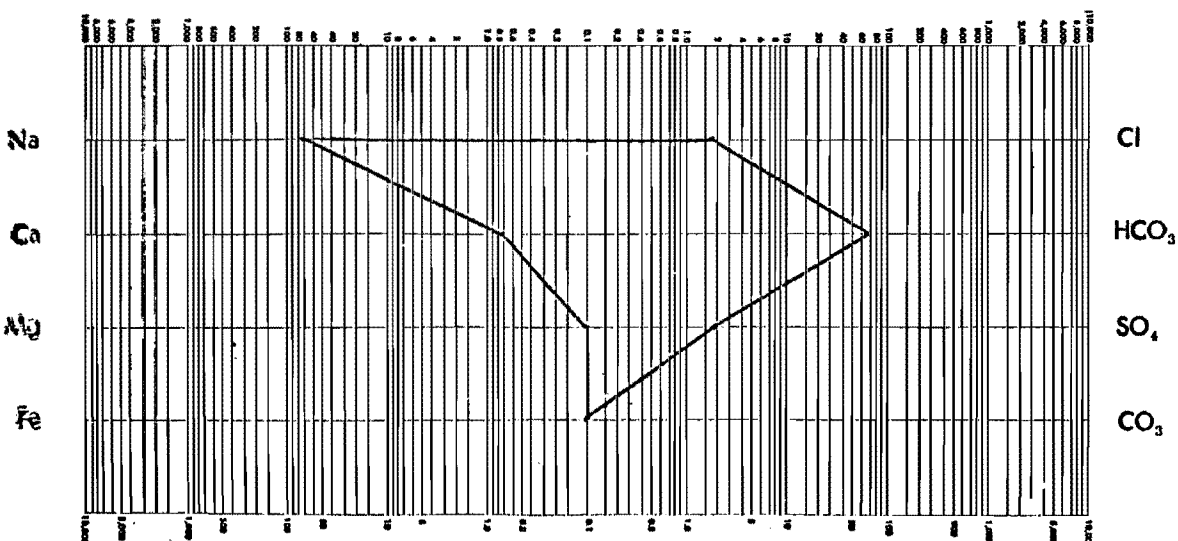
Recovered 7200' fluid.

(Signed)

| | Na | K | Ca | Mg | | | | | SO ₄ | Cl | | | CO ₃ | 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 | | |
| Meq. % | 49.44 | | 0.51 | 0.05 | | | | | 1.34 | 1.21 | | | | 47.45 | | |

Total Solids Mg/L: By Evaporation 6,384 Fe --- Specific Gravity 1.004 @60°F Observed pH 8.2 @ 78 °
 Calculated 6,150 After Ignition 4,376 H₂S --- Refractive Index 1.3330 @25°C Resistivity 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-YT-G-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 Tool

Sampled by:

Date: Aug. 6, 196

OTHER PERTINENT DATA

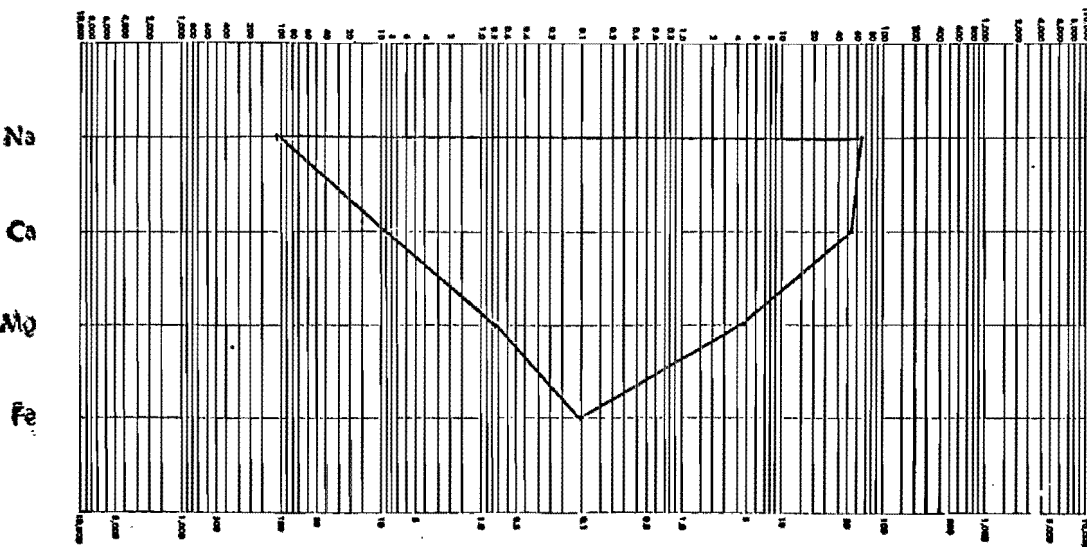
Recovered 7200' fluid.

(Signed)

| | Na | K | Ca | Mg | | | | SO ₄ | Cl | | | CO ₃ | 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 9,104 Fe Trace Specific Gravity 1.007 @60°F Observed pH 7.2 @ 77 °F
 Calculated 8,841 After Ignition 6,616 H₂S Present Refractive Index 1.3330 @25°C Resistivity 1.01 ohm meters @ 68 °F

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.