British Columbia
Energy and Minerals Division
Petroleum Lands Branch

Map 1

LIARD BASIN

Regional Trends

by

P. A. MONAHAN, P. Geo.
MONAHAN PETROLEUM CONSULTING

kilometres 0 5 10 15 20 25 kilometres

Chinkeh Sand present:
(western boundary poorly defined)

Triassic Subcrop edge

Toad Subcrop edge

Mattson Subcrop edge

Mattson and Debolt outcrop

Surface Anticline

Note: Bovie Lake structure coincident with Mississippian outcrop and Triassic and Mattson edges

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BRITISH COLUMBIA
Energy and Minerals Division
Petroleum Lands Branch

Map 2

LIARD BASIN

Cross-section Locations

by

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kilometres 0 5 10 15 20 25 kilometres

Cross Sections:

M1, M2, M3, M4

P1, P2, P3, P4

B1, B2

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NORTH

SOUTH

b - 85 - H 94 - O - 11
KB 650 m
WA 3081

c - 24 - H 94 - O - 11
KB 610 m
WA 3328

d - 87 - A 94 - O - 11
KB 562 m
WA 3330

d - 67 - A 94 - O - 11
KB 528 m
WA 3484

d - 09 - A 94 - O - 11
KB 479 m
WA 88

b - 85 - H 94 - O - 11

AccuCard — 00/B-085-H/094-O-11/0 (Lic 3081)

Well Reader [as at February 8, 1999]

Well Name: AQUIT ET AL TATTOO B- 085-H/094-O- 11
Operator: AQUITAINE COMPANY OF CANADA
License: 1972-01-25
Spud: 1972-02-22
Rig Rel: 1972-03-20

KB: 649.5 m
Gr Elev: 645.3 m
TVD: 1459.1 m

DST's
1. 920.5-957.1 (GARBUTT,PERM,MATTSON)
VO: 5/90 SI: 60/90 min
FP: 1310/1413 KPa
SIP: 7150/7115 KPa
HP: 9549/9294 KPa
"GTS 5 MIN @ 1831.31 M3/D MAX 5634.80 M3/D. REC 176.78M GC DRLG MUD. "
2. 969.3-1005.8 (MATTSON)
VO: 5/90 SI: 60/90 min
FP: 2737/4006 KPa
SIP: 7467/7453 KPa
HP: 10018/9949 KPa
"REC 91.44M WC (DRLG MUD, 655.32M SALT WTR (21100 NACL). "
3. 1289.3-1325.9 (MATTSON)
VO: 5/90 SI: 60/90 min
FP: 827/3592 KPa
HP: 13790/13721 KPa
"REC 54.86M DRLG MUD, 408.74M SLI GC SALT WTR (25000 Cl). "
4. 1249.7-1261.9 (MATTSON)
VO: 5/90 SI: 60/90 min
FP: 257/462 KPa
SIP: 10597/10597 KPa
HP: 13293/13190 KPa
"REC 21.34M DRLG MUD, 27.43M MDY WTR. "

Note: Quoted text is always in SI.

Cores
1.	1005.8	1024.1	1972-03-04	Len 12.2m Conventional
2.	933.2	934.2	1972-03-17	Len 0.9m SideWall
3.	935.7	936.6	1972-03-17	Len 0.5m SideWall
4.	941.3	943.7	1972-03-17	Len 0.4m SideWall
5.	941.7	942.1	1972-03-17	Len 0.7m SideWall
6.	947.6	948.5	1972-03-17	Len 0.5m SideWall

c - 24 - H 94 - O - 11

AccuCard — 00/C-024-H/094-O-11/0 (Lic 3328)

Well Reader [as at February 8, 1999]

Well Name: AQUIT ANNIE WINDFLOWER C- 024-H/094-O- 1
Operator: AQUITAINE COMPANY OF CANADA
License: 1973-02-05
Spud: 1973-02-11
Rig Rel: 1973-03-02

KB: 610.0 m
Gr Elev: 606.0 m
TVD: 1125.1 m

DST's
1. 580.0-606.9 (GARBUTT,BELL,SCATTER)
VO: 5/120 SI: 30/120 min
FP: 345/372 KPa
SIP: 3916/3916 KPa
HP: 8281/8281 KPa
"REC 27.43M MDY WTR. "
2. 606.6-626.8 (SCATTER)
VO: 5/60 SI: 30/60 min
FP: 2133/4195 KPa
SIP: 3980/3980 KPa
HP: 8355/8355 KPa
"REC 54.86M MUD. 371.8M SALTY MDY WTR.. "

Note: Quoted text is always in SI.

Cores
1.	598.3	607.1	1973-02-19	Len 8.8m Conventional

d - 87 - A 94 - O - 11

AccuCard — 00/D-087-A/094-O-11/0 (Lic 3330)

Well Reader [as at February 8, 1999]

Well Name: ENCO WINDFLOWER D- 087-A/094-O- 11
Operator: ENCO OIL, LTD.
License: 1973-02-07
Spud: 1973-03-03
Rig Rel: 1973-03-22

KB: 562.3 m
Gr Elev: 558.3 m
TVD: 923.0 m

DST's
1. 422.1-445.5 (GARBUTT,BELL,MATTSON)
VO: 5/60 SI: 30/60 min
FP: 345/372 KPa
SIP: 3546/3544 KPa
HP: 8447/8447 KPa
"SLI GC PREFLOW BLW 33976.2M3/D NO REC. "
2. 456.6-470.3 (MATTSON,SHUNDA,WATTSON)
VO: 5/60 SI: 30/60 min
FP: 2133/4195 KPa
SIP: 3980/3980 KPa
HP: 8355/8355 KPa
"DTS 1 MCM AT 33976.2M3/D NO REC. "
3. 35.1-49.2 (DEBOLT)
VO: 5/120 SI: 60/120 min
FP: 1172/1172 KPa
SIP: 4529/4529 KPa
HP: 8267/8385 KPa
"DTS 2 MCM WGAS GAS BLOW ON VO REC 22.8M MUD. "

Note: Quoted text is always in SI.

Cores
1.	428.5	437.4	1973-03-10	Len 8.9m Conventional
2.	428.5	437.4	1973-03-10	Len 8.9m Conventional
3.	445.0	459.9	1973-03-10	Len 14.9m Conventional
4.	459.9	469.7	1973-03-10	Len 9.8m Conventional
5.	469.7	470.1	1973-03-12	Len 2.4m Conventional
6.	472.1	477.3	1973-03-13	Len 4.9m Conventional

d - 67 - A 94 - O - 11

AccuCard — 00/D-067-A/094-O-11/0 (Lic 3484)

Well Reader [as at February 8, 1999]

Well Name: KESS AQUIT ET AL WINDFLOWER D- 067-A/09
Operator: AMERADA HESS CANADA LTD.
License: 1974-01-29
Spud: 1974-02-09
Rig Rel: 1974-02-26

KB: 529.2 m
Gr Elev: 525.0 m
TVD: 795.3 m

DST's
1. 463.6-483.4 (MATTSON,DEBOLT)
VO: 5/120 SI: 30/120 min
FP: 1310/1413 KPa
SIP: 3726/3758 KPa
HP: 5033/5144 KPa
"NO GTS. REC 18.28M MUD. 54.86M MDY WTR, 274.32M SALT WTR (32,000 Cl). "
2. 793.0-798.4 (DEBOLT)
VO: 5/120 SI: 30/60 min
FP: 572/1862 KPa
SIP: 5723/5171 KPa
HP: 10135/10135 KPa
"GTS 60 MCMD-TSTM. REC 54.86M GC MUD, 112.78M GC WTR (TRACE OF OIL). "

Note: Quoted text is always in SI.

Cores
1.	465.1	483.4	1974-02-16	Len 18.2m Conventional

d - 09 - A 94 - O - 11

AccuCard — 00/D-009-A/094-O-11/0 (Lic 88)

Well Reader [as at February 8, 1999]

Well Name: BC OIL LANDS BEKAMI LAKE NO. 1 D- 009-
Operator: OPERATOR NAME NOT PROVIDED
License: 1954-02-01
Spud: 1954-02-03
Rig Rel: 1955-03-19

KB: 478.5 m
Gr Elev: 474.0 m
TVD: 1728.6 m

DST's
1. 367.3-374.9 (TRI)
VO: 45/45 SI: 15 min
FP: 414/414 kPa
"DIP REC 295.68M SW. "
2. 915.3-922.6 (MISS)
VO: 60
"DIP REC 19.81M MUD. "
3. 1388.3-1437.1 (BAY S SA,TY DIMP)
VO: 30
"PKR FAILED TO HOLD. "
4. 1394.8-1437.1 (BAY S SA,TY DIMP)
VO: 30
"HONEY 3 TIMES-TOOL PLUGGED. "

Note: Quoted text is always in SI.

Cores
None available.

Tests:
474.7-481.6 m)	7 spm
428.5-429.8 m)	FLWD 56.3 x 10³ m³/D
434.6-436.5 m)	
440.4-443.3 m)	
445.6-450.8 m)	
452.5-455.4 m)	
456.6-457.9 m)	
470.3-474.9 m)	20.5 m³ ACID, FLOW 18 Hrs Max 279 10³ m³/D TP 2861 kPa CP 1145 kPa

4 POINT TEST
RPM	MMCF/D	ORIF	TP
8	6.008	3/4	461
8	7.426	1"	435
8	8.811	1 1/4"	420
24	9.815	1 1/2"	414

BRITISH COLUMBIA
Energy and Minerals Division
Petroleum Lands Branch

LIARD BASIN
CROSS SECTION B1
NORTH-SOUTH, SHOWING STRATIGRAPHIC CHANGES ALONG BOVIE LAKE STRUCTURE

by

P. A. MONAHAN, P. Geo.
MONAHAN PETROLEUM CONSULTING

LOCATION MAP

ArmitageCAD COMPUTER DRAFTING
Acknowledgement is made to AccuMap EnerData, A Division of IDC Data, for the use of well data ticket information
IDC Acknowledgement is made to International Datashare Corporation, for the use of halliburton well log products

NORTH

b - 66 - D 94 - O - 15
KB 479 m
WA 3433

a - 28 - D 94 - O - 15
KB 478 m
WA 3469

a - 78 - L 94 - O - 10
KB 510 m
WA 3291

b - 44 - L 94 - O - 10
KB 540 m
WA 3432

a - 27 - L 94 - O - 10
KB 566 m
WA 5210

b - 96 - E 94 - O - 10
KB 602 m
WA 3425

a - 45 - E 94 - O - 10
KB 640 m
WA 3439

SOUTH

BRITISH COLUMBIA
Energy and Minerals Division
Petroleum Lands Branch

LIARD BASIN
CROSS SECTION B2

NORTH-SOUTH, SHOWING STRATIGRAPHIC CHANGES ALONG BOWIE LAKE STRUCTURE

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SOUTHWEST
NORTHEAST
d - 35 - G 94 - O - 4
KB 790 m
WA 2676
a - 67 - D 94 - O - 6
KB 465 m
WA 2809
a - 77 - D 94 - O - 11
KB 465 m
WA 1290
c - 51 - B 94 - O - 14
KB 484 m
WA 7573
LEPINE
SCATTER
UPPER GARBUTT
DATUM
R A ZONE
LOWER GARBUTT
CHINKEH SILTSTONE
TOAD
GRAYLING
FANTASQUE
MATTSON
GOLATA
DEBOLT
LOWER KINDLE
LEPINE AND EQUIVALENTS
CHINKEH SANDSTONE
CORE
BRITISH COLUMBIA
LIARD BASIN
CROSS SECTION M1
NORTHEAST-SOUTHWEST, LOWER TRIASSIC TO LOWER CRETACEOUS
(GRAYLING TO SCATTER)
by
P. A. MONAHAN, P. Geo.
MONAHAN PETROLEUM CONSULTING
LOCATION MAP
CROSS SECTION M1
94-O
ArmitageCAD COMPUTER DRAFTING

WEST

b - 55 - E 94 - O - 13
KB 379
WA 442

b - 21 - K 94 - O - 14
KB 459 m
WA 3717

c - 51 - B 94 - O - 14
KB 484 m
WA 7573

b - 85 - H 94 - O - 11
KB 650 m
WA 3081

a - 78 - L 94 - O - 10
KB 510 m
WA 3291

a - 2 - D 94 - O - 15
KB 505 m
WA 3493

d - 77 - K 94 - O - 10
KB 510 m
WA 3466

d - 61 - A 94 - O - 15
KB 491 m
WA 3282
NCT

EAST

BRITISH COLUMBIA

LIARD BASIN
CROSS SECTION M2 (EAST SIDE)

EAST-WEST, TRIASSIC TO LOWER CRETACEOUS
(GRAYLING TO SCATTER)

by
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LOCATION MAP

WEST SIDE OF CROSS SECTION M2

EAST SIDE OF CROSS SECTION M2

ArmitageCAD COMPUTER DRAFTING

IDC

WEST

b - 43 - K 94 - O - 5
KB 362
WA 5725

a - 77 - D 94 - O - 11
KB 465 m
WA 1290

a - 26 - B 94 - O - 11
KB 495 m
WA 332

d - 87 - A 94 - O - 11
KB 562 m
WA 3330

a - 45 - E 94 - O - 10
KB 510 m
WA 3291

c - 62 - H 94 - O - 10
KB 595 m
WA 5554

EAST

WEST SIDE OF
CROSS SECTION M3

BRITISH COLUMBIA
Energy and Minerals Division
Petroleum Lands Branch

LIARD BASIN
CROSS SECTION M3 (EAST SIDE)

EAST-WEST, TRIASSIC TO LOWER CRETACEOUS
(GRAYLING TO SCATTER)

by

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MONAHAN PETROLEUM CONSULTING

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WEST

a - 15 - G 94 - O - 5
KB 463 m
WA 5111

a - 67 - D 94 - O - 6
KB 465 m
WA 2809

a - 93 - C 94 - O - 6
KB 467 m
WA 4207

d - 39 - G 94 - O - 6
KB 404 m
WA 4299

c - 37 - G 94 - O - 6
KB 391 m
WA 3508

b - 21 - G 94 - O - 6
KB 388 m
WA 3048

b - 6 - G 94 - O - 7
KB 440 m
WA 1225

EAST

WEST SIDE OF
CROSS SECTION M4

BRITISH COLUMBIA
Energy and Minerals Division
Petroleum Lands Branch

LIARD BASIN
CROSS SECTION M4 (EAST SIDE)

EAST-WEST, TRIASSIC TO LOWER CRETACEOUS
(GRAYLING TO SCATTER)

by

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MONAHAN PETROLEUM CONSULTING

LOCATION MAP

ArmitageCAD COMPUTER DRAFTING
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SOUTHWEST

d - 35 - G 94 - O - 4
KB 790 m
WA 2676

AccuCard 00/D-035-G/094-O-04/0 (Lic 2676)

Well Header [as at February 8, 1999]

Well Name: GPD NOEL ET AL POPLAR D- 035-G/094-O- 04
Operator: OPERATOR NAME NOT PROVIDED
License: 1970-02-18
Spud: 1970-02-21
Rig Rel: 1970-04-16

KB: 789.7 m
Gr Elev: 784.8 m
TVD: 2558.2 m

DSTs

1. 2447.5-2460.3 (MATTSON)
   VO: 4/60 SI: 60/60 min
   FP: 1131/752 KPa
   SIP: 24097/22876 KPa
   HP: 27648/27648 KPa
   "REC 80.1M MUD. "
2. 1356.7-1370.7 (SCATTER)
   VO: 4/120 SI: 60/120 min
   FP: 3882/4075/1620/5502 KPa
   SIP: 14727/8860 KPa
   HP: 15300/15093 KPa
   "GTS TO MINS-TSTM. REC 356.6M SLI GC DRLG MUD, 152.4M SALT WTR (9620 PPM). "

Note: Quoted text is always in SI.

Cores

None available.

a - 67 - D 94 - O - 6
GL 465 m
WA 2809

AccuCard 00/A-067-D/094-O-06/0 (Lic 2809)

Well Header [as at February 8, 1999]

Well Name: CANREX ET AL PATRY A- 067-D/094-O- 06
Operator: OPERATOR NAME NOT PROVIDED
License: 1970-12-04
Spud: 1971-01-03
Rig Rel: 1971-03-08

KB: 463.9 m
Gr Elev: 459.6 m
TVD: 2534.4 m

DSTs

1. 2080.3-2093.1 (MATTSON SILT)
   "Misrun"
   "REC 245.6M DRLG MUD. "
2. 2095.5-2107.7 (MATTSON SILT)
   VO: 5/60 SI: 60/120 min
   FP: 483/579 KPa
   SIP: 10432/14789 KPa
   HP: 23422/23035 KPa
   "REC 42.9M DRLG MUD. "
3. 1232.0-1248.2 (SPIRIT R,SPIRIT R SS)
   FP: 12352/13004 KPa
   SIP: 14017/13004 KPa
   HP: 14017/14027 KPa
   "TOOL PLUGGING. REC 316.9M DRLG MUD. "
4. 1228.3-1252.7 (SPIRIT R,SPIRIT R SS)
   VO: 30 SI: 60/30 min
   FP: 496/83 KPa
   SIP: 1282/166 KPa
   HP: 13790/13514 KPa
   "REC 9.1M DRLG MUD. "
5. 1252.7-1277.1 (SPIRIT R SS)
   VO: 10 SI: 60 min
   FP: 248/393 KPa
   SIP: 14045/14045 KPa
   HP: 13569/14307 KPa
   "REC 9.1M DRLG MUD. "

Note: Quoted text is always in SI.

Cores

None available.

a - 77 - D 94 - O - 11
KB 465 m
WA 1290

AccuCard 00/A-077-D/094-O-11/0 (Lic 1290)

Well Header [as at April 8, 1999]

Well Name: IOE PAN AM VISCOUNT A- 077-D/094-O- 11
Operator: IMPERIAL OIL RESOURCES LIMITED
Lahee: Exploratory Wildcat
License: 1963-02-07
Spud: 1963-02-10
Rig Rel: 1963-07-23

KB: 465.3 m
Gr Elev: 461.2 m
TVD: 3188.2 m

c - 51 - B 94 - O - 14
KB 484 m
WA 7573

AccuCard 00/C-051-B/094-O-14/0 (Lic 7573)

Well Header [as at February 8, 1999]

Well Name: MOBIL BF FCI MAX C- 051-B/094-O- 14
Operator: MOBIL OIL CANADA
License: 1990-12-21
Spud: 1991-02-28
Rig Rel: 1991-09-12

KB: 484.1 m
Gr Elev: 472.4 m
TVD: 4750.0 m

DSTs

1. 1239.0-1255.0 (TOAD GRAY,TOAD GRAY)
   VO: 10/65/176 SI: 90/182/523 min
   FP: 857/1296/995/1312/1222/1453 KPa
   SIP: 8420/8628/8808 KPa
   HP: 13217/13415 KPa
   "GAS @ 3600 M3/D > 23000 M3/D AT END, REC 36M MUD. "

Note: Quoted text is always in SI.

Cores

1.	4642.4	4651.6	1991-08-25	Len 7.8m Conventional
2.	1237.0	1255.0	1991-10-07	Len 18.0m Conventional

NORTHEAST

BRITISH COLUMBIA
Energy and Minerals Division
Petroleum Lands Branch

LIARD BASIN
CROSS SECTION P1

NORTHEAST-SOUTHWEST, UPPER MISSISSIPPIAN TO PERMIAN
(GOLATA TO FANTASQUE)

by
P. A. MONAHAN, P. Geo.
MONAHAN PETROLEUM CONSULTING

LOCATION MAP

a - 77 - D 94 - O - 11

DSTs

1. 2068.4-2083.9
   "Misrun"
2. 2057.4-2083.9
   VO: 60 SI: 65/60 min
   FP: 4764/5219 KPa
   SIP: 9177/8543 KPa
   HP: 23366 KPa
   "REC 73.1M MUD ABOVE TOOL NO REC FROM THE TOOL. "
3. 2168.7-2184.5 (MATTSON,MATTSON)
   VO: 60 SI: 60/60 min
   SIP: 969/414 KPa
   HP: 26131/26131 KPa
   "REC 18.2M MUD. "
4. 2237.8-2255.2 (MATTSON,MATTSON)
   VO: 60/60 SI: 30/60 min
   FP: 1186/1186 KPa
   SIP: 21746/22436 KPa
   HP: 27717 KPa
   "GTS 6 MIN @ 3268.1 M3/D IN22 MIN. (FLUID BLEW OUT OF PIPE) NO REC. "
5. 2262.5-2281.7 (MATTSON,MATTSON)
   VO: 60 SI: 30/65 min
   FP: 1648/1648 KPa
   SIP: 4137/1772 KPa
   HP: 28096 KPa
   "WAS USED 109.7M WTR CUSH REC 118.8M SLI MW. "
6. 2301.5-2328.4 (MATTSON,MATTSON)
   VO: 40 SI: 60/65 min
   FP: 2036/2034 KPa
   SIP: 3758/6447 KPa
   HP: 28579 KPa
   "(USED & REC 137.1M WTR CUSH) REC 6.1M MUD. "
7. 2338.4-2368.6 (MATTSON,MATTSON)
   VO: 30 SI: 60/65 min
   FP: 3951/6826 KPa
   SIP: 23269/24856 KPa
   HP: 29579 KPa
   "(USED 219.4M WTR CUSH) REC 192M CLEAN WTR CUSH 27.4M MDY WTR CUSH 27.4M SLI GCM 466.3M SLI M SLI GCSW. "
8. 2475.0-2495.7 (MATTSON,MATTSON)
   VO: 30/60 SI: 60/60 min
   FP: 793/793 KPa
   SIP: 17636/16789 KPa
   HP: 30544 KPa
   "GTS 18 MIN TSTM 3M FLARE REC 57.9M GCM. "
9. 2824.0-2857.8 (RUN,RUN)
   VO: 60/60 SI: 60/60 min
   FP: 586/317 KPa
   SIP: 10487/8405 KPa
   HP: 37018 KPa
   "GTS 5 MIN @ 11156.9 M3/D DECR 973.3 M3/D (SWEET GAS) REC 18.2M MUD. "

Note: Quoted text is always in SI.

Cores

1.	1498.9	1503.2	1963-03-04	Len 4.2m Conventional
2.	1822.6	1835.7	1963-03-26	Len 13.1m Conventional
3.	2076.2	2083.8	1963-04-04	Len 6.8m Conventional
4.	2143.9	2146.3	1963-04-09	Len 2.4m Conventional
5.	2169.5	2176.8	1963-04-12	Len 6.7m Conventional
6.	2266.1	2281.3	1963-04-23	Len 15.2m Conventional
7.	2318.8	2327.9	1963-05-01	Len 9.1m Conventional
8.	2343.2	2349.3	1963-05-05	Len 5.9m Conventional
9.	2436.8	2442.9	1963-05-15	Len 6.1m Conventional
10.	2482.5	2482.8	1963-05-20	Len 0.3m Conventional
11.	2496.2	2508.4	1963-05-24	Len 12.1m Conventional
12.	2511.4	2514.7	1963-05-26	Len 3.4m Conventional
13.	2545.0	2548.0	1963-05-29	Len 3.0m Conventional
14.	2595.6	2598.6	1963-06-02	Len 3.0m Conventional
15.	2614.8	2619.6	1963-06-04	Len 4.8m Conventional
16.	2745.5	2754.6	1963-06-15	Len 9.1m Conventional
17.	2869.9	2876.0	1963-06-24	Len 6.1m Conventional
18.	2976.2	2986.4	1963-07-02	Len 10.2m Conventional
19.	3118.0	3127.1	1963-07-08	Len 9.1m Conventional

Perfs:

1741.0-1741.9 m }	ALL 7 Jet/m
1734.6-1736.1 m }	Acid wash, swab dry
1722.4-1723.0 m }	
1723.9-1724.9 m }	
1727.0-1730.0 m }	Acid wash, swab dry
1713.6-1719.1 m }	
1720.0-1720.6 m }	Acid wash, swab dry
1470.1-1472.5 m }	Acid wash, swab dry
474.3-491.3 m }	Acid wash, swab al salt water

ArmitageCAD COMPUTER DRAFTING
Acknowledgement is made to AccuMap EnerData, A Division of QC Data, for the use of well data ticket information
IDC Acknowledgement is made to International Datashare Corporation, for the use of halliburtie well log products

WEST

a - 67 - D 94 - O - 13
KB 395 m
WA 3375

AccuCard 00/A-067-D/094-O-13/0 (Lic 3375)

Well Header [as at February 8, 1999]

Well Name: AMOCO ET AL LA BICHE A- 067-D/094-O- 13
Operator: AMOCO CANADA PETROLEUM COMPANY LTD.
License: 1973-07-30
Spud: 1973-10-14
Rig Rel: 1974-08-28

KB: 395.1 m
Gr Elev: 388.6 m
TVD: 5385.0 m

DSTs

1. 5318.8-5395.0 (M DEV CARB/NAHANNI)
   VO: 15/60 SI: 60/120 min
   FP: 26765/27441 KPa
   SIP: 41182/35991 KPa
   HP: 62136/62501 KPa
   "USED 2621.89M INHIB WTR CUSH. PKR STUCK, FILLED PIPE WITH WTR & MUD TO OPEN PUMP OUT, SUB PUMPED OUT ENTIRE STRING OF FLUID. FORM REC NOT KNOWN. "
2. 5151.1-5263.0 (M DEV CARB/NAHANNI)
   VO: 10/60 SI: 60/120 min
   FP: 28020/28151 KPa
   SIP: 28324/28455 KPa
   HP: 63852 KPa
   "USED 2590.8M INHIB WTR CUSH. PUMPED OUT FLUID-UNKNOWN. SAMPLER CONTAINED 1600 CC MUD, 0.02M3 GAS AT 3447.38 KPA. "

Note: Quoted text is always in SI.

Cores

1.	5128.3	5142.0	1974-07-15	Len 13.4m Conventional
2.	5211.2	5229.5	1974-07-19	Len 17.3m Conventional

b - 21 - K 94 - O - 14
KB 459 m
WA 3717

AccuCard 00/B-021-K/094-O-14/0 (Lic 3717)

Well Header [as at February 8, 1999]

Well Name: PENN WEST MAXHAMISH B- 021-K/094-O- 14
Operator: PENN WEST PETROLEUM LTD.
License: 1976-01-29
Spud: 1976-02-09
Rig Rel: 1976-04-04

KB: 458.9 m
Gr Elev: 454.1 m
TVD: 2292.1 m

DSTs

1. 1622.8-1636.2 (MATTSON)
   VO: 5/60 SI: 30/90 min
   FP: 724/1276 KPa
   SIP: 14679/15796 KPa
   HP: 10191/10191 KPa
   "GTS 14 MINS MAX 2930.09 M3/D. REC 100.5M GAS CUT MUD. "
2. 1633.7-1691.6 (MATTSON)
   VO: 5/60 SI: 60/90 min
   FP: 1310/2282 KPa
   SIP: 15224/14900 KPa
   HP: 18464/18464 KPa
   "NO GTS. REC 100.5M GAS CUT MUD. "

Note: Quoted text is always in SI.

Cores

1.	1636.1	1650.4	1976-03-02	Len 16.3m Conventional

c - 51 - B 94 - O - 14
KB 484 m
WA 7573

AccuCard 00/C-051-B/094-O-14/0 (Lic 7573)

Well Header [as at February 8, 1999]

Well Name: MOBIL BP FCI MAX C- 051-B/094-O- 14
Operator: MOBIL OIL CANADA
License: 1990-12-21
Spud: 1991-02-28
Rig Rel: 1991-09-12

KB: 484.1 m
Gr Elev: 472.4 m
TVD: 4756.0 m

DSTs

1. 1239.0-1255.0 (TOAD GRAY,TOAD GRAY)
   VO: 10/65/176 SI: 90/182/523 min
   FP: 857/1296/995/1312/1222/1453 KPa
   SIP: 8420/8628/8808 KPa
   HP: 13217/13415 KPa
   "GAS @ 5600 M3/D > 23000 M3/D AT END, REC 36M MUD. "

Note: Quoted text is always in SI.

Cores

1.	4642.4	4651.6	1991-08-25	Len 7.8m Conventional
2.	1237.0	1255.0	1991-10-07	Len 18.0m Conventional

b - 85 - H 94 - O - 11
KB 649 m
WA 3081

EAST

AccuCard 00/B-085-H/094-O-11/0 (Lic 3081)

Well Header [as at February 8, 1999]

Well Name: AQUIT ET AL TATTOO B- 085-H/094-O- 11
Operator: AQUITAINE COMPANY OF CANADA
License: 1972-01-25
Spud: 1972-02-22
Rig Rel: 1972-03-20

KB: 649.5 m
Gr Elev: 645.3 m
TVD: 1459.1 m

DSTs

1. 920.5-957.1 (GARBUTT,PERM,MATTSON)
   VO: 5/90 SI: 60/90 min
   FP: 1310/1413 KPa
   SIP: 7150/7115 KPa
   HP: 9549/9294 KPa
   "GTS 5 MIN @ 1831.31 M3/D MAX 5634.80 M3/D. REC 176.78M GC DRLG MUD. "
2. 969.3-1005.8 (MATTSON)
   VO: 5/90 SI: 60/90 min
   FP: 2737/4006 KPa
   SIP: 7467/7453 KPa
   HP: 10018/9949 KPa
   "REC 91.44M WC DRLG MUD, 655.32M SALT WTR (21100 NACL). "
3. 1289.3-1325.9 (MATTSON)
   VO: 5/90 SI: 60/90 min
   FP: 827/3592 KPa
   SIP: 13790/13721 KPa
   "REC 54.86M DRLG MUD, 408.74M SLI GC SALT WTR (25000 CL). "
4. 1249.7-1261.9 (MATTSON)
   VO: 5/90 SI: 60/90 min
   FP: 297/462 KPa
   SIP: 10597/10597 KPa
   HP: 13293/13190 KPa
   "REC 21.34M DRLG MUD, 27.43M MDY WTR. "

Note: Quoted text is always in SI.

Cores

1.	1005.8	1024.1	1972-03-04	Len 12.2m Conventional
2.	933.2	934.2	1972-03-17	Len 0.9m SideWall
3.	935.7	936.6	1972-03-17	Len 0.5m SideWall
4.	938.7	939.7	1972-03-17	Len 0.4m SideWall
5.	941.2	942.2	1972-03-17	Len 0.7m SideWall
6.	947.6	948.5	1972-03-17	Len 0.5m SideWall

BRITISH COLUMBIA
Energy and Minerals Division
Petroleum Lands Branch

LIARD BASIN
CROSS SECTION P2

EAST-WEST, UPPER MISSISSIPPIAN TO PERMIAN
(GOLATA TO FANTASQUE)
by
P. A. MONAHAN, P. Geo.
MONAHAN PETROLEUM CONSULTING

ArmitageCAD COMPUTER DRAFTING
Acknowledgement is made to AccuMap EnerData, A Division of CiC Data, for the use of well data ticket information
IDC Acknowledgement is made to International Datashare Corporation, for the use of halfscale well log products

WEST

b - 43 - K 94 - O - 5
KB 362 m
WA 5725

AccuCard ├┤ 00/B-043-K/094-O-05/0 (Lic 5725) ├┤

Well Header [as at February 8, 1999]

Well Name: SUNCOR LIARD B- 043-K/094-O- 05
Operator: SUNCOR INC.
License: 1981-12-15
Spud: 1982-01-11
Rig Rel: 1982-03-20

KB: 361.6 m
Gr Elev: 357.0 m
TVD: 2795.0 m

DSTs

1. 1511.0-1535.0 (SCATTER)
   VO: 5/60 SI: 60/120 min
   FP: 879/704 KPa
   SIP: 1407/829 KPa
   HP: 18187/18187 KPa
   "NO GTS. REC 90M DRLG MUD. "
2. 2761.0-2795.0 (DEBOLT)
   Misrun
3. 2761.0-2795.0 (DEBOLT)
   Misrun

Note: Quoted text is always in SI.

Cores

None available.

a - 77 - D 94 - O - 11
KB 465 m
WA 1290

AccuCard ├┤ 00/A-077-D/094-O-11/0 (Lic 1290) ├┤

Well Header [as at April 8, 1999]

Well Name: IOE PAN AM VISCOUNT A- 077-D/094-O- 11
Operator: IMPERIAL OIL RESOURCES LIMITED
Lahee: Exploratory Wildcat
License: 1963-02-07
Spud: 1963-02-10
Rig Rel: 1963-07-23

KB: 465.3 m
Gr Elev: 461.2 m
TVD: 3188.2 m

DSTs

1. 2068.4-2083.9
   Misrun
2. 2057.4-2083.9
   VO: 60 SI: 65/60 min
   FP: 4764/5219 KPa
   SIP: 3177/8543 KPa
   HP: 23366 KPa
   "REC 73.1M MUD ABOVE TOOL NO REC FROM THE TOOL. "
3. 2168.7-2184.5 (MATTSON,MATTSON)
   VO: 60 SI: 60/60 min
   SIP: 965/414 KPa
   HP: 26131/26131 KPa
   "REC 18.2M MUD. "
4. 2237.8-2255.2 (MATTSON,MATTSON)
   VO: 60/60 SI: 30/60 min
   FP: 1186/1186 KPa
   SIP: 21746/22436 KPa
   HP: 27717 KPa
   "GTS 6 MIN @ 3268.1 M3/D 1N22 MIN. (FLUID BLEW OUT OF PIPE) NO REC. "
5. 2262.5-2281.7 (MATTSON,MATTSON)
   VO: 60 SI: 30/65 min
   FP: 1648/1648 KPa
   SIP: 4137/1772 KPa
   HP: 28096 KPa
   "WAR USED 109.7M WTR CUSH REC 118.8M SLI MW. "
6. 2301.5-2328.4 (MATTSON,MATTSON)
   VO: 40 SI: 60/60 min
   FP: 2034/2034 KPa
   SIP: 3758/6447 KPa
   HP: 28579 KPa
   "(USED 4 REC 137.1M WTR CUSH) REC 6.1M MUD. "
7. 2338.4-2368.6 (MATTSON,MATTSON)
   VO: 30 SI: 60/65 min
   FP: 3951/6826 KPa
   SIP: 25269/24856 KPa
   HP: 29579 KPa
   "(USED 219.4M WTR CUSH) REC 192M CLEAN WTR CUSH 27.4M MDY WTR CUSH 27.4M SLI GCM 466.3M SLI M SLI GCSW. "
8. 2475.0-2495.7 (MATTSON,MATTSON)
   VO: 30/60 SI: 60/60 min
   FP: 793/793 KPa
   SIP: 17616/16789 KPa
   HP: 30544 KPa
   "GTS 15 MIN 25TM 3M FLARE REC 57.9M GCM. "
9. 2824.0-2857.8 (RUN,RUN)
   VO: 60/60 SI: 60/60 min
   FP: 586/317 KPa
   SIP: 10487/8405 KPa
   HP: 37018 KPa
   "GTS 5 MIN @ 11156.9 M3/D DECR 873.3 M3/D (SWEET GAS) REC 18.2M MUD. "

Note: Quoted text is always in SI.

a - 26 - B 94 - O - 11
KB 496 m
WA 332

AccuCard ├┤ 00/A-026-B/094-O-11/0 (Lic 332) ├┤

Well Header [as at February 8, 1999]

Well Name: IMPERIAL PAN AMERICAN TATTOO NO. 2 6 A-
Operator: IMPERIAL OIL RESOURCES LIMITED
License: 1958-01-14
Spud: 1958-01-15
Rig Rel: 1958-05-15

KB: 495.4 m
Gr Elev: 491.9 m
TVD: 2287.5 m

DSTs

1. 1193.9-1206.1 (SCATTER SS)
   VO: 45 SI: 30/45 min
   FP: 207/207 KPa
   SIP: 345/207 KPa
   HP: 15031/15031 KPa
   "REC 6.1M MUD. "
2. 1450.8-1460.0 (SCATTER SS)
   VO: 60 SI: 29/60 min
   FP: 310/310 KPa
   SIP: 4861 KPa
   HP: 18202/18133 KPa
   "REC 6.1M MUD. "
3. 1585.0-1589.5 (PERM)
   Misrun
   VO: 60 SI: 30/60 min
   FP: 414/414 KPa
   SIP: 3103 KPa
   HP: 19650/19650 KPa
   "REC 9.1M MUD. "
4. 1585.9-1606.9 (PERM)
   Misrun
   VO: 60 SI: 30 min
   FP: 19547 KPa
   HP: 19340/19340 KPa
5. 1576.4-1606.9 (TRI,PERM)
   Misrun
   VO: 30 SI: 30 min
   FP: 19650 KPa
   HP: 19443/19443 KPa
6. 1587.1-1606.9 (PERM)
   VO: 60 SI: 30/60 min
   FP: 207/207 KPa
   SIP: 621/896 KPa
   HP: 19547/19547 KPa
   "REC 12.1M MUD. "
7. 1846.8-1850.7 (PENN SYS)
   VO: 60 SI: 30/60 min
   FP: 310/517 KPa
   SIP: 11170/1310 KPa
   HP: 22649/21719 KPa
   "REC 28.9M MUD. "
8. 1813.6-1822.7 (PENN SYS)
   Misrun
9. 1813.0-1822.1 (PENN SYS)
   VO: 60 SI: 60 min
   FP: 586/1034 KPa
   SIP: 16203 KPa
   HP: 22442/21615 KPa
   "REC 36.5M GC WTRY MUD. 54.8M GC MDY FR WTR. "

Note: Quoted text is always in SI.

Cores

656.8-662.9 m, 1014.4-1020.5, 1313.4-1319.5, 1505.7-1511.8, 1619.4-1622.5, 1770.6-1776.7, 1983.0-1989.1, 2079.3-2085.4, 2283.3-2287.5 m

d - 87 - A 94 - O - 11
KB 562 m
WA 3330

AccuCard ├┤ 00/D-087-A/094-O-11/0 (Lic 3330) ├┤

Well Header [as at February 8, 1999]

Well Name: ENCO WINDFLOWER D- 087-A/094-O- 11
Operator: ENCO GAS, LTD.
License: 1973-02-07
Spud: 1973-03-05
Rig Rel: 1973-03-22

KB: 562.3 m
Gr Elev: 558.3 m
TVD: 823.0 m

DSTs

1. 422.1-445.0 (GARBUTT,BELL,MATTSON)
   VO: 3/60 SI: 30/60 min
   FP: 1324/1917 KPa
   SIP: 3544/3344 KPa
   HP: 4433/4447 KPa
   "GTS ON PRSELOW MAX 33076.2M3/D NO REC. "
2. 452.6-468.7 (MATTSON,MATTSON)
   VO: 3/60 SI: 43/60 min
   FP: 1165/1910 KPa
   SIP: 3952/3561 KPa
   HP: 4895/4950 KPa
   "GTS 1 MIN AT 33076.2M3/D NO REC. "
3. 757.4-823.0 (DRMCUT)
   VO: 5/120 SI: 60/120 min
   FP: 5426/5371 KPa
   SIP: 8529/8529 KPa
   HP: 8267/8308 KPa
   "GTS 2 MIN WEAK GAS BLOW ON VO REC 22.8M MUD. "

Note: Quoted text is always in SI.

Cores

1.	428.5	437.4	1973-03-10	Len 8.5m Conventional
2.	428.5	437.4	1973-03-10	Len 8.5m Conventional
3.	445.0	459.9	1973-03-11	Len 14.9m Conventional
4.	459.9	469.7	1973-03-12	Len 9.4m Conventional
5.	469.7	472.1	1973-03-12	Len 2.4m Conventional
6.	472.1	477.3	1973-03-13	Len 4.7m Conventional

Perfs:

476.7-481.6 m) 7 spm
428.5-429.8 m) FLWD 56.3 x 10^3 m^3/D
434.6-436.5 m)
440.4-443.5 m)
445.6-450.8 m)
452.9-455.4 m)
456.6-457.8 m)
470.3-474.9 m) 20.5 m^3 ACID, FLOW 18 Hrs Max 279 10^3 m^3/D
TP 2861 kPa CP 1145 KPa

4 POINT TEST

RRS	MMCF/D	CHK	TP
8	6.008	3/4	461
8	7.426	1"	435
8	8.811	1 1/4"	420
24	9.915	1 1/2"	414

BOVIE LAKE STRUCTURE

EAST

a - 77 - D 94 - O - 11

Cores

1.	1498.9	1503.2	1963-03-04	Len 4.2m Conventional
2.	1822.6	1835.7	1963-03-26	Len 13.1m Conventional
3.	2076.2	2083.8	1963-04-04	Len 6.8m Conventional
4.	2143.9	2146.3	1963-04-09	Len 2.4m Conventional
5.	2169.5	2176.8	1963-04-12	Len 6.7m Conventional
6.	2266.1	2281.3	1963-04-23	Len 15.2m Conventional
7.	2318.8	2327.9	1963-05-01	Len 9.1m Conventional
8.	2343.2	2349.3	1963-05-05	Len 3.9m Conventional
9.	2436.8	2442.9	1963-05-15	Len 6.1m Conventional
10.	2482.5	2482.8	1963-05-20	Len 0.3m Conventional
11.	2496.2	2508.4	1963-05-24	Len 12.1m Conventional
12.	2511.4	2526.7	1963-05-26	Len 2.4m Conventional
13.	2545.0	2548.0	1963-05-29	Len 3.0m Conventional
14.	2595.6	2598.6	1963-06-02	Len 3.0m Conventional
15.	2614.8	2619.6	1963-06-04	Len 4.8m Conventional
16.	2745.5	2754.6	1963-06-15	Len 9.1m Conventional
17.	2869.9	2876.0	1963-06-24	Len 6.1m Conventional
18.	2976.2	2986.4	1963-07-02	Len 10.2m Conventional
19.	3118.0	3127.1	1963-07-08	Len 9.1m Conventional

Perfs:

1741.0-1741.9 m) ALL 7 Jet/m
1734.6-1736.1 m) Acid wash, swab dry

1722.4-1723.0 m)
1723.9-1724.9 m)
1727.0-1730.0 m) Acid wash, swab dry

1713.6-1719.1 m)
1720.0-1720.6 m) Acid wash, swab dry

1470.1-1472.5 m) Acid wash, swab dry

474.3-491.3 m) Acid wash, swab sl salt water

BRITISH COLUMBIA
Energy and Minerals Division
Petroleum Lands Branch

LIARD BASIN
CROSS SECTION P3

EAST-WEST, UPPER MISSISSIPPIAN TO PERMIAN (GOLATA TO FANTASQUE)

by
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MONAHAN PETROLEUM CONSULTING

ArmitageCAD COMPUTER DRAFTING
Acknowledgement is made to AccuMap EnerData, A Division of DC Data, for the use of well data ticket information
iDC Acknowledgement is made to International Datashare Corporation, for the use of hallscale well log products

WEST

a - 67 - D 94 - O - 13
KB 395 m
WA 3375

a - 77 - D 94 - O - 11
KB 465 m
WA 1290

a - 79 - B 94 - O - 11
KB 510 m
WA 3129

c - 15 - I 94 - O - 6
KB 448 m
WA 1265

b - 6 - G 94 - O - 7
KB 440 m
WA 1255

c - 2 - H 94 - O - 10
KB 678 m
WA 3067

c - 62 - H 94 - O - 10
KB 595 m
WA 5554

EAST

BOVIE LAKE STRUCTURE

WEST SIDE OF
CROSS SECTION P4

BRITISH COLUMBIA
Energy and Minerals Division
Petroleum Geoscience Section

LIARD BASIN
CROSS SECTION P4 (EAST SIDE)

EAST - WEST, UPPER
DEVONIAN TO UPPER MISSISSIPPIAN
(EXSHAW TO DEBOLT)

by
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MONAHAN PETROLEUM CONSULTING

LOCATION MAP

ArmitageCAD COMPUTER DRAFTING
Acknowledgment is made to AutoMap SmeCAD, for the use of cad data layer information
IDC Acknowledgment is made to Intervalcorr Datamark Corporation, for the use of header well log products