

EXCO ET AL WEST PARKIN Y.T.
D-54
66°13' 09.73"N 137°26' 10.40"W
FINAL DRILLING SUMMARY

Exco Energy Ltd.

April, 1985

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SECTION I
SUMMARY - GENERAL DATA

EXCO ET AL WEST PARKIN Y.T. D-54

INTRODUCTION

In May of 1984 Exco Energy Ltd. concluded an Exploration Agreement with Westmin Resources Limited. Pursuant to the terms of the agreement, Exco was committed to conduct seismic activity and to drill two (2) wells within a specified grid area prior to April 30, 1985. By drilling these wells in furtherance of the agreement, Exco would earn a share of Westmin's interest in the lands; and, in so doing, would be entitled to earn additional acreage if they chose to exercise their option.

The first of the two wells to be drilled was Exco et al West Parkin Y.T. D-54. Both wells were to be drilled to a maximum depth of 1825 metres, measured distance, and to require approximately forty (40) days to complete.

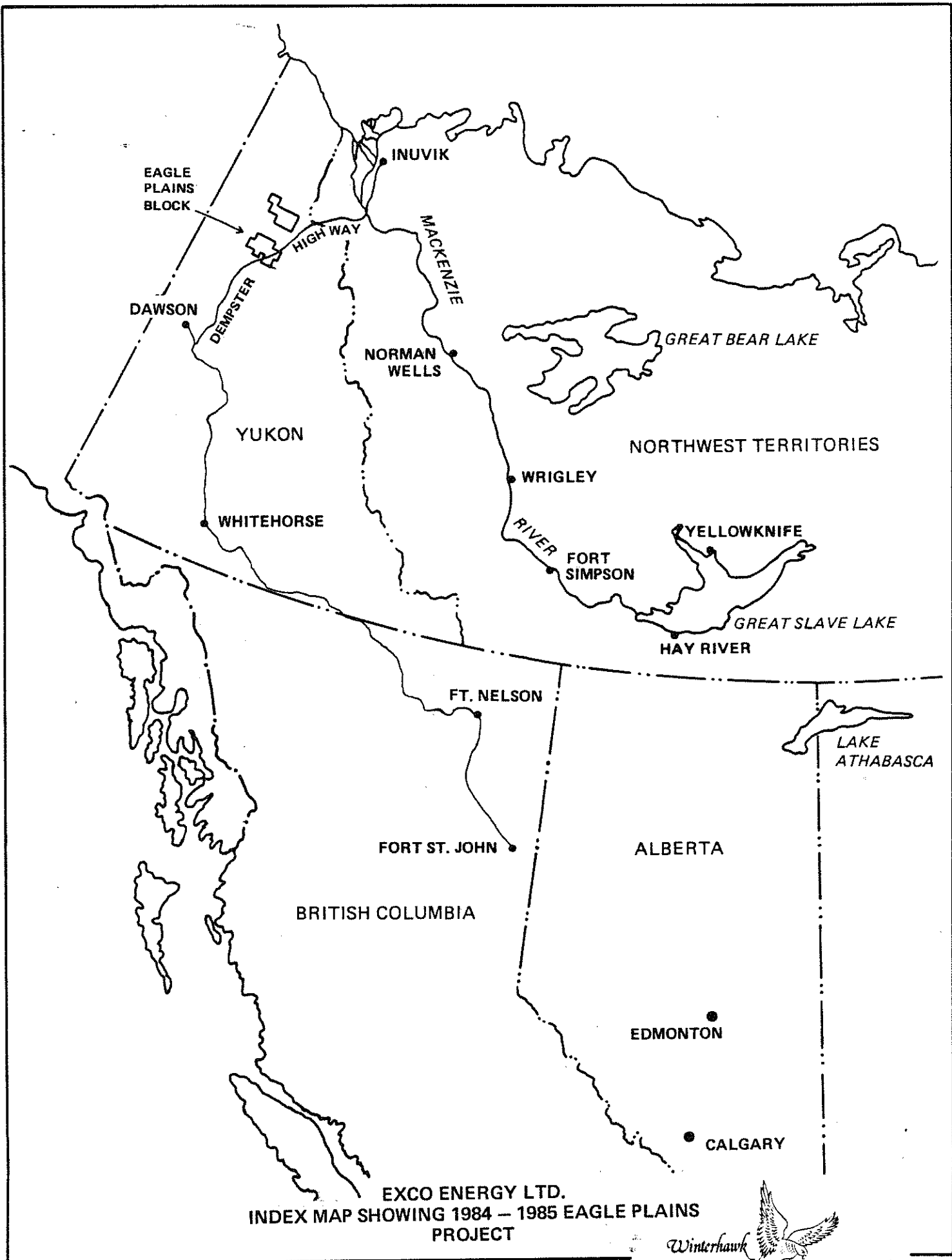
Construction of the access route began in late November, 1984 after approval had been granted from Land Use. By December 10, 1984 the heavy equipment was on location and in the process of preparing the sump.

The rig, together with supplies and support services for the project were transported north in early December. With reference to the enclosed area maps, all equipment gained access to the location by travelling the Dempster Highway, which runs north from Dawson City, Yukon. As required, additional supplies were flown into the site airstrip (Parkins Airstrip), via DC-3's.

Although minor delays were experienced in rigging up, the well was spudded only a few days behind schedule, namely, on December 20, 1984. Total depth was reached February 9, 1985 and, following evaluation procedures, the well was cased and suspended, with the rig being released February 19, 1985.

At that time the rig, auxillary equipment and supplies were transported to the second commitment well, Exco et al N. Chance Y.T. D-22.

Exco hereby gives notice that the enclosed report is to be considered the final drilling summary for Exco et al West Parkin Y.T. D-54.



EAGLE PLAINS BLOCK

DAWSON

DEMPESTER HIGHWAY

INUVIK

MACKENZIE RIVER

NORMAN WELLS

GREAT BEAR LAKE

YUKON

NORTHWEST TERRITORIES

WRIGLEY

WHITEHORSE

RIVER

FORT SIMPSON

YELLOWKNIFE

GREAT SLAVE LAKE

HAY RIVER

FT. NELSON

LAKE ATHABASCA

FORT ST. JOHN

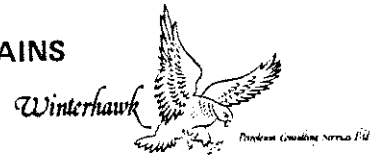
ALBERTA

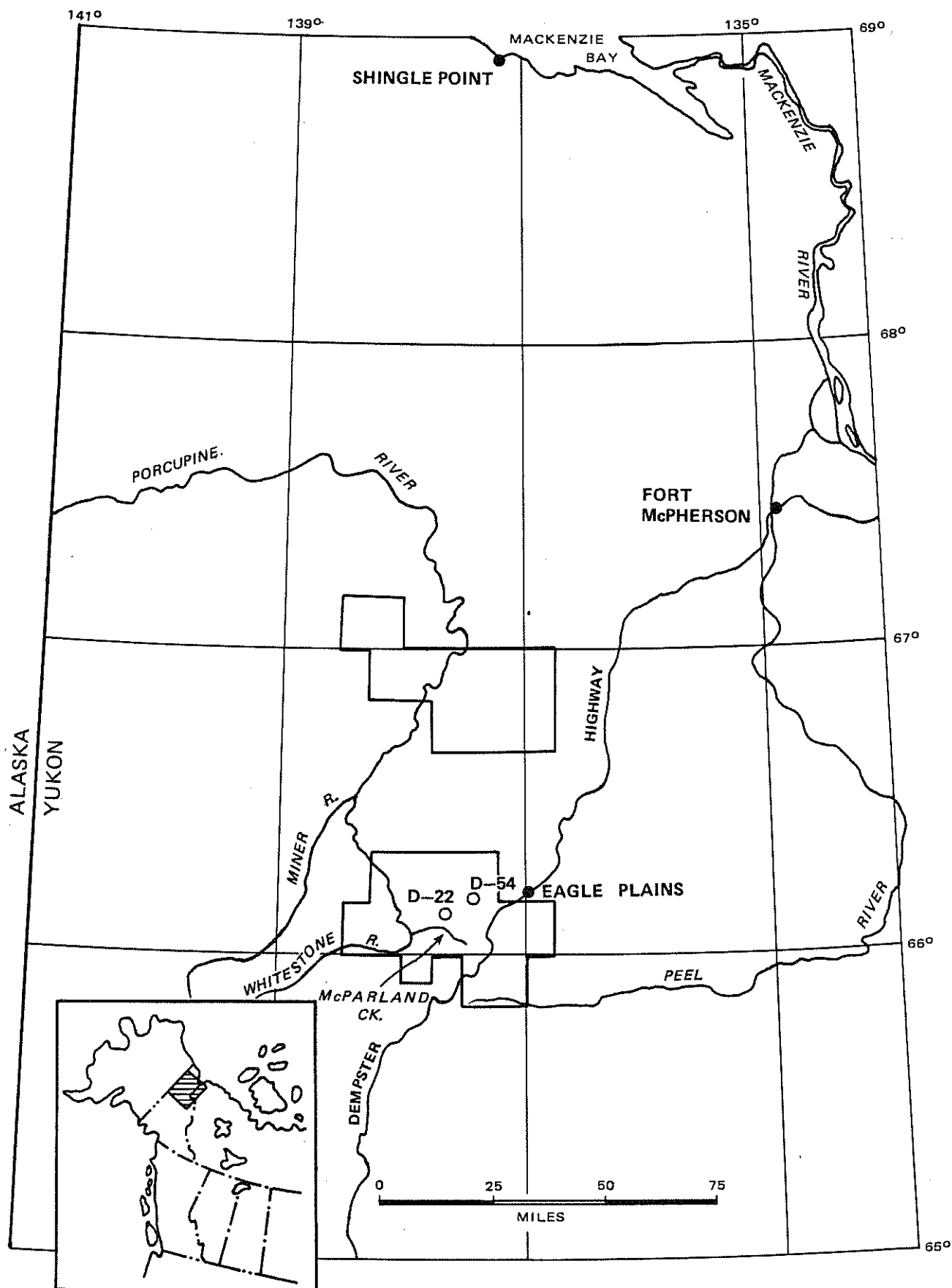
BRITISH COLUMBIA

EDMONTON

CALGARY

EXCO ENERGY LTD.
INDEX MAP SHOWING 1984 - 1985 EAGLE PLAINS PROJECT





EXCO ENERGY LTD.
 1984 - 1985 EAGLE PLAINS PROJECT



GENERAL WELL INFORMATION

WELL NAME: Exco et al West Parkin Y.T. D-54

LESSOR: Westmin Resources Limited
farm out to Exco Energy Ltd.

OPERATOR: Exco Energy Ltd.
6th Floor, 700 - 4th Avenue S.W.
Calgary, Alberta
T2P 3J4

GRID AREA: 66-20-137-15; Unit D; Section 54

CO-ORDINATES: 66° 13' 09.73"N
137° 26' 10.40"W

UNIQUE WELL IDENTIFIER: 300 D54 6620 137 150

EXPLORATION AGREEMENT: No. 231

DRILLING AUTHORITY: No. 1208 issued 84-12-14

DRILLING CONTRACTOR: Gray Mountain Drilling Ltd.
P.O. Box 4998
Whitehorse, Yukon
Y1A 4S2

2000 - 425 - 1st Street S.W.
Calgary, Alberta
T2P 3L8

DRILLING RIG: Custom Drilling Rig #94

CLASSIFICATION: New Field Exploratory (Northern)

ELEVATIONS: G.L. 502.50m
K.B. 506.85m

SPUD DATE: 1984-12-20 @ 1200 hrs.

COMPLETED DRILLING DATE: 1985-02-09 @ 0730 hrs.

RIG RELEASE: 1985-03-01 @ 2000 hrs.

WELL STATUS: Cased & Suspended



WELL SUMMARY

DATE 1985-02-19

Well Exco et al West Parkin Y.T. D-54 Location

Elevations: KB 506.85 m GL 502.50 m CF 502.92 m

History: Spud Date 84-12-20 R.R. Date 85-02-19 TD 1811 m

Status Suspended Gas Well Producing Zone(s) Mississippian (Hart River)

A. DRILLING DETAILS

Hole Size 444.5mm Depth 53 m Logs Nil

Hole Size 311.2mm Depth 460 m Logs Nil

Hole Size 215.9mm Depth 1811 m Logs DIL/GR, CDL/CNS/GR, BHS/GR/CAL, MEL/GR

Hole Size Depth Logs

Casing Size 339.7mm Grade K-55 Depth 53 m Cement Vol. 7 m³

Casing Size 244.5mm Grade N-80 Depth 460 m Cement Vol. 17.31 m³

Casing Size 139.7mm Grade K-55 Depth 1097 m Cement Vol. 31.40 m³

Casing Size Grade Depth Cement Vol.

DST No. 1 Int 1060 m - 1065 m Zone Mississippian (Hart River)

DST No. 2 Int 700 m - 750 m Zone Misrun - Orange Marker

DST No. 3 Int 742 m - 747 m Zone Orange Marker

DST No. 4 Int 1042 m - 1047 m Zone Mississippian (Hart River) Misrun

DST No. 5 Int 1038 m - 1048 m Zone Mississippian (Hart River) Misrun

Core No. Int Zone Rec.

Core No. Int Zone Rec.

Core No. Int Zone Rec.

Plug No. 1 Int 1811 m - 1711 m Cement Vol. 4.3 m³ Felt No

Plug No. 2 Int 1150 m - 1090 m Cement Vol. 3.1 m³ Felt Yes

Plug No. Int Cement Vol. Felt

Plug No. Int Cement Vol. Felt

B. COMPLETION DETAILS

COMPLETION DATE:

Perforations: Int N/A Zone Type

Int N/A Zone Type

Int N/A Zone Type

Stimulations: Formation N/A

N/A

Tubing Details: N/A

Anchor/Packer Details: N/A

Pumping Equipment:

Remarks:

See specific forms for more detail.

ENGINEER J. Reilly

DOWNHOLE PROBLEMS ENCOUNTERED

SUMMARY

For the most part the Exco et al West Parkin Y.T. D-54 well was drilled to total depth without encountering any major downhole problems. However, there were several mechanical, or rig related problems, which seriously delayed operations.

From spud to rig release, the rig was plagued with minor equipment failures including repairs to the clutches, air lines, mud pumps and the mixing pump. These repairs were numerous in number and contributed to a general slowdown in activity. In total, there were 87.75 hours lost due to repairs.

Aside from mechanical problems, lost circulation was noted at the 12 metre, 36 metre and 69 metre depth while drilling both conductor and surface hole. For the most part, these thief zones presented little difficulty. Standard additions of lost circulation material were used to plug the potentially troublesome zones. Although six (6) days were required to treat this problem, in fairness, the majority of the time was lost waiting on a circulating pump. The remainder of the down time can be attributed to waiting on lost circulation material. In review, the urgently required circulating pump and lost circulation materials should have been expedited to the rig location in short order, regardless of the cost.

At the 742 metre depth, while pulling out of the hole, the well was swabbed in. The time involved from when the well first began to flow, to the point at which drilling activity continued again, was nearly 24 hours. If proper tripping practices had been followed (including flow checks) this unfortunate situation would have been avoided.

From this point on no other downhole problems were noted. The hole was drilled to total depth and then production casing was run to the 1078 metre depth. With the exception of some difficulty experienced in obtaining packer seats on drill stem tests, the hole was trouble free.

Outlined on the following page is a synopsis of the delays and resultant lost time on the West Parkin well.

SYNOPSIS

<u>DRILLING DAY</u>	<u>PARTICULARS</u>	<u>LOST TIME</u>
1	Lost circulation at 12 ^m , 36 ^m Rig repairs	4 hours - mix and condition mud 2.5 hours - shock hose
4	Rig repair Lost circulation at 69 ^m	12 hours - thaw out rig, repair mixing pump, flow line, clutch pads 2 hours - mix and condition mud
5	Mix and Condition Mud Rig Repair	16.75 hours - build volume, wait on circulating pump 3 hours - thaw rig
6	Mix and Condition Mud Rig Repair	13.75 hours - lost circulation at 80 ^m , build volume, wait on circulating pump 3.5 hours - thaw out rig
7	Mix and Condition Mud Rig Repair	19.25 hours - mix mud and wait on circulating pump 4 hours - change out mixing pump and motor
8	Mix and Condition Mud Waiting	10 hours - build volume 14 hours - on sawdust - install mud agitators
9	Waiting	13.50 hours - on lost circulation material
10	Rig Repair	2 hours - thaw out rig
12	Rig Repair	8.75 hours - repair clutch and rod packing
17	Rig Repair	11.75 hours - repairs to rig in compliance with COGLA
18	Rig Repair	4 hours - repair steam leaks to mud tanks

SYNOPSIS

<u>DRILLING DAY</u>	<u>PARTICULARS</u>	<u>LOST TIME</u>
24	Circulate Kick	24 hours - strip in hole, mix barite, circulate
27	Rig Repair	2.25 hours - repair air line
28	Rig Repair	5.5 hours - repair pumps, change clutches
29	Rig Repair	4.75 hours - place liner gasket in pump, repair trip tank pump, replace clutch on floor motor
30	Rig Repair	4.75 hours - work on mud pump, work on motor clutches, repair rubber on suction valve
32	Rig Repair	1.25 hours - work on pumps - discharge frozen
33	Rig Shutdown	20.25 hours - failure to comply with COGLA regulations re safety
39	Rig Repair	5 hours - clutch slipping - change clutch, thaw out Kelly
49	Rig Repair	5.5 hours - repair tongs, repair clutch
52	Rig Repair	2 hours - repair clutch
58	Rig Repair	1.25 hour - replace break out line

**SECTION II
GEOLOGICAL SUMMARY**

Geological Wellsite Report

FORWARD ET AL WEST PARKIN YT D 54
Unit D, Section 54, Grid 66 20 137 15

Lat. $66^{\circ} 13' 9.73''$ N
Long. $137^{\circ} 26' 10.4''$ W

Report prepared and submitted by:

Victor P. Jircik
Victor P. Jircik, P. Geol.

International Geological Consultants Ltd.

april 3 1980



- 1165 Limestone as above ; 50% Marl as above
- 1170 Marl, brown, calcareous, siliceous ; 30% Limestone, brown, cryptocrystalline, very argillaceous, siliceous
- 1175 Limestone, buff, cryptocrystalline, very siliceous grading to chert, very argillaceous grading to marl ; 40% Marl as above ; 20% Chert, light brown calcareous
- 1180 Limestone as above, part brown ; 30% Shale, dark brown, very calcareous ; 20% Marl as above ; 10% Chert as above
- 1185 Shale, dark gray-brown, black, slightly bituminous, very calcareous, part siliceous, trace pyrite ; 30% Marl, buff-brown, calcareous, siliceous ; 20% Chert, gray-brown, argillaceous, calcareous ; 20% Limestone, buff, brown, cryptocrystalline, very argillaceous grading to marl, siliceous
- 1190 Shale as above ; 30% Chert as above ; 30% Limestone, buff, cryptocrystalline, very siliceous, argillaceous, silty
- 1195 Shale, dark gray-brown, black, slightly bituminous streaks, slightly siliceous, very calcareous, trace slickensides ; 30% Marl, buff-brown, calcareous, slightly siliceous ; 20% Limestone, buff, as above ; 10% Chert, light brown-gray, calcareous, argillaceous
- 1195-1200 Shale as above, slightly fissile, no slickensides ; 40% Marl, brown, calcareous ; 30% Limestone, light brown, very argillaceous grading to marl, trace fractures with calcite crystals and pyrobitumen
- 1205 Limestone, buff, cryptocrystalline, siliceous, very argillaceous grading to marl, very fine sandy, silty streaks ; 30% Marl, brown, calcareous, grading to shale ; 20% Chert, brown, argillaceous, calcareous ; 20% Sandstone, light brown, fine to medium grained, salt and pepper, calcareous, clean, subround, poorly sorted
- 1210 Limestone, brown, cryptocrystalline, very siliceous, very sandy grading to sandstone, very argillaceous grading to marl ; 30% Shale, dark gray-brown, very calcareous, siliceous ; 20% Chert, brown-gray, argillaceous, calcareous
- 1215 Chert, light brown-gray, calcareous ; 20% Marl, brown, calcareous, grading to shale ; 20% Limestone, buff, cryptocrystalline, very sandy, argillaceous siliceous ; 20% Sandstone, light gray, dark gray, fine to medium grained, salt and pepper, very argillaceous streaks, calcareous, subangular, poorly sorted, part with light oil stain
- 1220 Chert, light brown-gray, calcareous, few fractures and calcite veining ; 30% Limestone, buff, cryptocrystalline, very argillaceous and siliceous streaks, sandy ; 20% Marl, gray-brown, calcareous
- 1225 Limestone, buff, cryptocrystalline, very siliceous grading to chert, sandy, argillaceous ; 30% Chert, light brown-gray, buff, calcareous ; 20% Shale, brown, very siliceous grading to chert, sandy
- 1230 Chert, light brown-gray, calcareous, trace pyrite, trace fracture with light oil stain ; 20% Limestone as above ; 20% Shale as above
- 1235 Chert as above, trace pyrobitumen ; 20% Shale, brown, very siliceous, calcareous
- 1240 Chert light brown-gray, calcareous, trace pyrite, trace fracture with light oil stain ; 30% Chert conglomerate, varicolored chert, dark gray, very argillaceous, siliceous, trace pyrite, subround, light oil stain
- 1245 Chert, light gray-buff, dark gray-brown, calcareous, trace pyrite ; 30% Chert conglomerate, dark gray, varicolored chert and clear quartz grains, subround, very argillaceous, siliceous, pyritic

- 1090 Limestone, buff, brown, cryptocrystalline, argillaceous streaks, part very siliceous grading to chert ; 30% Shale, dark gray-brown, calcareous ; 30% Chert, light gray-brown, trace fracture porosity with oil stain
- 1095 Chert, light brown, dark gray-brown, argillaceous streaks ; 30% Marl, dark gray-brown, calcareous ; 30% Limestone, buff, gray-brown, cryptocrystalline, few medium pellet shadows, part very siliceous, very argillaceous streaks grading to marl
- 1095-1100 Limestone, dark gray-brown, buff, part very siliceous, part very argillaceous grading to marl ; 30% Marl as above ; 30% Chert as above
- 1105 Limestone, light and dark brown, cryptocrystalline, very argillaceous streaks ; 30% Marl, gray-brown, calcareous ; 20% Chert, gray-brown, trace fractures with pyrobitumen
- 1110 Limestone, buff, gray-brown, cpyptocrystalline, very argillaceous streaks part siliceous ; 30% Chert, light gray-brown, gray-brown ; 30% Marl dark gray-brown, calcareous
- 1115 Limestone, buff, brown, cryptocrystalline, few very argillaceous streaks grading to marl, trace fracture porosity with oil stain ; 30% Chert, gray-brown ; 20% Marl, dark gray-brown, calcareous
- 1120 Limestone, buff, cryptocrystalline, very argillaceous streaks grading to marl ; 30% Marl, buff, gray-brown, calcareous ; 20% Chert, light brown, gray-brown, few fractures with calcite crystals, light oil stain and cut
- 1125 Limestone, very fine sandy and silty streaks ; 30% Chert as above, trace fractures and pyrite ; 30% Marl as above
- 1130 Chert, buff, trace pyrite, few fractures with calcite veining and pyrobitumen ; 20% Limestone, buff, cryptocrystalline, very argillaceous streaks slightly silty ; 20% Marl, gray-brown, calcareous ; trace chert pebble conglomerate, very argillaceous, trace pyrite
- 1135 Chert, buff, dark gray-brown, very argillaceous streaks, trace pyrite, trace fractures with heavy oil stain, pyrobitumen and slight cut ; 20% Marl, dark brown, calcareous, very siliceous ; trace varicolored chert pebble conglomerate, very argillaceous, siliceous, calcareous, heavy oil stain
- 1140 Chert, buff, light gray, argillaceous streaks, trace pyrite, few streaks earthy porosity with heavy oil stain, trace fracture porosity with oil stain ; 30% Limestone, buff, cryptocrystalline, part sandy with very fine quartz sand, very argillaceous streaks grading to marl ; 20% Sandstone, dark gray-brown, fine to coarse grained, salt and pepper, very argillaceous silty, angular, poorly sorted, trace pyrite, slightly calcareous, streaks 5% intergranular porosity, abundant pyrobitumen, heavy oil stain, fair cut
- 1145 Limestone as above, part siliceous ; 30% Chert, buff, gray-brown, few fractures with oil stain ; 20% Marl, gray-brown, calcareous ; 10% Sandstone as above
- 1150 Marl, buff, very siliceous, sandy, silty, very calcareous grading to limestone ; 30% Limestone, buff, cryptocrystalline, very argillaceous and siliceous, silty, sandy ; 30% Chert, light brown-gray, trace fractures with pyrobitumen ; 10% Shale, dark brown, very siliceous, calcareous
- 1155 Marl, dark brown, calcareous, trace pyrite and white calcite veining ; 30% Limestone, dark brown, cryptocrystalline, very argillaceous grading to marl ; 10% Chert, light brown-gray
- 1160 Limestone, dark brown, cryptocrystalline, slightly siliceous, sandy and silty, trace white calcite veining, very argillaceous grading to marl ; 40% Marl, dark brown, slightly sandy and silty

- 1030 Chert, light gray-brown, trace fractures with slight oil stain, fluorescence and cut ; 30% Limestone, buff, cryptocrystalline, very sandy ; 20% Marl, light brown-gray, calcareous
- 1035 Sandstone, light gray, fine to coarse grained, varicolored chert and clear quartz grains, clean, very calcareous, trace slight oil stain, subround, poorly sorted ; 30% Chert, gray, light gray, trace pyrite ; 20% Sandstone, light gray, very fine to fine grained, salt and pepper, clean, very calcareous grading to sandy limestone, angular, poorly sorted ; 20% Limestone, buff, cryptocrystalline, clean, very sandy
- 1040 Limestone, buff, cryptocrystalline, clean, slightly dolomitic, very sandy with very varicolored chert grains grading to sandstone ; 30% Sandstone, buff, fine to coarse grained, salt and pepper, clear quartz and varicolored chert grains, clean, very calcareous, angular, poorly sorted ; 20% Chert, light brown-gray
- 1045 Sandstone as above ; 30% Limestone, buff, light brown, cryptocrystalline, part slightly argillaceous ; 20% Sandstone, gray, very fine to medium grained, salt and pepper, clear quartz and varicolored chert grains, clean, slightly siliceous, angular, poorly sorted, abundant pyrobitumen, 8% intergranular porosity, slight oil stain, fluorescence and cut ; 20% Chert, light gray
- 1050 Chert, light brown-gray, part spicular, trace mottled oil stain ; 40% Limestone, buff, cryptocrystalline and brown, very fine crystalline, very silty and very fine sandy streaks, trace crinoid (?), clean, trace mottled oil stain
- 1055 Chert, light gray, trace pyrite and mottled oil stain ; 30% Sandstone, light brown-gray, fine to medium grained, salt and pepper, very calcareous, clean, angular, poorly sorted ; 30% Limestone, buff, brown, cryptocrystalline, very sandy streaks, trace mottled oil stain
- 1060 Chert as above ; 30% Limestone, brown, cryptocrystalline, slightly argillaceous and silty, trace pinpoint porosity, oil stained with slight fluorescence and cut, part light gray, cryptocrystalline, clean, very sandy grading to sandstone ; 20% Sandstone, light gray, very fine to fine grained salt and pepper, very calcareous, clean, angular, poorly sorted
- 1065 Limestone, brown, cryptocrystalline, very argillaceous streaks grading to marl, oil stained with slight cut ; 30% Sandstone, light gray, fine to medium grained, salt and pepper, clean, calcareous, trace pyrite, streaks of 20% porosity part with pyrobitumen, subangular, poorly sorted ; 20% Chert light gray, few fractures with oil stain
- 1070 Chert, light brown-gray, trace pyrite and mottled oil strain ; 30% Sandstone, light gray-buff, medium to coarse grained, salt and pepper, clean, calcareous, trace pyrobitumen and pyrite, subangular, poorly sorted ; 30% Limestone, brown and buff, cryptocrystalline, sandy, very argillaceous streaks
- 1075 Chert, brown, brown-gray, argillaceous, calcareous ; 40% Limestone, buff, brown, cryptocrystalline, very argillaceous streaks ; 20% Marl, brown, calcareous, very siliceous
- 1080 Chert, brown, gray-brown, argillaceous, calcareous streaks, trace fracture porosity with pyrobitumen ; 40% Limestone, buff, dark gray-brown, cryptocrystalline, siliceous, very argillaceous streaks grading to marl ; 20% Marl as above
- 1085 Chert, brown, gray-brown, slightly calcareous streaks, trace fracture porosity with pyrobitumen ; 30% Limestone as above ; 30% Marl as above

- flakes, pyrite and ironstone ; 20% Sandstone as above
- 925 Shale as above ; 30% Siltstone, dark gray, very argillaceous grading to shale, slightly calcareous, very sandy, slightly micaceous
 - 930 Shale, dark gray, slightly calcareous, micaceous, very sandy and silty streaks, very glauconitic, trace pyrite and carbon flakes ; 40% Siltstone, dark gray, very argillaceous, sandy, slightly calcareous, trace pyrite, glauconitic, slightly micaceous
 - 935 Shale as above, few brown, very calcareous streaks grading to marl
 - 940 Shale, dark gray, slightly micaceous and calcareous, glauconitic, very silty grading to siltstone, trace pyrite ; 30% Siltstone, dark gray-brown, very argillaceous grading to shale, very sandy, slightly calcareous, trace mica and glauconite
 - 945 Shale as above ; 20% Siltstone as above
 - 950 Shale as above ; 40% Siltstone as above
 - 955 Shale as above ; 40% Siltstone as above
 - 960 Shale as above ; 50% Siltstone as above
 - 965 Shale, dark gray, slightly micaceous and calcareous, glauconitic, trace pyrite, very silty streaks ; 30% Siltstone as above
 - 970 Shale as above ; 30% Siltstone as above
 - 975 Shale as above ; 30% Siltstone as above
 - 980 Shale as above ; 20% Siltstone as above
 - 985 Shale, dark gray, slightly micaceous, very sandy and silty streaks, few floating medium quartz sand grains, slightly calcareous, glauconitic, trace Inoceramus fragments
 - 990 Shale, dark gray, very pyritic streaks, part very calcareous, part very sandy and silty, glauconitic
 - * ** Hart River 993 (-486) **
 - 995 Limestone, buff cryptocrystalline, very argillaceous and silty, trace pyrite and stylolites ; 40% Shale as above ; 20% Chert, light gray-brown, calcareous streaks, trace fractures with very light oil stain and light fluorescence and cut
 - 995-1000 Limestone, light gray, cryptocrystalline, very sandy with very fine quartz sand grading to sandstone, slightly argillaceous to very argillaceous grading to marl ; 20% Marl, tan, calcareous, very sandy ; 10% Chert, light gray-brown, sandy
 - 1005 Limestone, light gray-buff, cryptocrystalline, very sandy grading to sandstone, clean ; 10% Chert, light gray, sandy
 - 1010 Sandstone, light gray-buff, light brown-buff, very fine grained, quartzose, very argillaceous and very silty streaks, very calcareous grading to sandy limestone ; 30% Limestone as above ; 20% Marl light brown, calcareous, very sandy, traces pinpoint porosity with light oil stain, slight fluorescence and cut ; 10% Chert light gray
 - 1015 Sandstone as above ; 20% Limestone as above ; 20% Marl, brown, calcareous ; 10% Chert, light gray, trace fracture porosity with light oil stain, good fluorescence and cut
 - 1020 Marl, brown, buff, calcareous, sandy ; 20% Chert, oil stained as above
 - 1025 Chert, light gray, light gray-brown, traces fracture porosity with heavy oil stain, good fluorescence ; 30% Marl, gray-brown, very siliceous, sandy calcareous

- 765 Shale as above, trace ironstone
- 770 Shale as above, part slightly calcareous
- 775 Shale, dark gray, slightly fissile, calcareous and micaceous, very silty streaks, trace carbon flakes and slickensides
- 780 Shale as above, trace pyrite
- 785 Shale as above, trace ironstone
- 790 Shale, dark gray, slightly fissile, calcareous and micaceous, few very silty streaks, trace carbon flakes, ironstone, pyrite and slickensides
- 795 Shale as above
- 795-800 Shale, dark gray, slightly fissile, calcareous and micaceous, trace pyrite and ironstone, few silty streaks
- 805 Shale as above
- 810 No sample
- 815 Shale, dark gray, slightly fissile, calcareous and micaceous, trace pyrite and ironstone, silty streaks
- 820 Shale as above
- 825 Shale, dark gray, slightly fissile, calcareous and micaceous, trace pyrite and ironstone, few silty streaks
- 830 Shale as above
- 835 Shale as above
- 840 Shale as above
- 845 Shale as above
- 850 Shale as above
- 855 Shale as above
- 860 Shale as above
- 865 Shale, dark gray, slightly fissile, calcareous and micaceous, trace pyrite few silty streaks
- 870 Shale as above
- 875 Shale as above
- 880 Shale as above ; 10% Siltstone dark gray, very argillaceous, slightly calcareous, sandy, trace pyrite
- 885 Shale as above ; 10% Siltstone as above
- 890 Shale as above
- 895 Shale as above
- 895-900 Shale as above
- 905 Shale as above
- * ** Basal Silt 910 (-403) **
- 910 Shale, dark gray, slightly micaceous and calcareous, very fine sandy and silty streaks, trace glauconite, pyrite and ironstone
- 915 Shale as above ; 20% Sandstone, dark gray, very fine grained, quartzose, slightly calcareous, very argillaceous grading to shale, very silty grading to siltstone, glauconitic, angular, poorly sorted
- 920 Shale, dark gray, slightly micaceous and calcareous, very sandy streaks with very fine to fine sand, very silty streaks, very glauconitic trace carbon

- 20% Coal ; 20% Sandstone as above
- 535 Shale as above ; 30% Sandstone, light gray-buff, very fine grained, quartzose, slightly salt and pepper, very silty, argillaceous, trace mica and carbon flakes, angular, poorly sorted
 - 540 Sandstone, light gray, very fine to fine grained, quartzose, slightly salt and pepper, very silty, argillaceous, trace mica, few carbon flakes, angular, poorly sorted ; 30% Shale, dark gray-brown, very silty and sandy, slightly micaceous
 - 545 Sandstone, gray-brown, very fine grained, quartzose and slightly salt and pepper, very argillaceous and silty, slightly calcareous and siliceous, trace mica, angular, poorly sorted ; 40% Shale as above
 - 550 * Sandstone ** MidSandstone Member 549.5 (-42.5) ** light gray-brown, very fine to fine grained, quartzose and salt and pepper, very silty, slightly siliceous and calcareous, argillaceous streaks, trace mica and carbon flakes, angular, poorly sorted ; 30% Shale dark gray, sandy, silty streaks, micaceous
 - 555 Shale, dark gray, micromicaceous, slightly fissile, trace slickensides ; 30% Sandstone as above
 - 560 Sandstone, light gray-buff, very fine to fine grained, slightly salt and pepper, slightly silty and calcareous, trace mica and kaolin, angular, medium sorting ; 40% Shale, dark gray, sandy, silty streaks, trace mica
 - 565 Sandstone as above, part friable with streaks of 12% intergranular porosity ; 30% Shale as above
 - 570 Sandstone as above, part friable with streaks of 10% intergranular porosity
 - 575 Sandstone, light gray-buff, very fine grained, quartzose and slightly salt and pepper, silty, slightly calcareous, trace kaolin and mica, few carbon flakes, part slightly argillaceous, trace 10% intergranular porosity ; 20% Shale, dark gray, very sandy and silty streaks, few carbon flakes
 - 580 Shale, dark gray, slightly fissile and micromicaceous ; 30% Sandstone, light gray, very fine grained, salt and pepper, very silty, friable, angular, poorly sorted
 - 585 Shale as above ; 30% Sandstone as above
 - 590 Sandstone, light gray, very fine to fine grained, quartzose and slightly salt and pepper, friable, clean, silty, part slightly calcareous, trace kaolin, angular, medium sorting, few streaks of 12% intergranular porosity ; 20% Shale, dark gray, slightly micaceous, few silty, sandy streaks
 - 595 Sandstone as above ; 40% Shale, dark gray, micromicaceous, fissile
 - 595-600 Sandstone, light gray, very fine to fine grained, salt and pepper, friable, clean, silty, trace kaolin, angular, medium sorting ; 30% Shale, dark gray, few silty streaks, slightly micaceous
 - 605 Shale, dark gray, few silty streaks, slightly micaceous ; 40% Sandstone as above, part becoming argillaceous
 - 610 Sandstone, light gray, very fine to fine grained, salt and pepper, friable, clean, silty, angular, medium sorting ; 30% Shale, dark gray, fissile
 - 615 Shale, dark gray, few sandy, silty streaks, part micaceous
 - 620 Sandstone, light gray, very fine grained, salt and pepper, part slightly calcareous, slightly argillaceous, trace mica, very silty grading to siltstone, angular, poorly sorted ; 30% Shale as above
 - 625 Shale, dark gray, few very sandy and silty streaks, slightly micaceous and fissile ; 30% Sandstone as above

- 420 Shale, dark gray, fissile, few sandy streaks, slightly micaceous
- 425 Shale as above ; 30% Sandstone, light gray, very fine grained, salt and pepper, very argillaceous and silty, angular, poorly sorted
- 430 Shale as above, trace ironstone
- 435 Sandstone, light gray, slightly salt and pepper, very silty grading to siltstone, argillaceous, angular, poorly sorted ; 30% Shale, dark gray, few silty streaks, slightly micaceous
- 440 Shale, dark gray, few silty streaks, slightly micaceous ; 30% Sandstone as above
- 445 Shale, dark gray, very fine sandy and silty streaks, slightly micaceous 20% Sandstone, light gray, very fine to fine grained, salt and pepper, very silty, part calcareous and argillaceous, angular, poorly sorted
- 450 Shale as above, trace ironstone ; 20% Sandstone as above
- 455 Shale, dark gray, silty and very fine sandy streaks, slightly micaceous, trace ironstone ; 20% Sandstone, light gray, very fine grained, argillaceous, trace mica, part slightly calcareous, very silty grading to siltstone
- 460 Shale as above ; 20% Sandstone as above
- 465 Shale, dark gray, few very fine sandy and silty streaks, slightly micaceous trace carbon flakes ; 30% Sandstone, gray-brown, very fine to fine grained, salt and pepper, very silty and argillaceous, siliceous, angular, poorly sorted
- 470 Shale, dark gray, slightly fissile and micaceous, few silty streaks, trace carbon flakes and slickensides
- 475 Shale as above
- 480 Shale as above, trace coal
- 485 Shale, dark gray, few silty streaks, slightly micaceous, calcareous and fissile, trace slickensides
- 490 Shale, dark gray, few silty streaks, slightly micaceous and calcareous ; 40% Sandstone, light gray, very fine to fine grained, quartzose and slightly salt and pepper, very silty, calcareous, angular, poorly sorted
- 495 Shale, dark gray, part micromicaceous, part slightly calcareous, trace slickensides
- 495-500 Shale as above, slightly fissile, few silty streaks, trace carbon flakes
- 505 Shale, dark gray, few silty streaks, slightly fissile and micaceous, trace slickensides ; 20% Siltstone, light gray, quartzose, slightly calcareous
- 510 Shale, dark gray, silty, poor sample
- 515 Shale, dark gray, few silty streaks, fissile, part slightly calcareous, trace mica ; 20% Sandstone, light gray, very fine grained, quartzose and slightly salt and pepper, clean, slightly calcareous, very silty grading to siltstone, angular, poorly sorted
- 520 Shale as above ; 20% Sandstone as above
- 525 Shale, dark gray, very fine sandy and silty streaks, very micaceous streaks slightly calcareous, part fissile ; 20% Sandstone, light gray-brown, very fine to fine grained, slightly salt and pepper, very silty, slightly argillaceous, siliceous and calcareous, trace mica, angular, poorly sorted ; 20% Siltstone, light gray, sandy, siliceous, argillaceous
- 530 Shale, dark gray, fissile, few carbon flakes, part slightly calcareous ;

SAMPLE DESCRIPTIONS

(Porosities are estimated from samples)

(Formation Tops are taken from logs)

Note: Questionable samples from 295 to 460m

- * ** Upper Shale Member 295 (+212) **
- 295-300m Shale, dark gray, trace carbon flakes and mica, very sandy streaks, very silty grading to siltstone ; 30% Sandstone, light gray, fine to medium grained, salt and pepper, friable, silty, 10% to 15% intergranular porosity, angular, medium sorting
- 305 Shale as above ; 20% sandstone as above
- 310 Sandstone, light gray, fine to medium grained, salt and pepper, few pink grains, slightly siliceous and friable, trace coal fragments and varicolored chert pebbles, trace pyrite, few argillaceous and silty streaks, streaks of 15% to 20% intergranular porosity, angular, poorly sorted
- 315 Shale, dark gray, fissile, micromicaceous, few silty streaks
- 320 Shale as above, very silty and very micaceous streaks
- 325 Shale as above
- 330 Shale as above ; 30% Siltstone, gray, very sandy, argillaceous, slightly micaceous
- 335 Shale as above ; 30% Siltstone as above
- 340 Shale, dark gray, few silty streaks, slightly micaceous, trace slickensides
- 345 Shale as above
- 350 Shale, dark gray, few silty streaks, slightly micaceous
- 355 Shale as above
- 360 Shale as above ; 20% Sandstone, gray, very fine to fine grained, very sandy, argillaceous, slightly calcareous, angular, poorly sorted
- 365 Shale as above ; 10% Sandstone as above, very silty grading to siltstone
- 370 Shale as above, trace ironstone
- 375 Shale, dark gray, few silty streaks, slightly fissile, part micromicaceous
- 380 Shale as above
- 385 Shale as above
- 390 Shale as above, trace pyrite and ironstone, very silty grading to siltstone
- 395 Shale as above, trace ironstone
- 395-400 Shale as above
- 405 Shale, dark gray, few silty streaks, slightly micaceous, trace ironstone and pyrite ; 30% Sandstone, dark gray, very fine grained, salt and pepper friable, very argillaceous and silty, angular, poorly sorted
- 410 Shale, dark gray, few silty streaks, trace mica, ironstone and slickensides
- 415 Shale as above

FORWARD ET AL WEST PARKIN YT D 54

GEOLOGICAL FORMATIONS AND MARKERS

Formation or marker	Depth(Logs)	Subsea
CRETACEOUS		
Lower Cretaceous Upper Shale Member	295m	+212m
Lower Cretaceous Mid-Sandstone Member	549.5	-42.5
Lower Cretaceous Lower Shale Member	630	-123
Orange Marker	742.25	-235.25
Basal Silt	910	-403
CARBONIFEROUS		
Hart River	993	-486
DEVONIAN		
Unit One Shale/Silt	1650	-1143
Tuttle Sandstone	1750	-1243
Total Depth - Driller	1811	-1304

- 1250 Chert, buff gray, trace fractures with slight oil stain ; 20% Conglomerate as above ; 10% Marl, brown, calcareous, siliceous ; Very poor sample
- 1255 Chert as above ; 20% Shale, brown, very siliceous grading to chert
- 1260 Chert as above ; 20% Shale as above
- 1265 Chert, light gray, dark gray, very argillaceous, calcareous, trace pyrite, few fractures with oil stain, slight fluorescence ; 30% Shale, dark gray-brown, trace pyrite, slightly calcareous, very siliceous grading to chert ; 20% Limestone, light brown, cryptocrystalline, very argillaceous streaks very siliceous grading to chert
- 1270 Limestone, light brown, cryptocrystalline, very argillaceous grading to marl, very siliceous grading to chert ; 40% Shale, dark gray-brown, very calcareous grading to marl ; 10% Chert as above
- 1275 Limestone, brown, cryptocrystalline, slightly siliceous, very argillaceous grading to marl, trace white calcite veining ; 30% Marl, brown, calcareous ; 20% Chert, dark brown, calcareous
- 1280 Limestone as above ; 30% Marl as above ; 30% Chert as above
- 1285 Limestone, brown, cryptocrystalline, few siliceous streaks, very argillaceous grading to marl ; 30% Marl, brown, calcareous
- 1290 Marl, brown, calcareous ; 30% Limestone, brown, cryptocrystalline, few fractures with calcite crystals, very argillaceous grading to marl ; 20% Shale, black, very calcareous, slightly bituminous ; 20% Chert, brown, calcareous
- 1295 Shale, dark gray-brown, very calcareous ; 30% Limestone, brown, light brown, cryptocrystalline, part slightly siliceous, part very argillaceous grading to marl, trace coral fragment (?), trace calcite veining with calcite crystals and pyrobitumen ; 20% Chert, dark gray-brown, calcareous
- 1295-1300 Shale, dark gray-brown, very calcareous grading to marl ; 40% Limestone, brown, light brown, very argillaceous grading to marl
- 1305 Limestone as above ; 40% Marl, brown, calcareous ; 10% Chert, dark brown, calcareous
- 1310 Marl, brown, buff, calcareous, slightly siliceous ; 30% Shale as above, slightly siliceous ; 30% Conglomerate, varicolored chert, very pyritic and siliceous, argillaceous, calcareous
- 1315 Marl, brown, calcareous ; 30% Limestone, brown, light brown, cryptocrystalline, very argillaceous, siliceous ; 20% Chert, brown, calcareous
- 1320 Marl as above ; 30% Limestone as above ; 5% Chert as above
- 1325 Marl, dark gray-brown, calcareous ; 10% Chert, dark brown, argillaceous, calcareous
- 1330 Shale, dark gray-brown, very calcareous, trace fracture with pyrobitumen
- 1335 Shale as above with trace fractures and pyrobitumen
- 1340 Limestone, light brown, cryptocrystalline, very siliceous and argillaceous slightly sandy, trace white calcite veining ; 30% Shale, brown, very calcareous, siliceous ; 30% Chert, dark brown, calcareous, trace calcite veining
- 1345 Marl, brown, calcareous, siliceous ; 30% Shale, brown, black, very calcareous, part bituminous ; 30% Limestone, brown, cryptocrystalline, very argillaceous, siliceous, few streaks fine to medium grained quartz sand
- 1350 Limestone, buff, cryptocrystalline, argillaceous, slightly siliceous and sandy ; 30% Chert, light brown, calcareous

- 1355 Limestone, buff, cryptocrystalline, slightly argillaceous and siliceous, silty, few fine to medium pellet shadows ; 30% Chert as above, few fractures ; 20% Marl, brown, calcareous
- 1360 Chert, light brown-gray, calcareous, few fractures with pyrobitumen ; 30% Limestone, buff, cryptocrystalline, argillaceous, siliceous, trace pyrite ; 20% Shale, brown, very siliceous, calcareous
- 1365 Limestone, buff, cryptocrystalline, slightly argillaceous and siliceous, trace very fine quartz sand, few fine pellet shadows ; 30% Chert, light gray-buff, calcareous, trace white calcite veining
- 1370 Limestone, buff, brown, cryptocrystalline, very argillaceous, siliceous, very fine sandy streaks grading to sandstone ; 20% Chert, gray-brown, calcareous
- 1375 Limestone as above ; 20% Marl, brown, calcareous, very sandy grading to very fine sandstone ; 20% Chert, light gray-brown, calcareous
- 1380 Limestone, brown, cryptocrystalline, slightly siliceous, argillaceous and sandy, very fine sand, trace pyrite, few very argillaceous streaks grading to marl ; 20% Chert, brown, gray-brown, calcareous, argillaceous ; 20% Shale, gray-brown, calcareous, very siliceous grading to chert
- 1385 Chert, brown, dark brown, argillaceous, calcareous, trace pyrite and fracture with pyrobitumen ; 30% Limestone, light brown, cryptocrystalline, very siliceous, argillaceous, very sandy with very fine sand, trace pyrite and calcite veining ; 20% Shale, dark gray-brown, very siliceous grading to chert, calcareous, sandy
- 1390 Chert, brown, light brown, very calcareous streaks, few fractures and calcite veining ; 30% Limestone, light brown, cryptocrystalline, very siliceous grading to chert, very argillaceous, very fine sandy streaks ; 20% Shale, gray-brown, calcareous, very siliceous grading to chert
- 1395 Chert, brown, dark brown, very calcareous streaks, trace white calcite veining ; 20% Limestone as above ; 20% Shale as above
- 1395-1400 Chert as above ; 20% Marl, light brown, calcareous, very siliceous, silty ; 10% Shale, dark gray-brown, calcareous, very siliceous, sandy
- 1405 Chert, light brown-gray, calcareous, trace pyrite and calcite veining ; 40% Limestone, light brown, cryptocrystalline, very argillaceous and siliceous, very fine sandy streaks ; 20% Marl, brown, calcareous, siliceous, sandy
- 1410 Chert as above, no pyrite ; 30% Limestone as above ; 30% Shale, brown, calcareous, very siliceous
- 1415 Limestone, brown, cryptocrystalline, very argillaceous grading to marl, siliceous, very fine sandy streaks, few fractures with calcite crystals ; 40% Chert, light brown-gray, calcareous, trace calcite veining ; 20% Marl brown, calcareous, siliceous, sandy
- 1420 Limestone as above ; 40% Chert as above, trace pyrite ; 20% Marl as above
- 1425 Chert, light brown-gray, calcareous, few fractures with calcite crystals and trace pyrobitumen ; 30% Limestone, light brown, cryptocrystalline, few very argillaceous streaks, slightly siliceous and silty trace calcite veining ; 30% Marl, brown, calcareous, very siliceous
- 1430 Chert, dark gray-brown, light brown-gray, calcareous, argillaceous streaks trace white calcite veining ; 40% Limestone as above ; 20% Shale, brown, very siliceous, silty, slightly calcareous, good oil stain, fluorescence and cut

- 1435 Chert as above ; 40% Limestone as above, very argillaceous grading to marl ; 20% Shale, gray-brown, calcareous, very siliceous
- 1440 Chert, brown, light brown-gray, calcareous, few fractures and calcite veining ; 30% Limestone, light brown, cryptocrystalline, very argillaceous and siliceous, slightly sandy ; 20% Marl, brown, calcareous, siliceous, slightly sandy ; 20% Shale, black, bituminous, very calcareous
- 1445 Limestone, buff, cryptocrystalline, slightly sandy, very argillaceous grading to marl ; 30% Chert, light gray-buff, calcareous, trace calcite veining ; 20% Shale, dark gray-brown, very calcareous, slightly siliceous
- 1450 Chert, dark brown, light brown-gray, calcareous ; 30% Shale, very dark gray, black, fissile, calcareous, bituminous streaks ; 30% Marl, brown, calcareous
- 1455 Marl, brown, calcareous, trace fractures with calcite crystals and pyrobitumen ; 40% Shale, dark gray-brown, very calcareous, slightly fissile
- 1460 Marl, dark gray-brown, calcareous, sandy, trace slickensides
- 1465 Marl as above, slightly bituminous, trace pyrite, no slickensides
- 1470 Shale, dark gray-brown, very calcareous, very sandy streaks, part slightly fissile ; 30% Sandstone, gray, light gray, very fine grained, slightly salt and pepper, very calcareous and silty, argillaceous, angular, poorly sorted
- 1475 Shale as above, trace crinoid ; 30% Sandstone as above ; 20% Sandstone, light gray, fine to medium grained, salt and pepper with varicolored chert and clear quartz grains, very calcareous, slightly argillaceous and silty, angular, poorly sorted
- 1480 Marl, light brown, very calcareous and silty, siliceous, very sandy grading to 10% Sandstone, very fine, as above ; 30% Shale, dark gray-brown, part fissile, very calcareous, siliceous and sandy grading to chert ; 20% Sandstone, medium grained as above ; 10% Chert, brown, light brown, calcareous
- 1485 Shale, black, slightly calcareous, fissile, slightly bituminous, trace pyrite, very fine sandy streaks ; 20% Marl, brown, calcareous, very siliceous, sandy ; 20% Chert, brown, light brown, calcareous, argillaceous, sandy, trace white calcite veining
- 1490 Shale, very dark gray, black, slightly calcareous, bituminous and fissile, sandy ; Sandstone, light gray, gray, very fine grained, salt and pepper, very calcareous and silty, siliceous and argillaceous streaks, angular, poorly sorted ; 20% Chert, brown, calcareous, trace fractures with calcite crystals
- 1495 Shale, brown, slightly calcareous and siliceous, silty, trace white calcite veining, trace fractures with calcite crystals, good oil stain, fluorescence and cut ; 30% Chert, light brown-gray, calcareous, trace calcite veining ; 20% Sandstone, light gray, very fine to fine grained, salt and pepper, very calcareous, clean, silty, trace kaolin, angular, poorly sorted
- 1495-1500 Chert, light gray-brown, calcareous, few fractures with calcite crystals ; 40% Shale as above ; 10% Marl, brown, calcareous
- 1505 Shale as above ; 20% Chert as above, few fractures with oil stain ; 20% Marl, brown, calcareous, very siliceous and silty ; 10% Sandstone, light gray, fine to medium grained, salt and pepper, varicolored chert and clear quartz grains, very calcareous, siliceous, clean, angular, poorly sorted
- 1510 Shale, brown, slightly calcareous, silty, good oil stain, fluorescence and cut ; 20% Chert, light gray-brown, calcareous, trace calcite veining

- 1515 Chert, light gray-brown, calcareous, argillaceous, few calcite veins ; 40% Shale as above ; 20% Marl, light brown, calcareous, siliceous, slightly sandy and silty
- 1520 Chert as above ; 20% Shale as above ; 20% Marl as above
- 1525 Chert, gray-brown, calcareous, argillaceous, few calcite veins ; 20% Shale as above ; 20% Marl as above
- 1530 Shale, very dark gray, black, slightly fissile, calcareous, sandy, silty, part slightly bituminous ; 20% Sandstone, light gray, very fine grained, salt and pepper, calcareous, very silty, trace kaolin, angular, poorly sorted ; 20% Marl, light brown, very calcareous grading to limestone, silty
- 1535 Shale, very dark gray, black, very calcareous, part slightly bituminous, very silty, slightly fissile
- 1540 Shale as above ; 40% Chert, light brown-gray, calcareous ; 10% Marl, brown, calcareous, sandy
- 1545 Sandstone, light gray, light brown, very fine to fine grained, salt and pepper, silty, calcareous, siliceous, slightly argillaceous, angular, poorly sorted, part very argillaceous with oil stain ; 30% Shale, as above ; 20% Chert as above ; 10% Marl as above
- 1550 Shale, very dark gray, very calcareous and sandy ; 20% Sandstone, light gray, very fine to fine grained, salt and pepper, very silty, argillaceous calcareous, angular, poorly sorted ; 20% Chert, light brown-gray, calcareous ; 10% Marl as above
- 1555 Shale as above ; 40% Sandstone, light gray, light brown-gray, very fine to fine grained, salt and pepper, very siliceous and silty, argillaceous, slightly calcareous, angular, poorly sorted, part with good oil stain, fluorescence and cut
- 1560 Shale, very dark gray-brown, very sandy and silty, siliceous streaks, calcareous, slightly fissile ; 50% Sandstone, dark gray, light gray, very fine to fine grained, salt and pepper, siliceous, calcareous, very silty, very argillaceous streaks, angular, poorly sorted
- 1565 Shale as above ; 30% Sandstone as above, very argillaceous ; 20% Shale, black, bituminous, slightly calcareous, fissile
- 1570 Shale, very dark gray, black, fissile, slightly bituminous, part slightly calcareous
- 1575 Shale, black, fissile, calcareous, bituminous
- 1580 Shale as above, slightly calcareous
- 1585 Shale, very dark gray-brown, black, slightly calcareous, trace slickensides ; 20% Marl, brown, calcareous
- 1590 Shale, dark gray, dark gray-brown, few to abundant crinoids, calcareous, slightly fissile ; 20% Marl as above ; 20% Limestone, gray-brown, medium to coarse crinoidal, very argillaceous
- 1595 Limestone, light brown, 60% medium to coarse pellet and crinoid fragmental very argillaceous, slightly sandy ; 20% Shale as above ; 20% Shale, black, very dark gray-brown, slightly calcareous, fissile, trace crinoids, few slightly bituminous streaks
- 1595-1600 Shale, black very dark gray-brown, calcareous, trace crinoids, few slightly bituminous streaks
- 1605 Shale as above, very silty streaks, very calcareous grading to marl
- 1610 Shale as above ; 40% Limestone, light brown, 60% fine to medium pellet

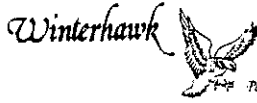
- crinoid fragmental, very argillaceous, sandy
- 1615 Shale, black, bituminous, fissile, slightly calcareous, trace slickensides
 - 1620 Shale as above, slightly calcareous to noncalcareous
 - 1625 Shale as above
 - 1630 Shale as above, trace pyrite ; 30% Limestone, brown, cryptocrystalline to very fine crystalline, very argillaceous grading to marl, very siliceous and sandy, trace crinoids
 - 1635 Shale, black, fissile, noncalcareous, trace pyrite and slickensides ; 20% Sandstone, brown, quartzose, fine grained, very siliceous grading to quartzite, calcareous, angular, poorly sorted ; 20% Marl, brown, calcareous, siliceous
 - 1640 Shale as above, slightly pyritic
 - 1645 Shale as above
 - 1650 Shale, black, slightly bituminous, fissile, few silty streaks, trace pyrite, noncalcareous
* ** Unit One Shale 1650 (-1143) **
 - 1655 Shale as above, part very dark gray, fissile, noncalcareous
 - 1660 Shale, very dark gray, dark gray, fissile, noncalcareous, trace pyrite and carbon flakes ; 30% Marl, brown, calcareous
 - 1665 Shale as above, few silty streaks ; 20% Marl as above
 - 1670 Shale, very dark gray, black, fissile, noncalcareous, slightly silty, trace carbon flakes and pyrite
 - 1675 Shale as above ; 20% Sandstone, light gray, very fine to fine grained, salt and pepper, very siliceous, dolomitic, silty, trace pyrite, angular, poorly sorted
 - 1680 Shale, dark gray, fissile, noncalcareous, trace pyrite and carbon flakes 20% Sandstone, light gray, very fine to fine grained, slightly salt and pepper, siliceous, dolomitic, very silty, argillaceous streaks, angular, poorly sorted
 - 1685 Shale, dark gray, very dark gray, fissile, few silty streaks, trace pyrite and carbon flakes
 - 1690 Shale as above
 - 1695 Shale as above ; 20% Marl, brown, calcareous
 - 1695-1700 Shale as above
 - 1705 Shale as above
 - 1710 Shale, dark gray, fissile, few silty streaks, trace carbon flakes and pyrite
 - 1715 Shale as above ; 20% Sandstone, gray, very fine to fine grained, quartzose, very argillaceous, silty and siliceous, slightly calcareous, angular, poorly sorted
 - 1720 Shale as above
 - 1725 Shale as above, trace ironstone ; 20% Sandstone, light brown, fine to medium grained, salt and pepper, very siliceous, dolomitic, clean, silty, slight oil stain, angular, poorly sorted
 - 1730 Shale, dark gray, fissile, splintery, trace carbon flakes and pyrite, few very fine sandy and silty streaks, trace ironstone
 - 1735 Shale as above, no ironstone
 - 1740 Shale as above, trace ironstone

- 1745 Shale as above
- * ** Tuttle Sandstone 1750 (-1243)
- 1750 Shale, dark gray, fissile, splintery, trace ironstone and pyrite ; 30% Sandstone, light brown, fine to medium grained, salt and pepper, gray-brown chert and clear quartz grains, quartzitic, slightly dolomitic and calcareous, silty, clean, trace pyrite, angular, poorly sorted, slight oil stain, fluorescence and cut
- 1755 Sandstone, light brown, fine to medium grained, salt and pepper, gray-brown chert and clear quartz grains, quartzitic, clean, slightly dolomitic and calcareous, silty, trace pyrite, angular, poorly sorted, slight oil stain, fluorescence and cut ; 50% Shale as above, trace slickensides
- 1760 Shale as above, trace slickensides ; 20% Sandstone as above
- 1765 Shale, dark gray, fissile, splintery, trace pyrite and ironstone
- 1770 Shale as above ; 10% Sandstone, light brown, fine to medium grained, salt and pepper, very siliceous, calcareous, dolomitic, silty, clean, angular, poorly sorted, light oil stain
- 1775 Shale as above, trace slickensides ; 10% Sandstone as above
- 1780 Shale as above ; 10% Sandstone, light gray-brown, fine to medium grained, salt and pepper, quartzitic, slightly dolomitic and calcareous, angular, poorly sorted
- 1785 Shale, dark gray, splintery, fissile, trace pyrite and ironstone ; 10% Sandstone as above
- 1790 Shale as above abundant slickensides
- 1795 Shale, dark gray, fissile, splintery, trace pyrite, slickensides, few carbon flakes
- 1795-1800 Shale as above, trace ironstone
- 1805 Shale as above
- 1811 Shale, dark gray, fissile, trace pyrite and ironstone, few carbon flakes

SECTION III
ENGINEERING SUMMARY

DRILL STEM TESTS

The Mississippian (Hart River) formation and the Lower Cretaceous Orange Marker were selectively tested for hydrocarbon determination. Of the five (5) drill stem tests attempted, three (3) were misruns. This was due, in part, to a combination of poor packer seats and downhole tool problems. One successful test was run across both of the above noted formations.



A. WELL DATA FIELD DRILL STEM TEST REPORT

DATE 85-02-12

Well: Exco et al West Parkin Y.T. D-54 Location _____

DST No. 1 Interval 1062 m - 1064 m Formation Hart River

Last Casing: Size 244mm Depth 460 m Open Hole: Size 215.9mm Depth 1811 m

Hole Troubles: Deviation at bottom Caliper at Packer(s) 240 m

Mud: Wt. 1186 kg/m³ Vis 70 W.L. 7.0 % Oil - ppm Cl 8

B. TEST STRING DATA

Testing Company Halliburton Type of Test Inflate

Type and Number of Packers 2 - Inflate Gates Size 178mm

DP Size 114mm Wt 24.7 kg/m Length 862.94 m

DC Size 159/171mm Wt 123/150 kg/m I.D. 57/71mm Length 184.03 m

Tail Pipe Size N/A Wt N/A Length N/A Perfs N/A m

T.D. String _____ Recorder Depth 1046/1048 m Water Cushion Inhibitor BH Choke 19.04mm

Packer Depth(s) 1060/1065 m Weight on Packer(s) 30,000 daN

Other Equipment Temperature Gauge 1049 m. Two Bottom Hole Samplers

C. TEST RESULTS

Times: PF 15 ISI 60 Flow 60 SI 120 Flow - FSI -

Pressures: PF 916 kPa IH 11,936 kPa ISI 3195 kPa IF 1826 kPa

TEMP - °C FH 12,086 kPa FSI 4257 kPa FF 3042 kPa

Flow Descriptions:

Preflow: Very slow start, building slowly, to strong and building at ISI (AIR)

Valve Open Flow: Slow starting, to very strong air, dying to 4" in bubble pail.
(No gas to surface).

Recoveries: Salt water gas cut H₂S 6%, 305 m salt.

D. SAMPLE DETAILS:

Sample caught top and middle tool.

Sent to: _____ Via: _____ Date Sent: _____

E. REMARKS:

Difficulty opening valve on flow - 1 1/4 hours.

Very cold.

Note: Data reported on this form are field readings taken at the time of test, and are subject to correction.

ENGINEER Stu Cameron

TESTERS
L. Bruneau
S. Cameron
DRILLING CONTRACTOR
Gray Mountain



FORMATION TESTING
DATA SHEET

REFER TO INVOICE NO. 44 899
DATE OF TEST 85-02-12
TEST No. 1
JOB TYPE Hydroflate Straddle

PRESSURE SUMMARY kPa						
GAUGE NUMBER	2326	2620	545	1853		
LOG SE DEPTH	1045.28	1046.53	1066.76	1068.62		
BLOCKED OFF	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO
HOUR CLOCK TRAVEL	48	48	24	24		
INITIAL HYDROSTATIC	12 153	12 165	12 324	12 320		
FLOW	INITIAL	410	411	724	780	
	FINAL	1 168	1 216	1 321	1 402	
FIRST CLOSED IN	9 793	9 823	9 953	10 023		
SECOND FLOW	INITIAL	1 563	1 590	1 826	1 864	
	FINAL	4 069	4 077	4 261	4 296	
SECOND CLOSED IN						
THIRD FLOW	INITIAL					
	FINAL					
THIRD CLOSED IN						
FINAL HYDROSTATIC	12 234	12 230	12 464	12 454		

TIME PERIODS					
	FIRST	SECOND	THIRD		TIME
FLOW	15	60		TESTER VALVE OPENED	10:25
CLOSED IN	60	120		PACKER UNSEATED	16:10

EQUIPMENT AND WELL DATA			
FORMATION TESTED	Hart River		
TEMP. REC. No.	TE70		
DEPTH	1047.78 m		
MAX. TEMP.	37 °C		
NET PRODUCTIVE THICKNESS	m		
MUD TYPE	Gel Chemical		
Ground ELEVATION	502.5 m	MUD DENSITY kg/m ³	MUD VISC s/L
		1190	70
ALL DEPTHS MEASURED FROM:	<input type="checkbox"/> KB	<input checked="" type="checkbox"/> GROUND	CASING OR HOLE SIZE
			216 mm
PACKER DEPTHS	TOP 1060	BOTTOM 1065 m	RATHOLE SIZE
			mm
DEPTH OF TESTER VALVE	1039.34 m	DRILL PIPE OD mm	kg/m
		114.3	24.7
CASING PERFORATED INTERVAL	N/A m	DRILL COLLARS ABOVE TESTER VALVE	ID mm LENGTH m
		71	184.03
TOTAL DEPTH	1811 m	SURFACE CHOKE	25.4 mm
AMOUNT AND TYPE CUSHION	Nil	BOTTOM CHOKE	19.05 mm

LIQUID RECOVERY DATA	
METRES	DESCRIPTION OF LIQUID
305	Sour gas cut water.
305	TOTAL LIQUID RECOVERY

SAMPLE DATA
OIL GRAVITY _____ @ _____ °C
OIL RATIO _____
REFRACTOMETER/RELATIVE DENSITY _____
RECOVERY WATER _____ @ _____ °C
WATER CONTENT _____ mg/L

SAMPLE SHIPPED TO LABORATORY YES NO
SAMPLER No. 706, 1002
GAS SAMPLE BOTTLE No.
LABORATORY _____

REMARKS
Charts indicate that tool opened for Final Flow at 11:40 but did not close in at 14:10 as indicated in the job log. This resulted in an extended (270 minute) flow period with no Final Closed In period. First Closed In period does not have sufficient closure for an accurate Horner Extrapolation.

COMPANY EXCO ENERGY LTD.
LEGAL DESCRIPTION Long. 137-26-10.4W Lat. 66-13-9.73N
PROVINCE OR TERRITORY YUKON
FIELD OR AREA WEST PARKIN
TEST NUMBER 1
TESTED INTERVAL 1060 - 1065
WELL NAME AND NUMBER PARKIN D-54
FORMER WELL NAME AL WESI

DATES AND TIMES (00:00-24:00 HRS.)	CHOKE SIZE (mm)	SURFACE PRESSURE (kPa)	GAS RATE (m ³ /day)	LIQUID RATE (m ³ /day)	REMARKS
85-02-11					
20:15					Load 4 pressure recorders and 1 temperature recorder.
20:45					Thaw out test tools.
20:50					Rig finished pulling out of hole and then ran in with casing plug to test casing, rams, hydyl, and manifold.
23:00					Pull out of hole.
23:30					Pick up bottom section of test tools and make up.
					Pick up top section, load recorders, samplers, etc.
02:30					Strap and run in collars.
04:15					Slip and cut line.
06:15					Strap pipe and run in.
08:45					Head up surface equipment.
10:00					Rotate tool at 45 RPM. String weight 40 000 daN.
10:20					Pick up 4000 daN over string weight. O.K.
10:21					Put 7000 daN on tool.
10:23					Put total of 14 000 daN on tool.
10:25					Tool Opened: Very weak air blow increasing to strong in 12 minutes. To bottom of pail in 8 minutes. No gas to surface.
10:40					Tool closed.
11:40					Tried to open tool, would no open. Pull all weight on tool, did not open, no indication tool opening. Worked pipe up and down still wouldn't open.
13:10					Tool Open: Strong blow, slowly decreasing to approximately 4" in water bucket.
14:10					Shut In tool.
16:10					Tried to open tool in 6 minutes with 40 000 daN. Could not. Pull out of hole.
19:15					Got to fluid at 305 m above tool. Sour gas readings.
20:00					Safety meeting with new crew.

HALLIBURTON SERVICES LIMITED

SPECIAL PRESSURE DATA

DATE: 85-02-12

TICKET # 44899

* Gauge Number : 1853. *
* Gauge Depth : 1069. m *
* Time of Flow : 15.0 min. *
* Final Pressure : 1401.7 kPa. *

Initial Hydrostatic Pressure = 12320.0 kPa
Final Hydrostatic Pressure = 12454.3 kPa

GAUGE 1, FLOW 1

	Time Deflection (in)	Time (minutes)	Pressure (kPa)
1.	0.0000	0.0	780.4
2.	0.0160	5.0	841.0
3.	0.0320	10.0	1144.1
4.	0.0481	15.0	1401.7

HALLIBURTON SERVICES LIMITED

GAUGE 1, CIP 1

	Time Deflection (in)	Time (minutes)	T+dt Log ---- dt	Pressure (kPa)
1.	0.0067	2.0	0.9313	3797.6
2.	0.0134	4.0	0.6784	4637.1
3.	0.0203	6.0	0.5425	5191.7
4.	0.0268	8.0	0.4600	5553.9
5.	0.0338	10.0	0.3969	5963.0
6.	0.0403	12.0	0.3528	6296.4
7.	0.0504	15.0	0.3015	6735.9
8.	0.0674	20.0	0.2429	7424.8
9.	0.0840	25.0	0.2044	7969.5
10.	0.1009	30.0	0.1762	8484.4
11.	0.1177	35.0	0.1550	8879.9
12.	0.1346	40.0	0.1384	9215.7
13.	0.1514	45.0	0.1250	9484.4
14.	0.1683	50.0	0.1140	9700.8
15.	0.1852	55.0	0.1047	9893.3
16.	0.2020	60.0	0.0969	10023.1

HALLIBURTON SERVICES LIMITED

SPECIAL PRESSURE DATA

DATE: 85-02-12

TICKET # 44899

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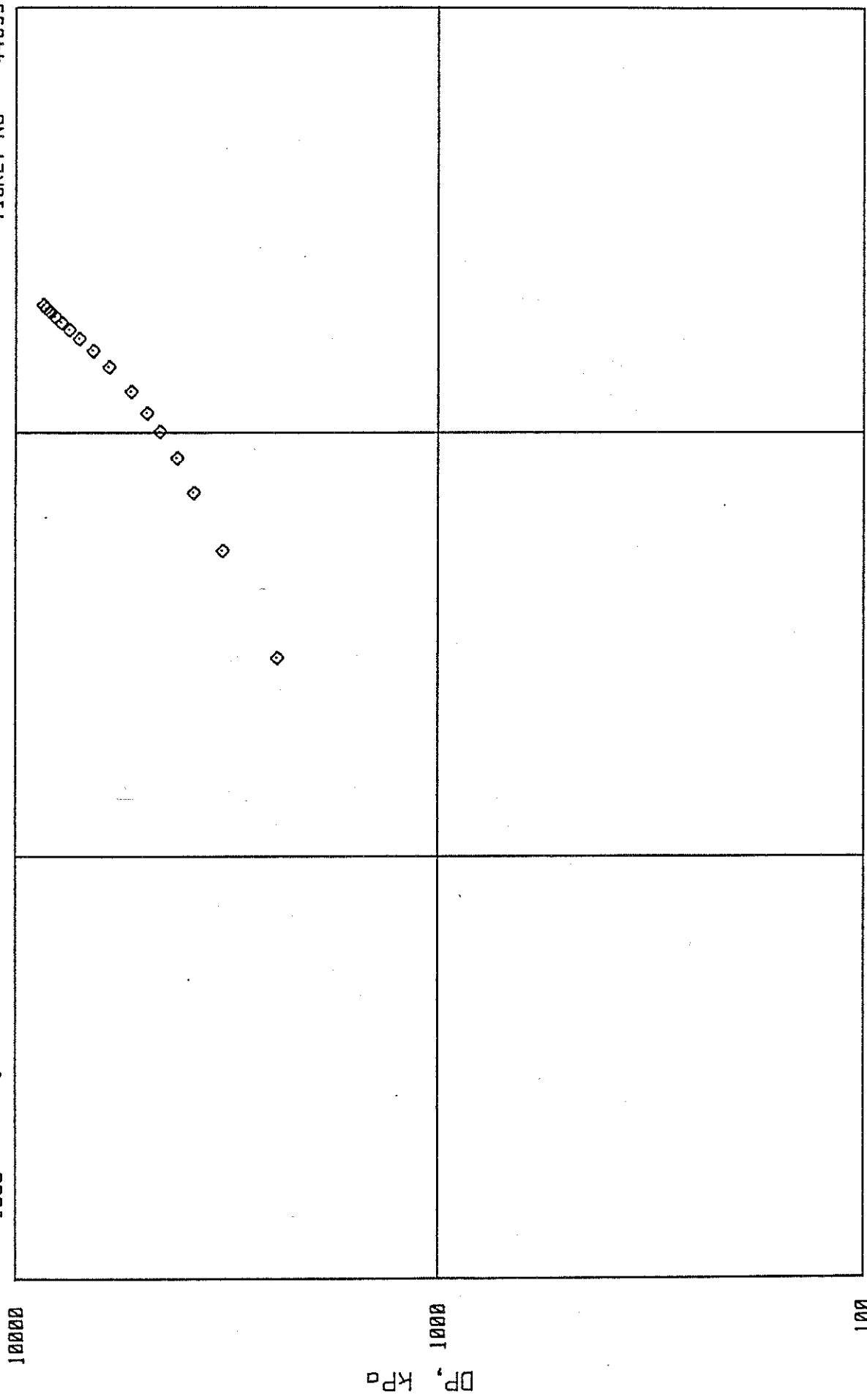
-----
* Gauge Number      :      1853.      *
* Gauge Depth       :      1069.      m  *
* Time of Flow      :      270.0 min. *
* Final Pressure    :      4296.1 kPa. *
-----
    
```

GAUGE 1, FLOW 2

	Time Deflection (in)	Time (minutes)	Pressure (kPa)
1.	0.0000	0.0	1863.9
2.	0.0338	10.0	2220.0
3.	0.0673	20.0	2394.3
4.	0.1012	30.0	2538.3
5.	0.1347	40.0	2659.5
6.	0.1686	50.0	2786.8
7.	0.2023	60.0	2894.4
8.	0.2358	70.0	3000.5
9.	0.2696	80.0	3071.7
10.	0.3032	90.0	3180.8
11.	0.3369	100.0	3250.5
12.	0.3708	110.0	3332.3
13.	0.4043	120.0	3408.1
14.	0.4382	130.0	3477.8
15.	0.4718	140.0	3553.6
16.	0.5055	150.0	3621.8
17.	0.5392	160.0	3697.5
18.	0.5728	170.0	3767.2
19.	0.6067	180.0	3833.9
20.	0.6403	190.0	3887.0
21.	0.6742	200.0	3947.6
22.	0.7078	210.0	4000.6
23.	0.7415	220.0	4053.7
24.	0.7752	230.0	4109.7
25.	0.8088	240.0	4159.7
26.	0.8425	250.0	4212.8
27.	0.8763	260.0	4273.4
28.	0.9100	270.0	4296.1

GAUGE NO CIP 1 2
1853

TICKET NO 44899



GAUGE NO CIP 1 2
1853

TICKET NO 44899

14000

12000

10000

8000

6000

4000

2000

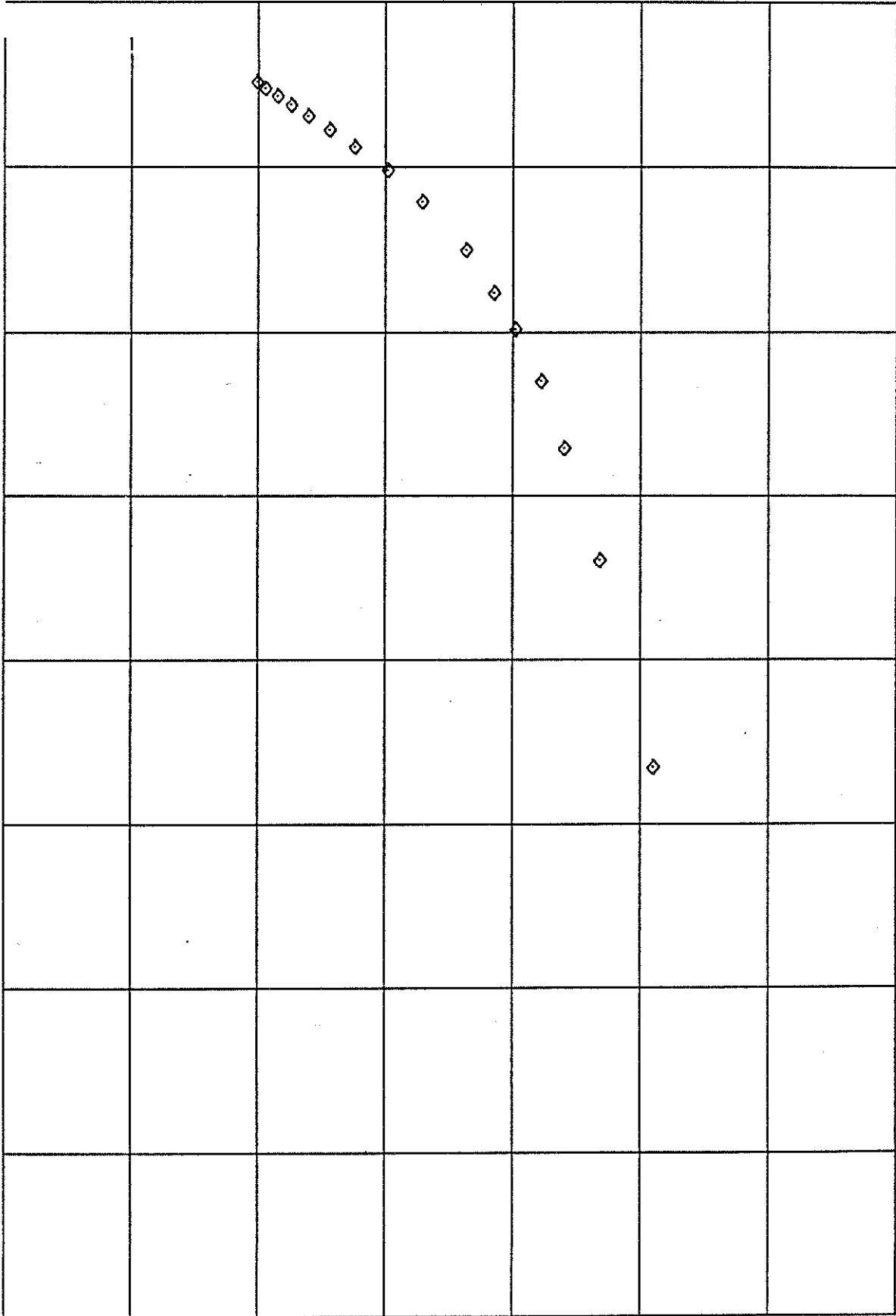
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1.60 1.40 1.20 1.00 0.80 0.60 0.40 0.20 0.00

LOG [(T+DT)/DT]

HALLIBURTON SERVICES LIMITED

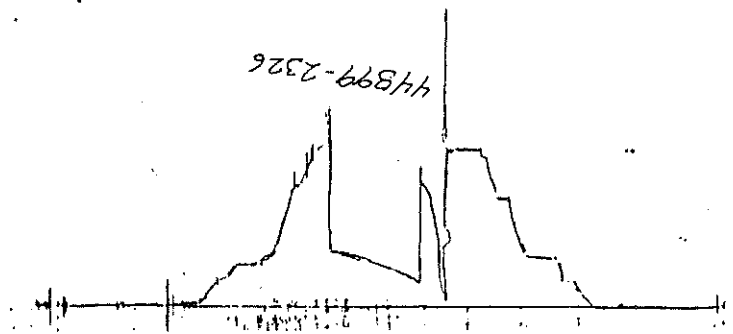
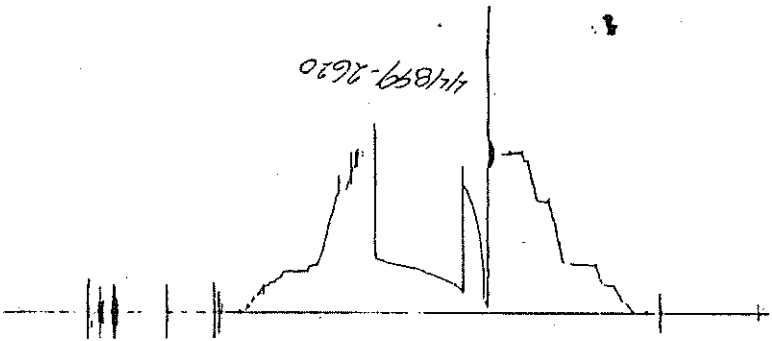
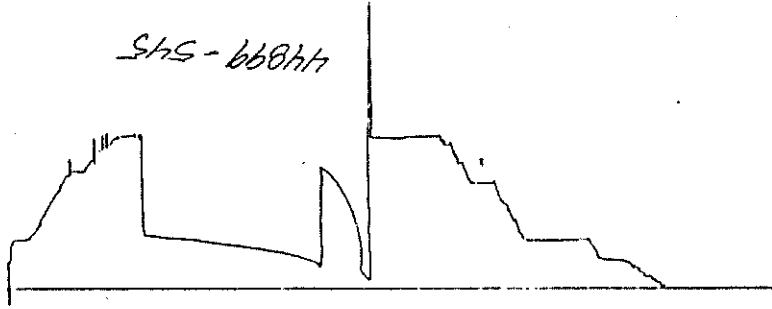
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		O. D. (mm)	I. D. (mm)	LENGTH (m)	DEPTH (m)
3	DRILL COLLARS.....	159.0	71.0	165.80	
50	IMPACT REVERSING SUB.....	155.5	76.2	0.31	
3	DRILL COLLARS.....	159.0	71.0	18.23	
5	CROSSOVER.....	155.5	76.2	0.31	
60	HYDROSPRING TESTER.....	127.0	19.1	3.78	1039.34
14	EXTENSION JOINT.....	127.0	25.4	2.16	
80	AP RUNNING CASE.....	127.0	57.2	1.25	1045.28
80	AP RUNNING CASE.....	127.0	57.2	1.25	1046.53
82	TEMPERATURE RUNNING CASE.....	127.0	57.2	1.25	
15	JAR.....	127.0	44.5	1.52	
16	VR SAFETY JOINT.....	127.0	25.4	1.06	
26	PUMP ASSEMBLY.....	127.0	22.3	2.15	
27	SCREEN ASSEMBLY.....	127.0	25.4	1.34	
11	HYDROFLATE PRESSURE LIMITER.....	127.0	25.4	1.52	
13	HYDROFLATE SAFETY JOINT.....	127.0	25.4	1.62	
74	TOP HYDROFLATE PACKER.....	177.8	26.9	2.55	1060.00
28	PORT ASSEMBLY.....	127.0		1.03	
22	BLANK ANCHOR.....	127.0	57.2	2.57	
75	LOWER HYDROFLATE PACKER.....	177.8	50.8	2.37	1065.00
97	BELLY SP W/ BLANKED OFF RECORDER		57.2	1.55	1066.76
5	CROSSOVER.....	127.0	57.2	0.31	
81	BLANKED-OFF RUNNING CASE.....	127.0	57.2	1.25	1068.62
23	BLANK SUB.....	127.0		0.31	

EQUIPMENT DATA

45 Bot A



↑
PRESSURE

EDMONTON, ALBERTA
GAS ANALYSIS

CONTAINER IDENTITY: **BHS#706** LABORATORY NUMBER: **84-201-6329**

LICENCE NO. _____ OPERATOR NAME AND ADDRESS: **EXCO RESOURCES LTD.**

CPA NUMBER _____ WELL NAME: **FORWARD ET AL WEST PARKIN D-54** ELEVATIONS METERS: **NONE** GRD: **502.5**

FIELD OF AREA: **WEST PARKIN** POOL OR ZONE: **HART RIVER** NAME OF SAMPLER: _____ COMPANY: **HALLIBURTON**

TEST RECOVERY: **NIL**

TEST TYPE: **DST** NO. **1** SAMPLING POINT: **BOTTOM HOLE SAMPLER #706** AMT & TYPE OF CUSHION: _____ MUD RESISTIVITY: **@25° C**

MULTIPLE RECOVERY: TYPE OF PRODUCTION: PUMPING FLOWING GAS LIFT SWAB

TEST INTERVAL FROM: **1060.0** m TO: **1065.0** m PRODUCTION RATES: WATER _____ m³/d OIL _____ m³/d GAS _____ 10³m³/d

PERFORATIONS FROM: _____ m TO: _____ m GAUGE PRESSURE - KPa: SEPARATOR _____ TREATER _____ AS RECEIVED **48** TEMPERATURES °C: SEPARATOR _____ TREATER _____ AS RECEIVED **20**

DATE SAMPLED: **85-03-NA** DATE RECEIVED: **85-03-04** DATE REPORTED: **85-03-04** ANALYST: **ES**

COMP.	MOL FRACTION AIR FREE AS REC'D	MOL FRACTION AIR FREE ACID GAS FREE	LIQUID VOLUME ml. m ⁻³ AIR FREE AS REC'D
H ₂	0.0019	0.0020	
He	0.0000	0.0000	
N ₂	0.2543	0.2682	
CO ₂	0.0517	0.0000	
H ₂ S	0.0000	0.0000	
C ₁	0.2269	0.2393	
C ₂	0.2167	0.2285	
C ₃	0.1297	0.1368	474.46
iC ₄	0.0196	0.0207	85.19
nC ₄	0.0486	0.0512	203.60
iC ₅	0.0165	0.0174	80.25
nC ₅	0.0059	0.0062	28.41
C ₆	0.0149	0.0157	80.12
C ₇	0.0133	0.0140	79.89
C ₈			
C ₉			
C ₁₀			
TOTAL	1.0000	1.0000	631.92

GROSS HEATING VALUE
MJ. m⁻³ @ 15° C AND 101.325 KPa

(MOISTURE AND ACID GAS FREE)

MEASURED _____ CALCULATED **55.488** DEW POINT _____ VAPOUR PRESS PENTANES PLUS **69.509**

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED MOISTURE AND ACID GAS FREE

MEASURED _____ CALCULATED **1.157** MEASURED _____ CALCULATED **1.137**

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED ACID GAS FREE

pPc **4329.1** pTc **259.5** pPc **4162.5** pTc **257.0**

REMARKS

RECOVERED GAS + 300 CC WATER FROM TOOL

GAS SAMPLE WAS BADLY AIR CONTAMINATED

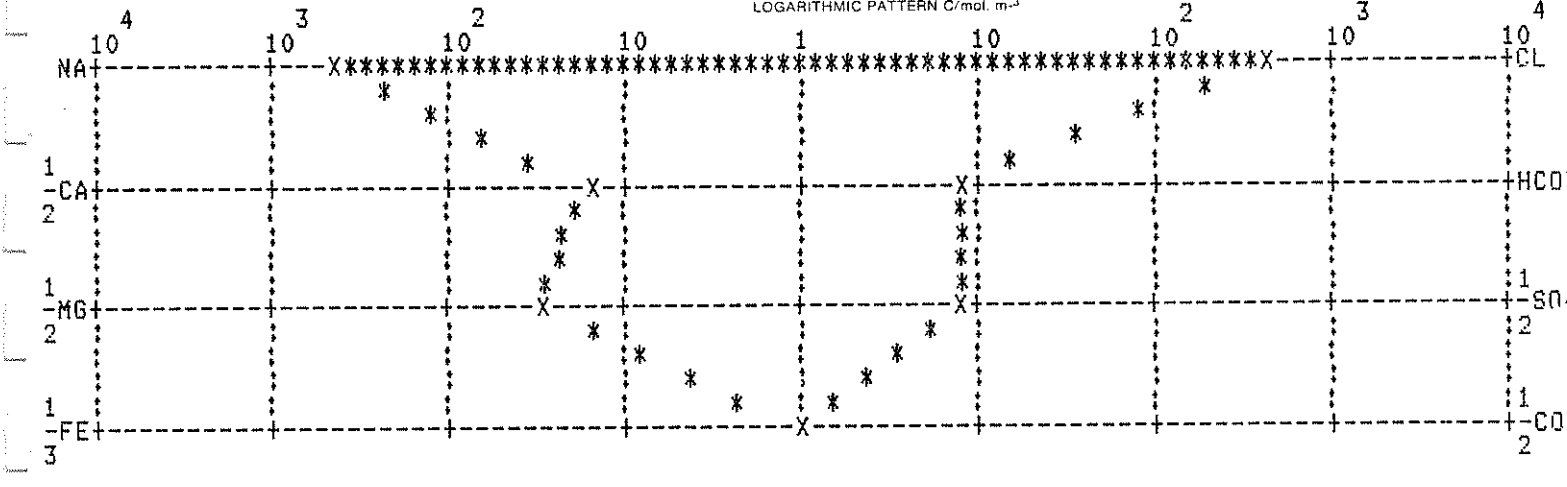
EDMONTON, ALBERTA WATER ANALYSIS

CONTAINER IDENTITY BHS#706		LABORATORY NUMBER 84-201-6329	
LICENCE NO.		OPERATOR NAME AND ADDRESS EXCO RESOURCES LTD.	
CPA NUMBER	WELL NAME FORWARD ET AL WEST PARKIN D-54	KB NONE	ELEVATIONS METERS GRD 502.5
FIELD OF AREA WEST PARKIN	POOL OR ZONE HART RIVER	NAME OF SAMPLER	COMPANY HALLIBURTON
TEST RECOVERY NIL			
TEST TYPE DIST	NO. 1	SAMPLING POINT BOTTOM HOLE SAMPLER #706	AMT & TYPE OF CUSHION
MULTIPLE RECOVERY			MUD RESISTIVITY @25°C
TEST INTERVAL FROM 1060.0 m	TYPE OF PRODUCTION		
TO 1065.0 m	PUMPING <input type="checkbox"/>	FLOWING <input type="checkbox"/>	GAS LIFT <input type="checkbox"/>
PERFORATIONS FROM	PRODUCTION RATES		SWAB <input type="checkbox"/>
TO	WATER <input type="text"/> m ³ /d	OIL <input type="text"/> m ³ /d	GAS <input type="text"/> 10 ³ m ³ /d
	GAUGE PRESSURE - KPa		TEMPERATURES °C
	SEPARATOR	TREATER	AS RECEIVED
	<input type="text"/>	<input type="text"/>	48
	DATE SAMPLED	DATE RECEIVED	DATE REPORTED
	Y M D H:M	Y M D	Y M D
	85-03-NA	85-03-04	85-03-07
			ANALYST BM

ION	C g. m ⁻³	MASS FRACTION	C mol. m ⁻³
Na	10557		459
K	175		4.48
Ca	367		9.16
Mg	362		14.9
Ba			
Sr			
Fe	0.6		.011

ION	C g. m ⁻³	MASS FRACTION	C mol. m ⁻³
Cl	16000		451
Br			
I			
HCO ₃	598		9.80
SO ₄	456		4.75
CO ₃	0.0		0.0
OH			
H ₂ S	ABSENT		

TOTAL SOLIDS C/g. m ⁻³	
BY EVAPORATION @ 110 °C	BY EVAPORATION, @ 180 °C
<input type="text"/>	<input type="text"/>
AT IGNITION	CALCULATED
<input type="text"/>	28300
RELATIVE DENSITY @ 15°C	REFRACTIVE INDEX @ 25 °C
1.021	1.343
OBSERVED PH @ 25 °C	RESISTIVITY Ω m @ 25 °C
7.6	0.370



REMARKS
RECOVERED GAS + 300 CC WATER FROM TOOL
IRON DONE ON FILTERED SAMPLE



A. WELL DATA

FIELD DRILL STEM TEST REPORT

DATE 85-02-13

Well: Exco et al West Parkin Y.T. D-54 Location _____

DST No. 2 Interval 700 m - 750 m Formation Orange Marker

Last Casing: Size 244mm Depth 460 m Open Hole: Size 215.9mm Depth 1811 m

Hole Troubles: Deviation at bottom Caliper at Packer(s) 254/235mm

Mud: Wt. 1186 kg/m³ Vis 70 W.L. 7.0 % Oil - ppm Cl 8

B. TEST STRING DATA

Testing Company Halliburton Type of Test Inflate

Type and Number of Packers 2 Inflate Gates Size 178mm

DP Size 114mm Wt 24.7 kg/m Length N/A

DC Size 159/171mm Wt 123/150 kg/m I.D. 57/71mm Length 137.27 m

Tail Pipe Size _____ Wt _____ Length _____ Perfs _____ m

T.D. String _____ Recorder Depth 748/750 m Water Cushion -- BH Choke 19.04mm

Packer Depth(s) 700 m - 750 m Weight on Packer(s) No Seat

Other Equipment Temperature Gauge, Bottom Hole Samplers

C. TEST RESULTS Misrun - Screen and pump full of sand

Times: PF _____ ISI _____ Flow _____ SI _____ Flow _____ FSI _____

Pressures: PF _____ IH _____ ISI _____ IF _____

TEMP _____ °C FH _____ FSI _____ FF _____

Flow Descriptions:

Preflow: _____

Valve Open Flow: _____

Recoveries: _____

D. SAMPLE DETAILS:

Sent to: _____ Via: _____ Date Sent: _____

E. REMARKS:

Tool would not open, move down 5m, No seat.

POOH. Change interval and pump.

Note: Data reported on this form are field readings taken at the time of test, and are subject to correction.

ENGINEER Stu Cameron

TESTERS	L. Bruneau
WITNESSES	S. Cameron
DRILLING CONTRACTOR	Grey Mountain



FORMATION TESTING
DATA SHEET

REFER TO INVOICE NO.	44 900
DATE OF TEST	85-02-13
TEST No.	2
JOB TYPE	Hydroflute Straddle

PRESSURE SUMMARY kPa						
GAUGE NUMBER	2326	2620	1853	545		
TEST DEPTH	685.28	686.53	751.76	753.62		
TESTED OFF	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO
HOURLY CLOCK TRAVEL	48	48	24	24		
INITIAL HYDROSTATIC						
TEST INITIAL						
TEST FINAL						
FIRST CLOSED IN						
TEST INITIAL						
TEST FINAL						
SECOND CLOSED IN						
TEST INITIAL						
TEST FINAL						
THIRD CLOSED IN						
FINAL HYDROSTATIC						

TIME PERIODS					
	FIRST	SECOND	THIRD		TIME
TEST				TESTER VALVE OPENED	
CLOSED IN				PACKER UNSEATED	

EQUIPMENT AND WELL DATA			
FORMATION TESTED	Orange Marker		
TEMP. REC. No.	TE70		
DEPTH	687.78 m		
MAX. TEMP.	°C		
NET PRODUCTIVE THICKNESS	m	MUD TYPE	Gel Chemical
Ground ELEVATION	502.5 m	MUD DENSITY	1190 kg/m ³ MUD VISC 70 s/L
ALL DEPTHS MEASURED FROM:	<input type="checkbox"/> KB <input checked="" type="checkbox"/> GROUND	CASING OR HOLE SIZE	216 mm
PACKER DEPTHS	TOP 700 m	BOTTOM 750 m	RATHOLE SIZE mm
DEPTH OF TESTER VALVE	679.34 m	DRILL PIPE	114.3 OD mm 24.7 kg/m
CASING PERFORATED INTERVAL	N/A m	DRILL COLLARS ABOVE TESTER VALVE	71 ID mm 137.27 LENGTH m
TOTAL DEPTH	1811 m	SURFACE CHOKE	25.4 mm
AMOUNT AND TYPE CUSHION	Nil	BOTTOM CHOKE	19.05 mm

LIQUID RECOVERY DATA	
METRES	DESCRIPTION OF LIQUID
	NOTE: TESTS # 3 ALSO ENCLOSED
Nil	TOTAL LIQUID RECOVERY

SAMPLE DATA	
OIL GRAVITY _____ @ _____ °C	
GAS/OIL RATIO _____	
REFRACTOMETER/RELATIVE DENSITY _____	
RECOVERY WATER _____ @ _____ °C	
CHLORIDE CONTENT _____ mg/L	

SAMPLE SHIPPED TO LABORATORY	YES	NO
SAMPLER No. _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
GAS SAMPLE BOTTLE No. _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
LABORATORY _____	N/A	

REMARKS
Misrun. Screen and pump full of sand.

COMPANY	EXCO ENERGY LTD.
LEGAL DESCRIPTION	Lat 66-13-9.73N Long 93-12-6-10.4W
PROVINCE OR TERRITORY	YUKON
FIELD OR AREA	WEST PARKIN
WELL NAME AND NUMBER	FURKARD E1 AL WESI PARKIN D-54
TEST NUMBER	2
TESTED INTERVAL	700 - 750

		O. D. (mm)	I. D. (mm)	LENGTH(m)	DEPTH(m)
3	DRILL COLLARS.....	159.0	71.0	165.80	
50	IMPACT REVERSING SUB.....	155.5	76.2	0.31	
3	DRILL COLLARS.....	159.0	71.0	18.23	
5	CROSSOVER.....	155.5	76.2	0.31	
60	HYDROSPRING TESTER.....	127.0	19.1	3.78	679.34
14	EXTENSION JOINT.....	127.0	25.4	2.16	
80	AP RUNNING CASE.....	127.0	57.2	1.25	685.28
80	AP RUNNING CASE.....	127.0	57.2	1.25	686.53
82	TEMPERATURE RUNNING CASE.....	127.0	57.2	1.25	
15	JAR.....	127.0	44.5	1.52	
16	VR SAFETY JOINT.....	127.0	25.4	1.06	
26	PUMP ASSEMBLY.....	127.0	22.3	2.15	
27	SCREEN ASSEMBLY.....	127.0	25.4	1.34	
11	HYDROFLATE PRESSURE LIMITER.....	127.0	25.4	1.52	
13	HYDROFLATE SAFETY JOINT.....	127.0	25.4	1.62	
74	TOP HYDROFLATE PACKER.....	177.8	26.9	2.55	700.00
28	PORT ASSEMBLY.....	127.0		1.03	
22	BLANK ANCHOR.....	127.0	57.2	47.57	
75	LOWER HYDROFLATE PACKER.....	177.8	50.8	2.37	750.00
97	BELLY SP W/ BLANKED OFF RECORDER		57.2	1.55	751.76
5	CROSSOVER.....	127.0	57.2	0.31	
81	BLANKED-OFF RUNNING CASE.....	127.0	57.2	1.25	753.62
23	BLANK SUB.....	127.0		0.31	

EQUIPMENT DATA

A. WELL DATA FIELD DRILL STEM TEST REPORT

DATE 85-02-12

Well: Exco et al West Parkin Y.T. D-54 Location _____

DST No. 3 Interval 742 m - 747 m Formation L.C. Orange Marker

Last Casing: Size 244mm Depth 460 m Open Hole: Size 215.9mm Depth 1811 m

Hole Troubles: Deviation at bottom Caliper at Packer(s) 254-235mm

Mud: Wt. 1186 kg/m³ Vis 70 W.L. 7.0 % Oil - ppm Cl 8

B. TEST STRING DATA

Testing Company Halliburton Type of Test Inflate

Type and Number of Packers 2 Inflate Gates Size 178mm

DP Size 114mm Wt 24.7 kg/m Length 546.46 m

DC Size 159/171mm Wt 150 kg/m I.D. 71mm Length 184.03 m

Tail Pipe Size N/A Wt N/A Length N/A Perfs N/A m

T.D. String Refer to enclosed reports Recorder Depth _____ Water Cushion Inhibitor BH Choke 19.04mm

Packer Depth(s) 742 m - 747 m Weight on Packer(s) 10,000 daN

Other Equipment Temperature Gauge, Bottom Hole Samplers

C. TEST RESULTS

Times: PF 15 ISI 60 Flow 72 SI 120 Flow - FSI -

Pressures: PF 640 IH 8483 ISI 8227 IF 264

TEMP - °C FH 8535 FSI 8227 FF 829

Flow Descriptions:

Preflow: Very strong gas blow, air on rig down.

Valve Open Flow: Strong gas blow, building to 600 kPa in one hour

1005m³/d 3.2mm orifice.

Recoveries: _____

D. SAMPLE DETAILS:

Sent to: _____ Via: _____ Date Sent: _____

E. REMARKS:

On P.F. Rig air down testing, head not open immediately,
approximately 6 mins. after tool opened.

Very cold

Note: Data reported on this form are field readings taken at the time of test, and are subject to correction.

ENGINEER Stu Cameron

TESTERS	L. Bruneau
ADDRESS	S. Cameron
DRILLING CONTRACTOR	Grey Mountain



FORMATION TESTING
DATA SHEET

REFER TO INVOICE NO.	60 851
DATE OF TEST	85-02-14
TEST No.	3
JOB TYPE	Hydroflute Straddle

PRESSURE SUMMARY kPa						
GAUGE NUMBER	2326	2620	1853	545		
Gauge DEPTH	727.28	728.53	748.76	750.62		
Blocked OFF	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO
HOUR CLOCK TRAVEL	48	48	24	24		
INITIAL HYDROSTATIC	8495	8483	8699	8834		
FLOW	INITIAL	630	640			
	FINAL	319	315	CLOCK	CLOCK	
FIRST CLOSED IN	8255	8227	RAN	RAN		
VALVE	INITIAL	258	264	OUT	OUT	
	FINAL	837	829			
SECOND CLOSED IN	8247	8227				
TIME	INITIAL					
	FINAL					
THIRD CLOSED IN						
FINAL HYDROSTATIC	8562	8535				

TIME PERIODS					
	FIRST	SECOND	THIRD		TIME
W	15	60		TESTER VALVE OPENED	02:21
CLOSED IN	72	120		PACKER UNSEATED	06:48

EQUIPMENT AND WELL DATA			
FORMATION TESTED	Orange Marker		
TEMP. REC. No.	TE70	DEPTH	729.78 m
		MAX. TEMP.	37 °C
NET PRODUCTIVE THICKNESS	m	MUD TYPE	Gel Chemical
Ground ELEVATION	502.5 m	MUD DENSITY	1190 kg/m ³
		MUD VISC	70 s/L
ALL DEPTHS MEASURED FROM:	<input type="checkbox"/> KB	<input checked="" type="checkbox"/> GROUND	CASING OR HOLE SIZE 216 mm
PACKER DEPTHS	TOP 742	BOTTOM 747 m	RATHOLE SIZE mm
DEPTH OF TESTER VALVE	721.34 m	DRILL PIPE OD mm	114.3 kg/m
		DRILL PIPE LENGTH m	24.7
CASING PERFORATED INTERVAL	N/A m	DRILL COLLARS ABOVE TESTER VALVE	71 184.03
TOTAL DEPTH	1811 m	SURFACE CHOKE	25.4 mm
AMOUNT AND TYPE CUSHION	Nil	BOTTOM CHOKE	19.05 mm

LIQUID RECOVERY DATA	
METRES	DESCRIPTION OF LIQUID
Nil	TOTAL LIQUID RECOVERY

SAMPLE DATA	
OIL GRAVITY _____ @ _____ °C	
GAS OIL RATIO _____	
REFRACTOMETER/RELATIVE DENSITY _____	
RECOVERY WATER _____ @ _____ °C	
CHLORIDE CONTENT _____ mg/L	

SAMPLE SHIPPED TO LABORATORY	YES	NO
SAMPLER No. _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
GAS SAMPLE BOTTLE No. _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
LABORATORY _____	N/A	

REMARKS
Final Closed In pressures stabilized at 8227.2 kPa for final minutes (zero slope on Horner Extrapolation).

COMPANY EXCO ENERGY LTD.
LEGAL DESCRIPTION Lat. 66-13-9.73N Long. 137-26-10.4W
PROVINCE OR TERRITORY YUKON
FIELD OR AREA WEST PARKIN
TEST NUMBER 3
WELL NAME AND NUMBER FORWARD EL AL WEST PARKIN D-54
TESTED INTERVAL 742 - 747

HALLIBURTON SERVICES LIMITED

SPECIAL PRESSURE DATA

DATE: 85-02-14

TICKET # 60851

```

-----
* Gauge Number      :      2620.      *
* Gauge Depth       :      729.      m  *
* Time of Flow      :      15.0 min.  *
* Final Pressure    :      315.4 kPa. *
-----
    
```

Initial Hydrostatic Pressure = 8483.3 kPa
 Final Hydrostatic Pressure = 8534.6 kPa

GAUGE 1, FLOW 1

	Time Deflection (in)	Time (minutes)	Pressure (kPa)
1.	0.0000	0.0	639.6
2.	0.0081	5.0	821.5
3.	0.0163	10.1	491.5
4.	0.0243	15.0	315.4

GAUGE 1, CIP 1

	Time Deflection (in)	Time (minutes)	T+dt Log ---- dt	Pressure (kPa)
1.	0.0033	2.0	0.9313	3176.1
2.	0.0066	4.0	0.6784	5677.4
3.	0.0100	6.0	0.5425	7026.8
4.	0.0132	8.0	0.4601	7605.0
5.	0.0166	10.0	0.3977	7913.9
6.	0.0200	12.1	0.3510	8060.3
7.	0.0248	15.0	0.3017	8152.5
8.	0.0332	20.0	0.2429	8205.2
9.	0.0414	25.0	0.2043	8219.8
10.	0.0497	30.0	0.1762	8208.1
11.	0.0581	35.0	0.1548	8225.7
12.	0.0663	40.0	0.1384	8227.2
13.	0.0747	45.0	0.1248	8227.2
14.	0.0829	50.0	0.1140	8227.2
15.	0.0912	55.0	0.1047	8227.2
16.	0.0994	59.9	0.0970	8227.2
17.	0.1078	65.0	0.0902	8227.2
18.	0.1194	72.0	0.0822	8227.2

SPECIAL PRESSURE DATA

DATE: 85-02-14

TICKET # 60851

```

-----
* Gauge Number      :      2620.      *
* Gauge Depth       :      729.      m  *
* Time of Flow      :      60.0 min. *
* Final Pressure    :      828.9 kPa. *
-----
    
```

GAUGE 1, FLOW 2

	Time Deflection (in)	Time (minutes)	Pressure (kPa)
1.	0.0000	0.0	264.1
2.	0.0084	5.0	271.4
3.	0.0169	10.0	410.8
4.	0.0254	15.0	553.1
5.	0.0339	20.0	669.0
6.	0.0423	25.0	746.7
7.	0.0508	30.0	786.3
8.	0.0593	35.0	806.9
9.	0.0678	40.0	802.5
10.	0.0763	45.0	828.9
11.	0.0847	50.0	830.3
12.	0.0933	55.0	828.9
13.	0.1017	60.0	828.9

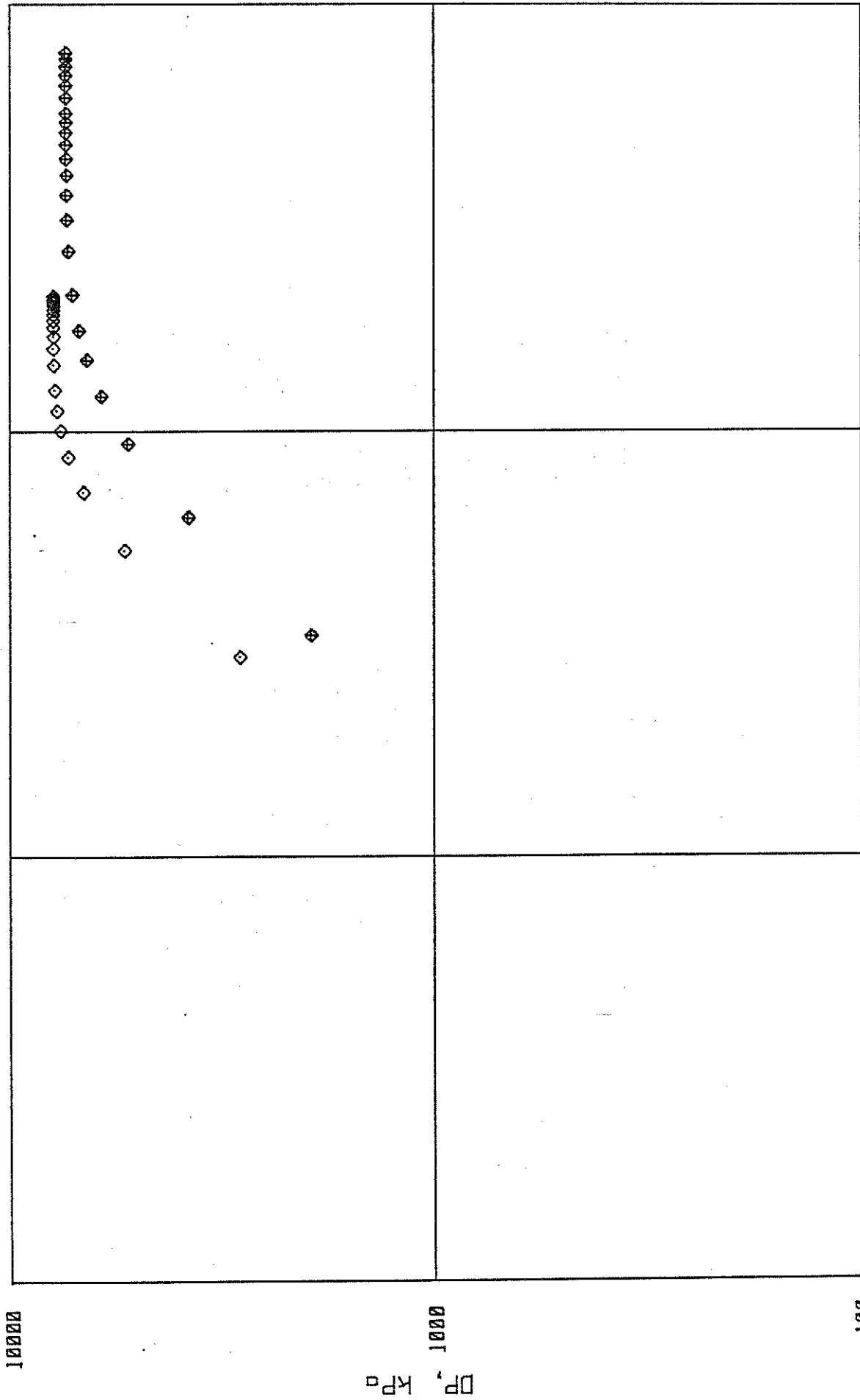
GAUGE 1, CIP 2

	Time Deflection (in)	Time (minutes)	T+dt Log ---- dt	Pressure (kPa)
1.	0.0034	2.0	1.5781	2772.7
2.	0.0066	4.0	1.3007	4621.1
3.	0.0101	6.0	1.1273	6095.5
4.	0.0134	8.0	1.0150	6917.0
5.	0.0167	10.0	0.9296	7420.5
6.	0.0200	12.0	0.8613	7714.8
7.	0.0251	15.0	0.7776	7963.7
8.	0.0334	20.0	0.6769	8118.8
9.	0.0417	25.0	0.6026	8177.4
10.	0.0501	30.0	0.5442	8205.2
11.	0.0585	35.0	0.4972	8193.5
12.	0.0668	40.0	0.4588	8219.8
13.	0.0752	45.0	0.4259	8227.2
14.	0.0836	50.0	0.3978	8227.2
15.	0.0920	55.1	0.3733	8227.2
16.	0.1002	60.0	0.3523	8227.2
17.	0.1170	70.0	0.3162	8227.2
18.	0.1336	80.0	0.2873	8227.2
19.	0.1503	90.0	0.2633	8227.2
20.	0.1670	100.0	0.2431	8227.2
21.	0.1840	110.1	0.2256	8227.2
22.	0.2005	120.0	0.2109	8227.2

2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

GAUGE NO CIP 1 2
2620

TICKET NO 60851



100 0.001 0.01 0.1 1.

PERFORMANCE REPORT

GAUGE NO CIP 1 2

2620

TICKET NO 60851

14000

12000

10000

8227
8000

6000

4000

2000

0.00

0.20

0.40

0.60

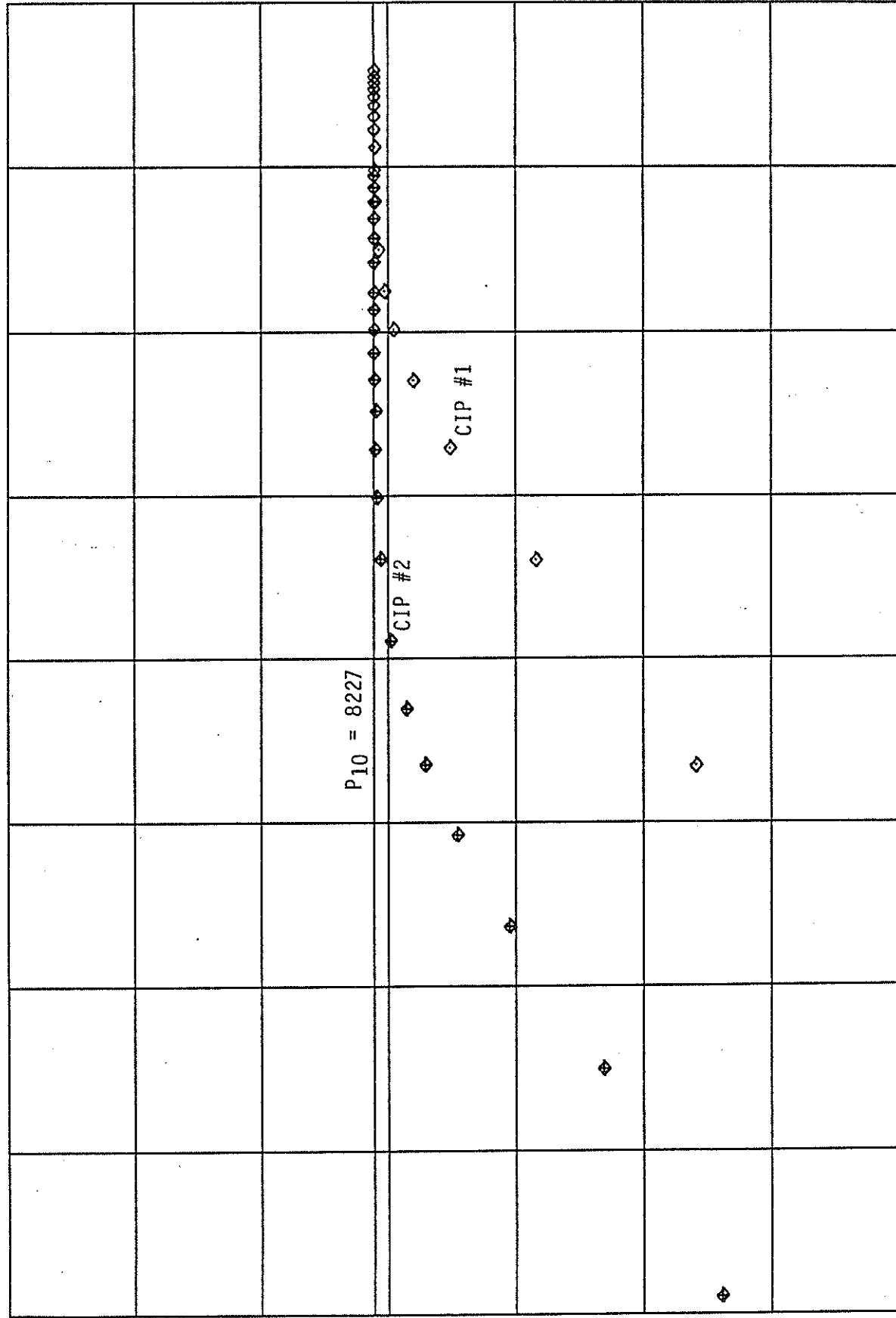
0.80

1.00

1.20

1.40

1.60



P10 = 8227
























CIP #2

CIP #1

0.05 0.1

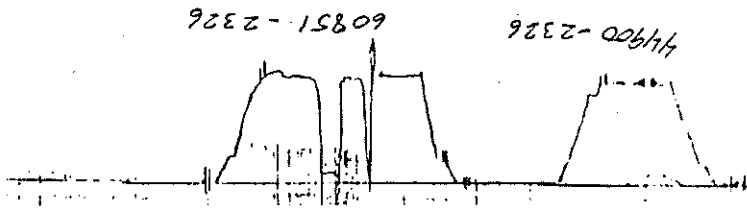
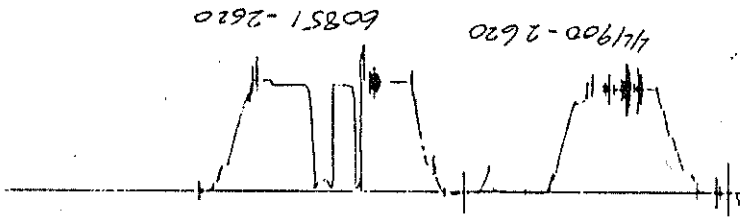
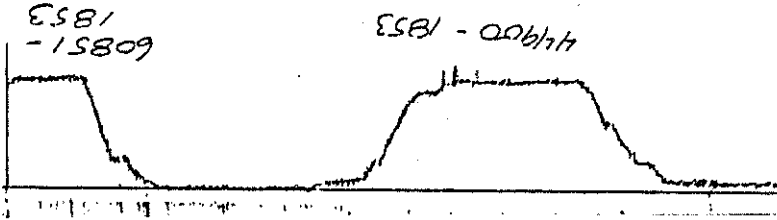
LOG[(T+DT)/DT]

HALLIBURTON SERVICES LIMITED

		O.D. (mm)	I.D. (mm)	LENGTH (m)	DEPTH (m)
3	 DRILL COLLARS.....	159.0	71.0	165.80	
50	 IMPACT REVERSING SUB.....	155.5	76.2	0.31	
3	 DRILL COLLARS.....	159.0	71.0	18.23	
5	 CROSSOVER.....	155.5	76.2	0.31	
60	 HYDROSPRING TESTER.....	127.0	19.1	3.78	721.34
14	 EXTENSION JOINT.....	127.0	25.4	2.16	
80	 AP RUNNING CASE.....	127.0	57.2	1.25	727.28
80	 AP RUNNING CASE.....	127.0	57.2	1.25	728.53
82	 TEMPERATURE RUNNING CASE.....	127.0	57.2	1.25	
15	 JAR.....	127.0	44.5	1.52	
16	 VR SAFETY JOINT.....	127.0	25.4	1.06	
26	 PUMP ASSEMBLY.....	127.0	22.3	2.15	
27	 SCREEN ASSEMBLY.....	127.0	25.4	1.34	
11	 HYDROFLATE PRESSURE LIMITER.....	127.0	25.4	1.52	
13	 HYDROFLATE SAFETY JOINT.....	127.0	25.4	1.62	
74	 TOP HYDROFLATE PACKER.....	177.8	26.9	2.55	742.00
28	 PORT ASSEMBLY.....	127.0		1.03	
22	 BLANK ANCHOR.....	127.0	57.2	2.57	
75	 LOWER HYDROFLATE PACKER.....	177.8	50.8	2.37	747.00
97	 BELLY SP W/ BLANKED OFF RECORDER		57.2	1.55	748.76
5	 CROSSOVER.....	127.0	57.2	0.31	
81	 BLANKED-OFF RUNNING CASE.....	127.0	57.2	1.25	750.62
23	 BLANK SUB.....	127.0		0.31	

EQUIPMENT DATA

53 Bot (B)



↑
PRESSURE

A. WELL DATA FIELD DRILL STEM TEST REPORT

DATE 85-02-16

Well: Exco et al West Parkin Y.T. D-54 Location Hart River

DST No. 4 Interval 1042 m - 1047 m Formation Mississippian

Last Casing: Size 244mm Depth 460 m Open Hole: Size 215.9 Depth 1811 m

Hole Troubles: Deviation Bottom Caliper at Packer(s) 217 - 240mm

Mud: Wt. 1190 kg/m³ Vis 80 W.L. 8 % Oil - ppm Cl 200

B. TEST STRING DATA

Testing Company Halliburton Services Ltd. Type of Test Inflate straddle

Type and Number of Packers 2 inflate straddle (Gates) Size 178mm

DP Size 114mm Wt 24.7 kg/m³ Length To Surface

DC Size 171mm Wt 150 kg/m I.D. 71mm Length 184.03 m

Tail Pipe Size N/A Wt ∅ Length ∅ Perfs - m

T.D. String - Recorder Depth 1027/1028 Water Cushion - BH Choke 19.04mm

Packer Depth(s) 1042 m and 1047 m Weight on Packer(s) No Seat

Other Equipment Temperature Gauge, 2 Bottom Hole Samplers

C. TEST RESULTS MISRUN - Failure to obtain a Packer Seat

Times: PF _____ ISI _____ Flow _____ SI _____ Flow _____ FSI _____

Pressures: PF _____ IH _____ ISI _____ IF _____

TEMP _____ °C FH _____ FSI _____ FF _____

Flow Descriptions:

Preflow: _____

Valve Open Flow: _____

Recoveries: _____

D. SAMPLE DETAILS:

N/A

Sent to: _____ Via: _____ Date Sent: _____

E. REMARKS:

Refer to attached report for details

Note: Data reported on this form are field readings taken at the time of test, and are subject to correction.

ENGINEER J. Reilly

EDMONTON, ALBERTA

GAS ANALYSIS

CONTAINER IDENTITY

BHS#77

LABORATORY NUMBER

84-201-6329

LICENCE NO.

OPERATOR NAME AND ADDRESS

EXCO RESOURCES LTD.

CPA NUMBER

WELL NAME

ELEVATIONS METERS GRD
NONE 502.5

FORWARD ET AL WEST PARKIN D-54

FIELD OF AREA

POOL OR ZONE

NAME OF SAMPLER

COMPANY

WEST PARKIN

ORANGE MARKER

HALLIBURTON

TEST RECOVERY

305 M SOUR GAS CUT WATER

TEST TYPE NO.
DST 3
MULTIPLE RECOVERY

SAMPLING POINT

AMT & TYPE OF CUSHION

MUD RESISTIVITY @25° C

BOTTOM HOLE SAMPLER #77

TYPE OF PRODUCTION

PUMPING FLOWING GAS LIFT SWAB

PRODUCTION RATES

WATER m³/d OIL m³/d GAS 10³m³/d

GAUGE PRESSURE - KPa

TEMPERATURES °C

SEPARATOR TREATER AS RECEIVED SEPARATOR TREATER AS RECEIVED
 41 20

DATE SAMPLED

DATE RECEIVED

DATE REPORTED

ANALYST

Y M D H:M
85-03-NA

Y M D
85-03-04

Y M D
85-03-04

ES

COMP.	MOL FRACTION AIR FREE AS REC'D	MOL FRACTION AIR FREE ACID GAS FREE	LIQUID VOLUME ml. m ⁻³ AIR FREE AS REC'D
H ₂	0.0013	0.0013	
He	0.0002	0.0002	
N ₂	0.1658	0.1663	
CO ₂	0.0028	0.0000	
H ₂ S	0.0000	0.0000	
C ₁	0.7342	0.7362	
C ₂	0.0543	0.0545	
C ₃	0.0245	0.0246	89.62
iC ₄	0.0031	0.0031	13.47
nC ₄	0.0059	0.0059	24.72
iC ₅	0.0019	0.0019	9.24
nC ₅	0.0016	0.0016	7.70
C ₆	0.0019	0.0019	10.22
C ₇	0.0025	0.0025	15.02
C ₈			
C ₉			
C ₁₀			
TOTAL	1.0000	1.0000	169.99

GROSS HEATING VALUE

MJ. m⁻³ @ 15° C AND 101.325 KPa

(MOISTURE AND ACID GAS FREE)

MEASURED CALCULATED DEW POINT VAPOUR PRESS PENTANES PLUS
 36.322 65.030

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED

MOISTURE AND ACID GAS FREE

MEASURED CALCULATED MEASURED CALCULATED
 0.706 0.703

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED

ACID GAS FREE

pPc pTc pPc pTc
4421.0 195.5 4412.6 195.1

REMARKS

RECOVERED GAS + 200 CC MUDDY WATER FROM TOOL

DETERMINATIONS TO C7+ ONLY

ALGARY, ALBERTA

CHEMEX LABS (ALBERTA) LTD.

GRANDE PRAIRIE, ALBERTA

EDMONTON, ALBERTA
WATER ANALYSIS

LABORATORY NUMBER

84-201-6329

CONTAINER IDENTITY

BHS#77

LICENGENO

OPERATOR NAME AND ADDRESS

EXCO RESOURCES LTD.

CPANUMBER

WELL NAME

FORWARD ET AL WEST PARKIN D-54

ELEVATIONS METERS GRD
NONE 502.5

FIELD OF AREA

WEST PARKIN

POOL OR ZONE

ORANGE MARKER

NAME OF SAMPLER

COMPANY

HALLIBURTON

TEST RECOVERY

305 M SOUR GAS CUT WATER

TEST TYPE NO
DST 3

SAMPLING POINT

BOTTOM HOLE SAMPLER #77

AMT & TYPE OF CUSHION

MUD RESISTIVITY @25°C

MULTIPLE RECOVERY

TYPE OF PRODUCTION

PUMPING FLOWING GAS LIFT SWAB

TEST INTERVAL FROM

742.0 m

PRODUCTION RATES

WATER m³/d OIL m³/d GAS 10³m³/d

TO

747.0 m

GAUGE PRESSURE - KPa

TEMPERATURES °C

SEPARATOR TREATER AS RECEIVED 41 SEPARATOR TREATER AS RECEIVED 20

PERFORATIONS FROM

DATE SAMPLED

DATE RECEIVED

DATE REPORTED

ANALYST

TO

85-03-NA

85-03-04

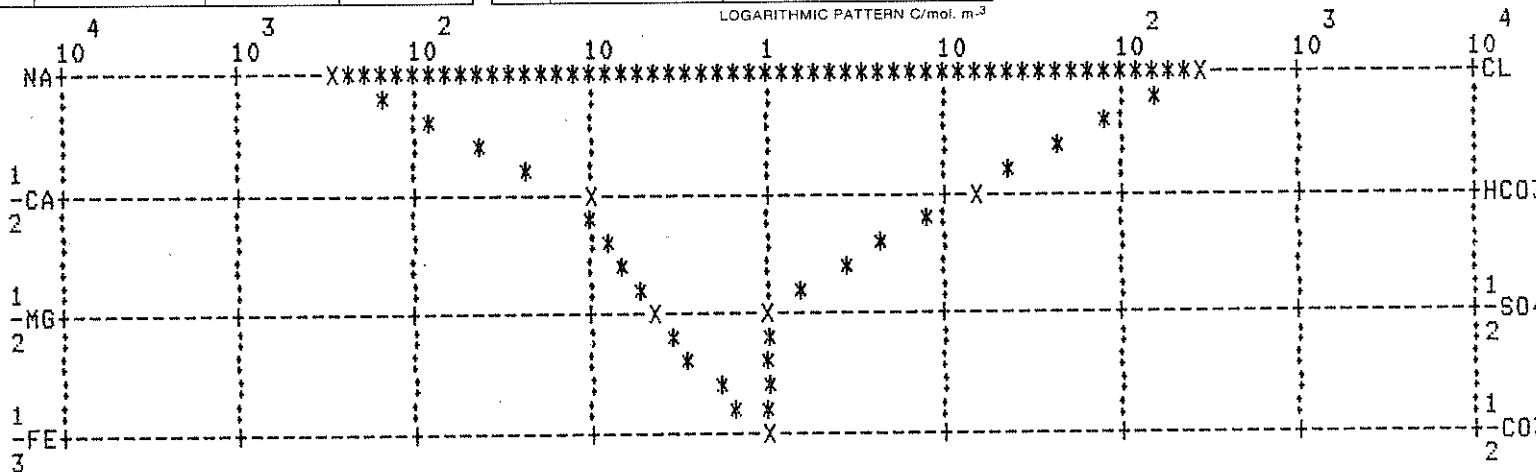
85-03-07

EM

ION	C g. m ⁻³	MASS FRACTION	C mol. m ⁻³
Na	7100		308
K	58		1.48
Ca	210		5.24
Mg	55		2.26
Ba			
Sr			
Fe	11		.197
Cl	11500		324
Br			
I			
HCO ₃	1020		16.7
SO ₄	5.0		.052
CO ₃	0.0		0.0
OH			
H ₂ S	ABSENT		

TOTAL SOLIDS C/g. m ⁻³	
BY EVAPORATION @ 110°C	BY EVAPORATION @ 180°C
AT IGNITION	CALCULATED 19500
RELATIVE DENSITY 1.014 @ 15°C	REFRACTIVE INDEX 1.338 @ 25°C
OBSERVED PH 6.8 @ 25°C	RESISTIVITY Ω m 0.340 @ 25°C

LOGARITHMIC PATTERN C/mol. m⁻³



REMARKS

RECOVERED GAS + 200 CC MUDDY WATER FROM TOOL
IRON DONE ON FILTERED SAMPLE

TESTERS
L. Bruneau
WELLS
J. Rielly
DRILLING CONTRACTOR
Grey Mountain



FORMATION TESTING
DATA SHEET

REFER TO INVOICE NO. 60 852
DATE OF TEST 85-02-16
TEST No. 4
JOB TYPE Hydroflate Straddle

PRESSURE SUMMARY kPa

GAUGE NUMBER	2326	2620	3163	545		
GAUGE DEPTH	1021.34	1028.53	1029.78	1048.76		
BLOCKED OFF	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO
HOUR CLOCK TRAVEL	48	24	24	48		
INITIAL HYDROSTATIC						
FIRST CLOSED IN						
SECOND CLOSED IN						
THIRD CLOSED IN						
FINAL HYDROSTATIC						

TIME PERIODS					
	FIRST	SECOND	THIRD	TESTER VALVE OPENED	TIME
START					
CLOSED IN				PACKER UNSEATED	

EQUIPMENT AND WELL DATA			
FORMATION TESTED	TEMP. REC. No.	DEPTH	m
	MAX. TEMP.	N/A	°C
NET PRODUCTIVE THICKNESS	m	MUD TYPE	Gel Chemical
Ground ELEVATION	502.5 m	MUD DENSITY	1180 kg/m ³
		MUD VISC	102 s/L
ALL DEPTHS MEASURED FROM:	<input type="checkbox"/> KB	CASING OR HOLE SIZE	216 mm
	<input checked="" type="checkbox"/> GROUND		
PACKER DEPTHS	TOP 1042	BOTTOM 1047	m
DEPTH OF TESTER VALVE	1022.59	DRILL PIPE	114.3 mm
		OD mm	24.7 kg/m
CASING PERFORATED INTERVAL	N/A	DRILL COLLARS ABOVE TESTER VALVE	71 ID mm
		LENGTH m	184.03
TOTAL DEPTH	1811	SURFACE CHOKE	25.4 mm
AMOUNT AND TYPE CUSHION	138 L Inhibitor	BOTTOM CHOKE	19.05 mm

LIQUID RECOVERY DATA	
METRES	DESCRIPTION OF LIQUID
MEASURED FROM TESTER VALVE	
Nil	TOTAL LIQUID RECOVERY

SAMPLE DATA	
OIL GRAVITY	@ °C
OIL RATIO	
REFRACTOMETER/RELATIVE DENSITY	
RECOVERY WATER	@ °C
CHLORIDE CONTENT	mg/L

SAMPLE SHIPPED TO LABORATORY	YES	NO
SAMPLER No.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
GAS SAMPLE BOTTLE No.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
LABORATORY	N/A	

REMARKS
Misrun. No packer seat.

COMPANY EXCO ENERGY LTD.
LEGAL DESCRIPTION Lat 66-13-9.73N Long 137-26-10.4W
PROVINCE OR TERRITORY YUKON
FIELD OR AREA WEST PARKIN
TEST NUMBER 4
TESTED INTERVAL 1042 - 1047
WELL NAME AND NUMBER FORWARD ET AL WEST PARKIN D-54

		O.D. (mm)	I.D. (mm)	LENGTH(m)	DEPTH(m)
3	DRILL COLLARS.....	159.0	71.0	19.12	
50	IMPACT REVERSING SUB.....	155.5	76.2	0.31	
3	DRILL COLLARS.....	159.0	71.0	19.14	
5	CROSSOVER.....	155.5	76.2	0.31	
80	AP RUNNING CASE.....	127.0	57.2	1.25	1021.34
60	HYDROSPRING TESTER.....	127.0	19.1	3.78	1022.59
14	EXTENSION JOINT.....	127.0	25.4	2.16	
80	AP RUNNING CASE.....	127.0	57.2	1.25	1028.53
80	AP RUNNING CASE.....	127.0	57.2	1.25	1029.78
82	TEMPERATURE RUNNING CASE.....	127.0	57.2	1.25	
15	JAR.....	127.0	44.5	1.52	
16	VR SAFETY JOINT.....	127.0	25.4	1.06	
26	PUMP ASSEMBLY.....	127.0	22.3	2.15	
27	SCREEN ASSEMBLY.....	127.0	25.4	1.34	
11	HYDROFLATE PRESSURE LIMITER.....	127.0	25.4	1.52	
13	HYDROFLATE SAFETY JOINT.....	127.0	25.4	1.62	
74	TOP HYDROFLATE PACKER.....	177.8	26.9	2.55	1042.00
28	PORT ASSEMBLY.....	127.0		1.03	
22	BLANK ANCHOR.....	127.0	57.2	2.57	
75	LOWER HYDROFLATE PACKER.....	177.8	50.8	2.37	1047.00
97	BELLY SP W/ BLANKED OFF RECORDER		57.2	1.55	1048.76
5	CROSSOVER.....	127.0	57.2	0.31	
23	BLANK SUB.....	127.0		0.31	

EQUIPMENT DATA

A. WELL DATA FIELD DRILL STEM TEST REPORT

DATE 85-02-18

Well: Exco et al West Parkin Y.T. D-54 Location _____

DST No. 5 Interval 1039 m - 1049 m Formation Mississippian (Hart River)

Last Casing: Size 244mm Depth 460 m Open Hole: Size - Depth -

Hole Troubles: Failure to obtain a packer seat Caliper at Packer(s) 217/240mm

Mud: Wt. 1185 kg/m³ Vis 80 W.L. 8 % Oil - ppm Cl 200

B. TEST STRING DATA

Testing Company Halliburton Type of Test Inflate straddle

Type and Number of Packers 2 Inflate straddle gates Size 178mm

DP Size 114mm Wt 24.7 kg/m Length To surface

DC Size 171mm Wt 150 kg/m I.D. 71 Length 38.26 m

Tail Pipe Size N/A Wt N/A Length N/A Perfs N/A m

T.D. String _____ Recorder Depth 1026/1027 Water Cushion - BH Choke 19.04mm

Packer Depth(s) 1038m - 1048 m Weight on Packer(s) -

Other Equipment Temperature Gauge, 2 Bottom Hole Samplers

C. TEST RESULTS Misrun - Failure to obtain a packer seat.

Times: PF _____ ISI _____ Flow _____ SI _____ Flow _____ FSI _____

Pressures: PF _____ IH _____ ISI _____ IF _____

TEMP _____ °C FH _____ FSI _____ FF _____

Flow Descriptions:

Preflow: _____

Valve Open Flow: _____

Recoveries: _____

D. SAMPLE DETAILS:

Sent to: _____ Via: _____ Date Sent: _____

E. REMARKS:

Permission by COGLA to cease testing after 3 attempts. Pumped
20, 40, 60 min. Lowered interval 2 m for final attempt - for
details refer to attached report.

Note: Data reported on this form are field readings taken at the time of test, and are subject to correction.

ENGINEER J. Reilly

TESTERS
L. Bruneau
BUSINESS
J. Rielly
DRILLING CONTRACTOR
Custom 94



FORMATION TESTING
DATA SHEET

REFER TO INVOICE NO. 60 853
DATE OF TEST 85-02-18
TEST No. 5
JOB TYPE Hydroflate Straddle

PRESSURE SUMMARY kPa

GAUGE NUMBER	1853	2326	3163	545		
GAUGE DEPTH	1017.34	1024.53	1025.78	1049.76		
PACKED OFF	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO	YES/NO
HOUR CLOCK TRAVEL	48	24	24	24		
INITIAL HYDROSTATIC						
FIRST CLOSED IN						
SECOND CLOSED IN						
THIRD CLOSED IN						
FINAL HYDROSTATIC						

TIME PERIODS					
	FIRST	SECOND	THIRD		TIME
TESTER VALVE OPENED					
PACKER UNSEATED					

EQUIPMENT AND WELL DATA					
FORMATION TESTED	TEMP. REC. No.		DEPTH		m
			MAX. TEMP.		N/A
NET PRODUCTIVE THICKNESS	m	MUD TYPE	Gel Chemical		
Ground ELEVATION	502.5	MUD DENSITY	1180	MUD VISC	102
ALL DEPTHS MEASURED FROM:	<input type="checkbox"/> KB	<input checked="" type="checkbox"/> GROUND			
CASING OR HOLE SIZE	216 mm				
PACKER DEPTHS	TOP 1038	BOTTOM 1048	RATHOLE SIZE mm		
DEPTH OF TESTER VALVE	1018.59	m	DRILL PIPE OD mm	114.3	kg/m 24.7
CASING PERFORATED INTERVAL	N/A		DRILL COLLARS ABOVE TESTER VALVE ID mm	71	LENGTH m 38.26
TOTAL DEPTH	1811	m	SURFACE CHOKE	25.4	mm
AMOUNT AND TYPE CUSHION	138 L Inhibitor		BOTTOM CHOKE	19.07	mm
























LIQUID RECOVERY DATA	
METRES	DESCRIPTION OF LIQUID
Nil	TOTAL LIQUID RECOVERY

SAMPLE DATA	
OIL GRAVITY @ _____ °C	
GAS OIL RATIO _____	
REFRACTOMETER/RELATIVE DENSITY	
RECOVERY WATER @ _____ °C	
CHLORIDE CONTENT _____ mg/L	

SAMPLE SHIPPED TO LABORATORY	YES	NO
SAMPLER No. _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
GAS SAMPLE BOTTLE No. _____	<input type="checkbox"/>	<input checked="" type="checkbox"/>
LABORATORY _____	N/A	

Misrun. No packer seat, heavy mud build up.

COMPANY EXCO ENERGY LTD.
LEGAL DESCRIPTION Long. 137-26-10.4W Lat. 66-13-9.73N
PROVINCE OR TERRITORY YUKON
FIELD OR AREA WEST PARKIN
TEST NUMBER 5
TESTED INTERVAL 1038 - 1048
WELL NAME AND NUMBER FORWARD ET AL WEST PARKIN D-54

		O.D. (mm)	I.D. (mm)	LENGTH (m)	DEPTH (m)	
3		DRILL COLLARS.....	159.0	71.0	19.12	
50		IMPACT REVERSING SUB.....	155.5	76.2	0.31	
3		DRILL COLLARS.....	159.0	71.0	19.14	
5		CROSSOVER.....	155.5	76.2	0.31	
80		AP RUNNING CASE.....	127.0	57.2	1.25	1017.34
60		HYDROSPRING TESTER.....	127.0	19.1	3.78	1018.59
14		EXTENSION JOINT.....	127.0	25.4	2.16	
80		AP RUNNING CASE.....	127.0	57.2	1.25	1024.53
80		AP RUNNING CASE.....	127.0	57.2	1.25	1025.78
82		TEMPERATURE RUNNING CASE.....	127.0	57.2	1.25	
15		JAR.....	127.0	44.5	1.52	
16		VR SAFETY JOINT.....	127.0	25.4	1.06	
26		PUMP ASSEMBLY.....	127.0	22.3	2.15	
27		SCREEN ASSEMBLY.....	127.0	25.4	1.34	
11		HYDROFLATE PRESSURE LIMITER.....	127.0	25.4	1.52	
13		HYDROFLATE SAFETY JOINT.....	127.0	25.4	1.62	
74		TOP HYDROFLATE PACKER.....	177.8	26.9	2.55	1038.00
28		PORT ASSEMBLY.....	127.0		1.03	
22		BLANK ANCHOR.....	127.0	57.2	7.57	
75		LOWER HYDROFLATE PACKER.....	177.8	50.8	2.37	1048.00
97		BELLY SP W/ BLANKED OFF RECORDER		57.2	1.55	1049.76
5		CROSSOVER.....	127.0	57.2	0.31	
23		BLANK SUB.....	127.0		0.31	

EQUIPMENT DATA

CASING SUMMARY

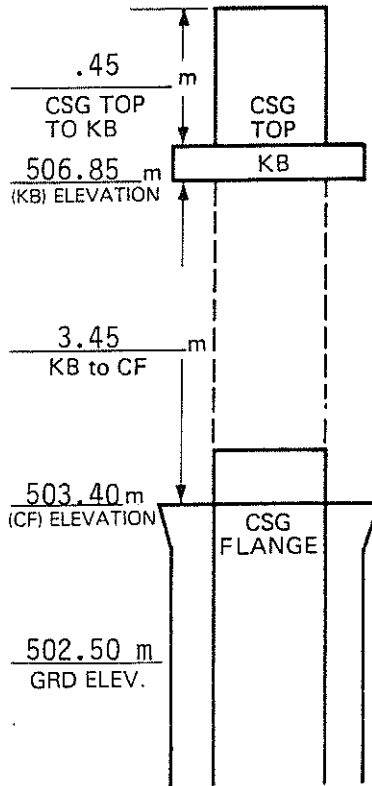
Enclosed are casing summaries for conductor, surface and production casing.

339^{mm} CONDUCTOR CASING

K

CASING SUMMARY

WELL Exco et al West Parkin Y.T LOCATION D-54 DATE 84-12-21
 Conductor Casing SIZE 339.7mm KB 506.85 m KB to CF 3.45 m
 New/Used Inspected By: Visual Drifted To: N/A API diam.



NO.	DESCRIPTION	MEASURED LENGTH	KB DEPTH
1	Davis Guide	.90	52.66
4	Jts 339.7mm 81.10 kg/m K-55	53.11	+ 0.45
	Scratchers		
3	Centralizers Gem Latch		
	Total String	54.01	Cut-off Jt. Length
	minus KB to Csg Top (STICK UP)	.45	
	Landed Depth KB	53.56	
	Hole Depth KB	53.70	
	Distance Csg Landed Off Bottom	.14	
			4.25

Cementing Company Halliburton Services Ltd.
 Wash - Type: Water Volume .2 m³
 Cement Type - Lead Slurry Permafrost 9.4 T Volume: 7 m³
 Additives None Volume: _____
 Cement Type - Tail Slurry _____ Volume: _____
 Additives _____ Volume: _____
 Cement Type - Above Stage Collar _____ Volume: _____
 Additives _____ Volume: _____
 Displacement Rate: Max. .44 Avg. .44 (m³/min)
 Calculated Cement Top(s) Surface KB _____ KB
 Returns: Mud Continuous m³ Cement 4.4 m³
 String Wt. in a mud wt. of: 1070 kg/m³ = _____ daN
 Wt. set on Slips: N/A daN
 Remarks: Cement yield .74 m³/tonne
Water ratio .39 m³/tonne
Density 1880 kg/m³

Engineer: J. Reilly

PIPE TALLY SHEET

PAGE _____ OF _____

WELL Exco et al West Parkin Y.T. D-54 LOCATION _____
 SIZE 339.7mm WT. 81.1 kg/m GRADE K-55 COUPLING LT&C THRD 8 RD
 DATE 84-12-20

JOINT	LENGTH	JOINT	LENGTH	JOINT	LENGTH	JOINT	LENGTH	JOINT	LENGTH
1	13 41	11		21		31		41	
2	13 15	12		22		32		42	
3	13 53	13		23		33		43	
4	13 02	14		24		34		44	
5		15		25		35		45	
6		16		26		36		46	
7		17		27		37		47	
8		18		28		38		48	
9		19		29		39		49	
10		20		30		40		50	
A	53 11	B		C		D		E	
51		61		71		81		91	
52		62		72		82		92	
53		63		73		83		93	
54		64		74		84		94	
55		65		75		85		95	
56		66		76		86		96	
57		67		77		87		97	
58		68		78		88		98	
59		69		79		89		99	
60		70		80		90		100	
F		G		H		I		J	

A								SUB TOTAL	JOINTS	LENGTH
B									4	53.11
C										-
D									4	53.11
E										
F										
G										
H										
I										
J										
TOTAL										

Shoe .90
 Float _____
 Collar _____
 Other _____

PAGE TOTAL _____
 BROUGHT FWD _____
 GRAND TOTAL _____
 JOINTS ON LOCATION _____

Remarks: _____

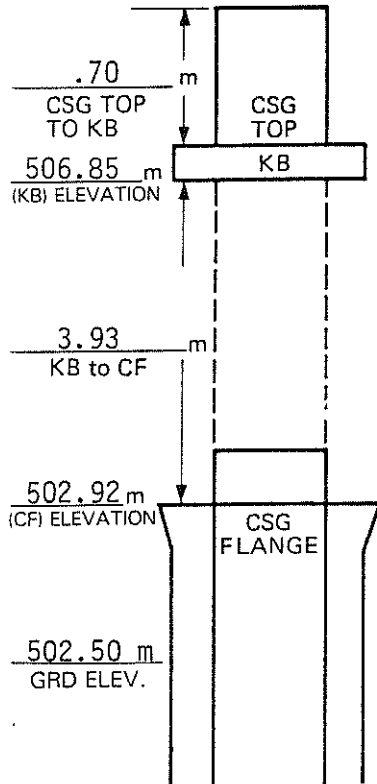
ENGINEER J. Reilly

NOTE: Use a new page for each casing type. Number joints in order of running. Indicate joints not run by * and do not include in total length.

244^{mm} SURFACE CASING

CASING SUMMARY

WELL Exco et al West Parkin Y.T LOCATION D-54 DATE 85-01-03
 SURF/INT/PROD/LINER SIZE 244.5mm KB 506.85 m KB to CF 3.93 m
 New/Used _____ Inspected By: Visual Drifted To: 8-5/8 API diam. _____



NO.	DESCRIPTION	MEASURED LENGTH	KB DEPTH
1	Davis Guide	.49	460.27
1	244.5 csg. N80 64.73 kg/m	11.95	448.32
1	Davis Float	.54	447.78
38	244.5 csg. N80 64.73 kg/m	448.48	+ 0.70
	Scratchers		
3	Centralizers 455.32, 443.55, 421.72		
	Total String	461.46	Cut-off Jt. Length
	minus KB to Csg Top (STICK UP)	.70	
	Landed Depth KB	460.76	
	Hole Depth KB	460.86	
	Distance Csg Landed Off Bottom	.10	
			4.98

Cementing Company Halliburton Services Ltd.

Wash - Type: Water Volume 1.6 m³
 Cement Type - Lead Slurry Permafrost 6.1 tonnes Volume: 4.5 m³
 Yield: 7.5 m³/T Wt: 1880 kg/m³ Volume: _____
 Cement Type - Tail Slurry Class "G" 16.85 T Volume: 12.81 m³
 Additives 2% CaCl₂ Yield: .75 Wt: 1895 Volume: _____
 Cement Type - Above Stage Collar _____ Volume: _____
 Additives _____ Volume: _____

Displacement Rate: Max. _____ Avg. .54 (m³/min)

Calculated Cement Top(s) Surface KB 5.35 KB

Returns: Mud Continuous m³ Cement 2 m³

String Wt. in a mud wt. of: 1120 kg/m³ = 30,000 daN

Wt. set on Slips: N/A daN

Remarks: Bump plug w/1000 kPa @ 0817 85-01-03

Bleed back pressure. Float held.

Displace w/17.43 m³ mud.

Engineer: Derry Lodder

PIPE TALLY SHEET

PAGE _____ OF _____

WELL Exco et al West Parkin Y.T. D-54 LOCATION _____

SIZE 244.4mm WT. 64.7 kg/m GRADE N80 COUPLING LT&C THRD 8 RD

DATE 85-01-01

JOINT	LENGTH		JOINT	LENGTH		JOINT	LENGTH		JOINT	LENGTH		JOINT	LENGTH	
1	11	95	11	11	96	21	11	48	31	11	82	41		
2	11	77	12	12	05	22	11	94	32	12	05	42		
3	11	91	13	11	87	23	11	93	33	11	69	43		
4	11	77	14	11	93	24	11	86	34	11	70	44		
5	11	83	15	11	94	25	11	74	35	11	79	45		
6	11	91	16	11	87	26	11	99	36	11	18	46		
7	11	80	17	11	67	27	11	80	37	12	07	47		
8	11	78	18	11	13	28	11	94	38	11	58	48		
9	11	70	19	11	85	29	11	90	39	12	00	49		
10	11	76	20	11	71	30	11	85	40			50		
A	118	18	B	117	94	C	118	43	D	105	88	E		
51			61			71			81			91		
52			62			72			82			92		
53			63			73			83			93		
54			64			74			84			94		
55			65			75			85			95		
56			66			76			86			96		
57			67			77			87			97		
58			68			78			88			98		
59			69			79			89			99		
60			70			80			90			100		
F			G			H			I			J		

	JOINTS	LENGTH	SUB TOTAL	
A	118	18		
B	117	94	236	12
C	118	43	354	55
D	105	88	460	43
E				
F				
G				
H				
I				
J				
TOTAL	460	43		

Shoe	<u>.49</u>
Float Collar	<u>.54</u>
Other	_____

PAGE TOTAL _____
 BROUGHT FWD _____
 GRAND TOTAL _____

JOINTS	LENGTH
39	460.43
39	460.43

JOINTS ON LOCATION _____

Remarks: Shoe and float thread locked and welded.
Centralizers on shoe jt, 3rd jt & 5th jt.

ENGINEER D. Lodder

NOTE: Use a new page for each casing type. Number joints in order of running. Indicate joints not run by * and do not include in total length.

HALLIBURTON**CEMENTING AND/OR SPECIAL TOOLS
SERVICE REPORT**

ATTACH TO

INVOICE No. _____

HALLIBURTON DISTRICT
FrontierJOB DATE 1985 01 03
YEAR MONTH DAY

OWNER, OPERATOR OR HIS AGENT STATES THE WELL IS IN GOOD CONDITION FOR THE SERVICE JOB TO BE PERFORMED AND SUBMITS THE FOLLOWING DATA.

CUSTOMER Gray Mountain Drilling		FIELD OR AREA West Parkin			WELL No. AND LEASE West Parkin D-54				
CALLED OUT DATE TIME	ON LOCATION 85-01-01 DATE TIME	JOB STARTED 85-01-03 06:43 DATE TIME	JOB COMPLETED 85-01-03 08:12 DATE TIME	PROVINCE Yukon	LSD	SEC	TWP	RANGE	MERIDIAN W

TYPE OF JOB <input checked="" type="checkbox"/>	WELL OR HOLE DATA								PRODUCTS	
	SURFACE <input checked="" type="checkbox"/>	HOLE DATA:	HOLE SIZE	TOTAL DEPTH	TYPE MUD	VISC.	DENSITY	EQUIPMENT	QUAN	
INTERMEDIATE		311.2 mm	460 m	Ge1				BASKETS		
PRODUCTION	CASING, TUBING OR LINER DATA	244.5 mm	kg/m 180	GRADE 64.7	DEPTH 461.44 m			CENTRALIZERS		
INNER	NEW <input checked="" type="checkbox"/> USED <input type="checkbox"/>							CLAMPS		
SQUEEZE	PERFORATIONS: FROM m TO m							FLOAT COLLAR	X	
PLUG	FROM m TO m							FLOAT SHOE	X	
PUMP	WASH FLUID TYPE: H2O	VOL. 1.6 m ³		DISPLACING FLUID TYPE: Mud	VOL. 17.4 m ³			GUIDE SHOE		
PRESSURE TEST	TEMP MIXING DATA	WATER	°C	SLURRY	°C	DISPLACING FLUID	°C	INSERT FLOAT		
OTHER								SCRATCHERS		
								OTHER		

EQUIPMENT

PACKER	CEMENT HEAD
TYPE _____ SIZE _____ mm	CONTINUOUS <input type="checkbox"/> KNOCK OFF <input type="checkbox"/> SWAGE <input checked="" type="checkbox"/>
DEPTH _____ m TAIL PIPE _____ m	OTHER _____
TOP PLUG TYPE _____ 5W	
BOTTOM PLUG TYPE _____ 5W	

CEMENT DATA

TONNE	API CLASS	BRAND	BULK OR SACKED	CEMENT BLEND	ADDITIVES TYPE AND PERCENT	kg/m ³	m ³ /tonne
6.1	G	Inland	Sacked	Permafrost Oilwell		1880	0.74
16.85	G	Inland	Sacked	Oilwell	2% CaCl ₂	1894	0.76

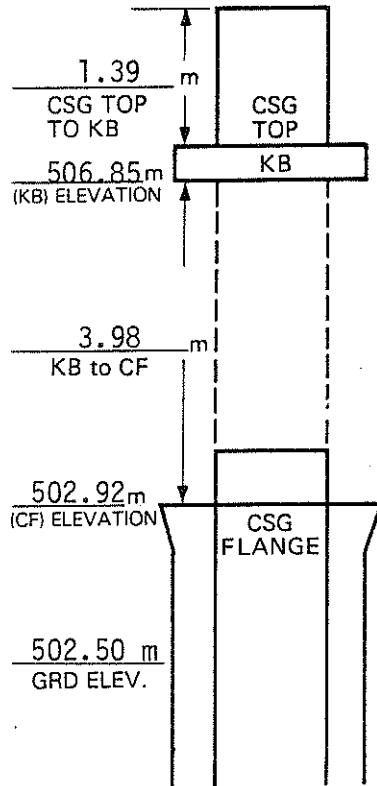
HALLIBURTON OPERATOR R. Drader CUSTOMER REP. _____**TREATING LOG**

CHART POSITION	TIME	RATE m ³ /min	VOLUME PUMPED IN m ³			PRESSURE MPa		REMARKS
			STAGE	TOTAL	IN FORMATION	TUBING	CASING	
								Release bottom wiper plug.
1	06:43 06:45	0.75						Pump 1.6 m ³ H ₂ O ahead.
2	06:45 07:40	0.3						Mix and pump 4.5 m ³ Permafrost slurry. Mix and pump 12.81 m ³ Neat + 2% CaCl ₂ .
3	07:40 07:45							Release top wiper plug.
4	07:45 08:17	0.54				1.0		Displace with mud and bump plug. Returns 2 m ³ slurry.

139.7^{mm} PRODUCTION CASING

CASING SUMMARY

WELL Exco et al West Parkin Y. LOCATION D-54 DATE _____
 PROD/ SIZE 139.7mm KB 506.85 m KB to CF 3.98 m
 New/Used Inspected By: Visual Drifted To: N/A API diam. _____



NO.	DESCRIPTION	MEASURED LENGTH	KB DEPTH
1	Float Shoe	.49	1096.41
1	jt 139.7mm K-55	11.33	1085.08
1	Float Collar	.54	1084.54
97	jts 139.7mm K-55	1085.93	+ 1.39
11	Scratchers		
8	Centralizers		
Total String		1098.29	
minus KB to Csg Top (STICK UP)		1.39	Cut-off Jt. Length
Landed Depth KB		1096.90	
Hole Depth Plugged Back		1105.50	5.3 m
Distance Csg Landed Off Bottom		8.60	

Cementing Company Halliburton Services Ltd.

Wash - Type: SAAP Volume 1.3 m³

Cement Type - Lead Slurry Permafrost 11.0T Volume: 9.44 m³

Additives CFR-2 0.75% Volume: 0.74 m³/tonne

Cement Type - Tail Slurry Class "G" 36.0T Volume: 31.4 m³

Additives CFR-2 0.75% Volume: 0.76 m³/tonne

Cement Type - Above Stage Collar - Volume: _____

Additives - Volume: _____

Displacement Rate: Max. 1.1 m³/m Avg. 0.65 m³/m (m³/min)

Calculated Cement Top(s) Permafrost - Surface KB G - 150 m KB

Returns: Mud 34 m³ m³ Cement 3.5 m³

String Wt. in a mud wt. of: _____ kg/m³ = _____ daN

Wt. set on Slips: _____ daN

Remarks: Caliper log (w/volume integration) appeared to derive volume somewhat higher than actual volume, leading to excessive cement returns.

Engineer: J. Reilly

PIPE TALLY SHEET

PAGE _____ OF _____

WELL Exco et al West Parkin Y.T. D-54 LOCATION _____

SIZE 139.7mm WT. 23.07 kg/m GRADE K-55 COUPLING LT&C THRD 8RD

DATE _____

JOINT	LENGTH		JOINT	LENGTH		JOINT	LENGTH		JOINT	LENGTH		JOINT	LENGTH	
1	11	33	11	11	10	21	11	42	31	11	24	41	11	05
2	11	36	12	11	11	22	11	26	32	11	10	42	11	14
3	11	21	13	11	26	23	11	16	33	11	36	43	11	31
4	11	45	14	11	32	24	11	11	34	11	27	44	11	30
5	11	38	15	10	70	25	11	20	35	11	26	45	11	26
6	11	43	16	10	66	26	11	44	36	11	40	46	11	10
7	11	32	17	11	45	27	11	34	37	11	36	47	11	21
8	11	37	18	11	09	28	11	36	38	11	30	48	11	20
9	11	37	19	11	34	29	11	21	39	11	34	49	11	17
10	11	34	20	11	26	30	11	37	40	11	22	50	11	13
A	113	56	B	111	29	C	112	87	D	112	85	E	111	87
51	11	19	61	11	36	71	11	05	81	11	21	91	11	10
52	11	11	62	11	39	72	10	94	82	11	15	92	11	04
53	11	13	63	10	73	73	11	29	83	11	00	93	11	03
54	11	18	64	11	21	74	11	37	84	11	14	94	10	96
55	11	10	65	11	19	75	11	06	85	11	32	95	11	10
56	11	36	66	11	13	76	11	10	86	11	21	96	11	22
57	11	35	67	11	09	77	10	42	87	11	11	97	11	21
58	11	04	68	11	24	78	11	11	88	11	10	98	11	12
59	11	05	69	11	22	79	11	32	89	11	19	99	11	21
60	11	25	70	11	12	80	11	19	90	11	32	100	11	12
F	111	76	G	111	68	H	110	85	I	111	75	J	111	11

	JOINTS	LENGTH
A	113	56
B	111	29
C	112	87
D	112	85
E	111	87
F	111	76
G	111	68
H	110	85
I	111	75
J	111	11
TOTAL	1119	59

SUB TOTAL	
224	85
337	72
450	57
562	44
674	20
785	88
896	73
1008	48
1119	59

Shoe	49
Float Collar	54
Other	(1.03)

PAGE TOTAL _____
 BROUGHT FWD _____
 GRAND TOTAL _____
 JOINTS ON LOCATION 150

100	1119.59
less	22.33
	1097.26

Remarks: Casing landed at 1096.9 m.
Float shoe, float collar thread-locked.

ENGINEER J. Reilly

NOTE: Use a new page for each casing type. Number joints in order of running. Indicate joints not run by * and do not include in total length.



CEMENTING AND/OR SPECIAL TOOLS SERVICE REPORT

ATTACH TO INVOICE No. _____

HALLIBURTON DISTRICT Frontier

JOB DATE 1985 02 19 YEAR MONTH DAY

OWNER, OPERATOR OR HIS AGENT STATES THE WELL IS IN GOOD CONDITION FOR THE SERVICE JOB TO BE PERFORMED AND SUBMITS THE FOLLOWING DATA.

CUSTOMER Gray Mountain Drilling FIELD OR AREA West Parkin WELL No. AND LEASE West Parkin D-54
CALLED OUT DATE TIME ON LOCATION 85-02-19 JOB STARTED 85-02-19 10:12 JOB COMPLETED 85-02-19 13:40 PROVINCE Yukon

TYPE OF JOB INTERMEDIATE PRODUCTION CHECKED
WELL OR HOLE DATA HOLE SIZE 215 mm TOTAL DEPTH 1097 m TYPE MUD Gel Chem Visc. 70 DENSITY 1190
CASING, TUBING OR LINER DATA NEW X USED
PERFORATIONS: FROM TO FROM TO FROM TO
WASH FLUID TYPE: H2O VOL. 1.59 m3 DISPLACING FLUID TYPE: H2O VOL. 13.4 m3
TEMP MIXING 12 °C SLURRY 10 °C DISPLACING FLUID 12 °C RETURNS °C

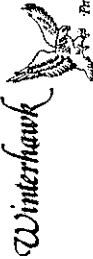
EQUIPMENT PACKER TYPE SIZE mm TOP PLUG TYPE 5W Rubber CEMENT HEAD CONTINUOUS KNOCK OFF SWAGE X OTHER
DEPTH m TAIL m BOTTOM PLUG TYPE 5W Rubber

CEMENT DATA table with columns: TONNE, API CLASS, BRAND, BULK OR SACKED, CEMENT BLEND, ADDITIVES TYPE AND PERCENT, kg/m3, m3/tonne

HALLIBURTON OPERATOR L. Mastel CUSTOMER REP.

TREATING LOG table with columns: CHART POSITION, TIME, RATE m3/min, VOLUME PUMPED IN m3 (STAGE, TOTAL, INFORMATION), PRESSURE MPa (TUBING, CASING), REMARKS

BIT RECORD



BIT RECORD

WELL NAME Exco et al West Parkin Y.T. D-54 LOCATION Field Eagle Plains Y.T.
 Contractor Gray Mountain Drilling Rig No. 1 (Custom 94) Rig Release Date 85-02-19 2400 hours
 Spud Date 84-12-20 1200 hours T.D. Date 85-02-09 0730 hours

BIT NO.	SIZE mm	MAKE & TYPE	DEPTH OUT	METRES DRILD	ROT. HOURS	WEIGHT ON BIT - daN	BIT RPM	JETS - mm			PUMP PRESS kPa or MPa	PUMP OUT - PUT m ³ /min	DULL COND.			
								1	2	3			T	B G		
1A	311.2	S21G-J	53	53	6.50	7	100	15	16	18	5000	.977	2	2	I	
1A	444.5	DSJ	53	Ream rat hole	-	7	100	12.7	12.7	12.7	4500	1.37	2	2	I	
1B	311.2	XDV	142	89	17.00	10	80/100	0	P	E	N	1000	1.41	6	4	I
2B	311.2	SDG	396	254	42.25	6 - 12	80/100	9.5	9.5	OPEN	5000	1.38	4	3	I	
3B	311.2	XI6	460	64	13.00	7	100	7.9	10.3	OPEN	5000	1.34	4	2	I	
1	215.9	S44	518	58	12.75	7 - 10	60/80	8.7	9.5	9.5	8000	1.086	8	7	I	
2	215.9	F2	673	155	40.75	6	60	8.7	9.5	9.5	8000	1.086	4	2	I	
3	215.9	F2	810	137	34.25	10	65	8.7	9.5	9.5	7000	1.086	4	5	I	
4	215.9	F2	1001	191	56.75	14 - 15	60	7.9	9.5	9.5	6000	1.310	3	5	3	
5	215.9	J33	1029	28	18.75	12	42	7.1	7.1	7.9	8000	0.760	8	8	1.5	
6	215.9	M84F	1077	48	29.00	14	55	8.7	8.7	9.5	8000	0.96	8	8	1.5	
7	215.9	M89F	1123	46	23.75	15	60	8.7	8.7	9.5	6000	1.086	4	3	1.5	
8	215.9	M89IF	1167	44	25.50	15	55	8.7	8.7	9.5	7800	1.014	7	8	3	
9	215.9	J55	1245	78	33.50	16	55	8.7	8.7	9.5	8000	1.104	8	8	3	
10	215.9	FP64J	1285	40	19.25	14	56	8.7	8.7	9.5	8000	1.104	8	3	3	
11	215.9	FP63J	1376	91	50.50	14 - 16	55	8.7	8.7	8.7	8000	1.104	8	6	3	

REMARKS Bit #9 - 3 cones left on bottom, successfully drilled up with Bit #10.

MUD REPORT

MUD ADDITIVES

Well: Exco et al West Parkin Y.T. D-54

Drilling Day	Ge1	Sawdust	Lime	Caustic	Kwikseal	Bicarb	Polyguard	Polysec	SAPP	CMC	Cypan	Barite
1	51	50	2	2								
2	15		1									
3												
4	27	75	2	4	5							
5	54	160	3	7	4							
6	59	93	3	2	23							
7	90	30		4								
8	60											
9	11	48			3							
10	47			1								
11	53			3								
12	51			3								
13	37			2								
14	49			2								
15												
16												
17	80	210		3		3						
18												
19	26	15				6	20	4	1	2		
20	22			2				2		1		
21	12	5					10	2		1		
22	6	70						1		1		
23	22			1			10					
24												85
25	12			2				2		1		
26	10	20		3			10	2		1		50
27	27							4		1		
28	6			1			10	1				
29												
30	35			1			10	6				
31	26			4				5		2		50
32	26	30					10	5				65
Totals	914	806	11	47	35	9	80	34	1	10	5	250

Well: Exco et al West Parkin Y.T. D-54

MUD ADDITIVES

Drilling Day	Gel	Sawdust	Lime	Caustic	Kwikseal	Bicarb	Polyguard	Polysec	SAPP	CMC	Cypan	Barite
33												
34	21	10					10	4		1	1	90
35	10			2				2				40
36	22			2				2				80
37		30					10					
38	16	30	3	1			10	3		1	1	40
39	4	30					10	4				75
40	44	30					10	9				18
41	28						10	5				56
42	10			1			10	5		1	1	78
43			2	2			10			1	1	145
44	12						10	2				60
45	51			2			10	12				200
46	39			2				7				120
47	20			1			10	4		1	1	80
48	24			1				4				80
49												
50	27			2			10	5				60
51	18	50		1			10	3				
52										1	1	
53												
54	22	20		1			6	5				40
55												
56												
57	20			1								30
58	45			3			20					97
59												
60												
61												
62												
Totals	433	200	5	22	--	--	116	76	--	6	6	1389
Total Used	1347	1006	16	69	35	9	196	110	1	16	11	1639

DIRECTIONAL SURVEY

Enclosed is the directional survey report for Exco et al West Parkin Y.T. D-54 with the bottom hole co-ordinates calculated as:

Total Depth:	1791.00 ^m
True Vertical Depth:	1784.75 ^m
Latitude:	67.84 ^m N
Departure:	93.18 ^m E
Closure:	115.26 ^m N 53.94 ^m E

Note: The last survey point was taken at 1791.00 metres measured depth while total depth was drilled to 1811 metres.

A directional completion plot is enclosed in the pocket enclosure located inside the back cover.

DIRECTIONAL SERVICES DIVISION

DIRECTIONAL SURVEY REPORT

FOR

EXCO ET AL WESTPARKIN D54

EXCO ENERGY LTD.

DATE: 19850327

COMPLETED DIRECTIONAL SURVEY

19850327

EXCO ET AL WESTPARKIN D54
EXCO ENERGY LTD.

STA NO.	TOTAL DEPTH	DRIFT ANGLE	VERT. DEPTH	DRIFT DIRECT	LATITUDE	DEPARTURE	VERT. SECTION	DOG LEG
0	0.00	0.00	0.00	N 00 E	0.00 N	0.00 E	0.00	0.00
1	464.90	0.00	464.90	N 00 E	0.00 N	0.00 E	0.00	0.00
2	484.07	2.00	484.07	N 55 E	0.19 N	0.27 E	0.33	3.13
3	503.24	2.50	503.22	N 55 E	0.62 N	0.89 E	1.09	0.78
4	522.41	2.25	522.37	N 54 E	1.08 N	1.54 E	1.88	0.40
5	541.58	3.00	541.52	N 61 E	1.55 N	2.28 E	2.76	1.27
6	560.75	3.00	560.67	N 63 E	2.02 N	3.17 E	3.75	0.16
7	579.92	3.60	579.81	N 63 E	2.52 N	4.15 E	4.84	0.94
8	599.09	3.60	598.94	N 66 E	3.04 N	5.24 E	6.02	0.30
9	618.26	3.90	618.07	N 64 E	3.57 N	6.37 E	7.25	0.51
10	637.43	3.90	637.19	N 65 E	4.13 N	7.55 E	8.53	0.11
11	656.60	4.10	656.32	N 62 E	4.73 N	8.74 E	9.85	0.45
12	675.77	4.50	675.43	N 71 E	5.29 N	10.06 E	11.25	1.23
13	694.94	4.25	694.55	N 75 E	5.72 N	11.46 E	12.63	0.62
14	714.11	4.25	713.66	N 72 E	6.13 N	12.82 E	13.97	0.35
15	733.28	4.60	732.78	N 75 E	6.55 N	14.24 E	15.36	0.66
16	752.45	4.90	751.88	N 69 E	7.04 N	15.74 E	16.87	0.91
17	771.62	5.00	770.98	N 74 E	7.56 N	17.31 E	18.45	0.69
18	790.79	5.25	790.07	N 69 E	8.11 N	18.93 E	20.08	0.80
19	809.96	5.75	809.16	N 75 E	8.67 N	20.68 E	21.82	1.19
20	829.13	5.90	828.23	N 74 E	9.19 N	22.55 E	23.64	0.28
21	848.30	6.00	847.29	N 72 E	9.77 N	24.45 E	25.52	0.36
22	867.47	5.75	866.36	N 71 E	10.39 N	26.32 E	27.39	0.42
23	886.64	5.60	885.44	N 70 E	11.02 N	28.10 E	29.21	0.28
24	905.81	5.75	904.51	N 67 E	11.72 N	29.87 E	31.04	0.52
25	924.98	5.75	923.59	N 65 E	12.50 N	31.62 E	32.92	0.31
26	944.15	6.00	942.66	N 71 E	13.23 N	33.44 E	34.82	1.04
27	963.32	5.75	961.73	N 69 E	13.90 N	35.28 E	36.71	0.51
28	982.49	5.50	980.80	N 69 E	14.58 N	37.04 E	38.52	0.39
29	1001.66	6.00	999.88	N 68 E	15.28 N	38.82 E	40.38	0.80
30	1020.83	5.80	1018.95	N 67 E	16.03 N	40.64 E	42.29	0.35
31	1040.00	6.00	1038.01	N 64 E	16.85 N	42.43 E	44.22	0.58
32	1059.17	6.00	1057.08	N 62 E	17.76 N	44.22 E	46.20	0.33
33	1078.34	5.90	1076.15	N 68 E	18.60 N	46.02 E	48.15	0.99
34	1097.51	6.25	1095.21	N 68 E	19.36 N	47.90 E	50.12	0.55
35	1116.68	6.00	1114.27	N 70 E	20.10 N	49.81 E	52.09	0.51
36	1135.85	5.90	1133.34	N 72 E	20.74 N	51.69 E	53.99	0.36
37	1155.02	6.00	1152.40	N 71 E	21.37 N	53.57 E	55.89	0.23
38	1174.19	5.20	1171.48	N 62 E	22.11 N	55.29 E	57.71	1.86
39	1193.36	5.25	1190.57	N 69 E	22.83 N	56.87 E	59.41	1.00
40	1212.53	5.75	1209.65	N 68 E	23.50 N	58.58 E	61.19	0.80
41	1231.70	5.75	1228.73	N 75 E	24.11 N	60.40 E	63.02	1.10
42	1250.00	5.75	1246.94	N 47 E	24.97 N	61.95 E	64.79	4.55
43	1309.00	5.50	1305.66	N 38 E	29.22 N	65.86 E	70.44	0.47
44	1353.00	5.30	1349.46	N 42 E	32.39 N	68.51 E	74.45	0.29

COMPLETED DIRECTIONAL SURVEY

19850327

EXCO ET AL WESTPARKIN D54
EXCO ENERGY LTD.

STA NO.	TOTAL DEPTH	DRIFT ANGLE	VERT. DEPTH	DRIFT DIRECT	LATITUDE	DEPAR- TURE	VERT. SECTION	DOG LEG
45	1420.00	2.80	1416.29	N 23 E	36.20 N	71.23 E	78.89	1.26
46	1510.00	3.00	1506.18	N 15 E	40.49 N	72.69 E	82.60	0.15
47	1567.00	3.50	1563.09	N 37 E	43.33 N	74.13 E	85.43	0.70
48	1625.00	6.75	1620.85	N 38 E	47.43 N	77.29 E	90.40	1.68
49	1654.00	10.00	1649.53	N 38 E	50.75 N	79.89 E	94.46	3.36
50	1683.00	10.50	1678.07	N 44 E	54.64 N	83.28 E	99.48	1.22
51	1702.00	10.00	1696.77	N 49 E	56.97 N	85.73 E	102.83	1.61
52	1744.00	8.75	1738.21	N 38 E	61.88 N	90.44 E	109.54	1.56
53	1759.00	7.75	1753.06	N 24 E	63.70 N	91.56 E	111.51	4.47
54	1791.00	8.25	1784.75	N 19 E	67.84 N	93.18 E	115.26	0.80

COMPLETED DIRECTIONAL SURVEY

DATE: 19850327
COMPANY: EXCO ET AL WESTPARKIN D54
WELLNAME: EXCO ENERGY LTD.

THE DRIFT DIRECTION IS EXPRESSED IN QUADRANT DIRECTION.
ALL ANGLES ARE EXPRESSED IN DECIMAL DEGREES
ALL DISTANCES ARE EXPRESSED IN METRES
A DECLINATION OF 34 DEGREES EAST HAS BEEN APPLIED.
VERTICAL SECTION WAS CALCULATED ALONG N 53.94 E
CLOSURE IS 115.26 METRES N 53.94 E
DOGLEG SEVERITY IS IN DEGREES PER 30 METRES.
MINIMUM CURVATURE METHOD OF CALCULATION

PRESSURE TESTS

Enclosed is a record of the pressure test performed on the 244^{mm} casing and Blow Out Preventors.

PLUGGING BACK PROCEDURE

The well was plugged back from 1811 metres total depth to 1097 metres, plug back depth. Subsequently, 139.7mm production casing was run from surface to the 1097 metre depth.

ABANDONMENT REPORT

DATE 85-02-17

Well Exco et al West Parkin Y.T. D-54 Location _____

A. WELL DATA

KB Elevation 506.85 m KB to CF 3.98 m FTD 1811 m

Hole Size	Hole Depth	Casing Size	Casing Depth	Cement Top(s)	Perfs
444.5	53	339.7	53	Surface	N/A
311.2	460	244.5	460	Surface	N/A
215.9	1811	139.7	1097	Surface	N/A

B. ABANDONMENT DATA

Fluid in Hole Drilling mud Abandonment Company Halliburton Services Ltd.

Cementing Company Halliburton Services Ltd. Gov't Official John Hamilton

Plug	Interval	Formation	Cem Vol	Cem Type	Cem Wt.	Plug Down	Felt Plug Time	Felt Plug Depth
1	1711 - 1811	Devonian	7.70	Class "G" + 2% CaCl ₂	1895	85-02-17	1600 hrs.	not felt
2	1090 - 1150	Carboniferous	5.40	Class "G" + 2% CaCl ₂	1895	85-02-17	85-02-18	1200 hrs.
Plug #2 was run and set to facilitate the setting of 139.7mm production casing. The plug was drilled from 1105 m to 1097 m, plug back depth.								

Method of Feeling Plugs Open ended

Surface Casing Cut N/A Surface Plug N/A Plate Welded On top of casing bowl

C. SALVAGE DATA

Casing Salvaged N/A

D. REMARKS _____

ENGINEER J. Reilly

Gray Mountain Drilling
West Parkin D-54

PLUG BACK JOB DATA

PLUG NO.	TOP	DEPTH BOTTOM	TONNE	DISPLACEMENT (m ³)	TIME (min)
1	1711	1811	5.6	11.4	13:30
2	1100	1130	1.43	7.8	18:30

SECTION IV
LOGGING SUMMARY

SECTION IV
LOGGING SUMMARY
JANUARY 14, 1985

- DIL/ BCS-GR-CL/ CDL-CNS-GR-CL4/ WEL
- MUD LOG - refer to pocket enclosure
- LITHOLOGY - refer to pocket enclosure

1985

DIL-GR/ CDL-CNS-GR-CAL/ BCS-GR-CAL/ MEL-GR-CAL

FEBRUARY 10, 1985

460.2^m - 1804.5^m

MUD LOG

LITHOLOGY LOG