



0229-1131-0244

CANADIAN FOREST OIL LTD.

FINAL PLAN REPORT

Area of Exploration: **Mount Flett 3D**
(also referred to as "Maxhamish 3D" and "Flett South 3D")

Operated by: Canadian Forest Oil Ltd.

Operation Number: 9229-C131-3E

Land Use Permit: 9180-C831-4

Type of Operation: 3D Seismic Acquisition

Location:
60.4488 -123.5196
60.4483 -123.5205

Duration of Operation: July 31, 1999 to November 29, 1999

Principle Contractor: Schlumberger Geco Prakla of Calgary

Interest Owners: Canadian Forest Oil Ltd 50%
Ranger Oil Ltd 50%

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Canadian Forest Oil Ltd.

Date of Report: July 21, 2000

3D Map
(mylar & paper)
available on request

Table of Contents

Abstract	Page 1
Figure 1: Location Map	Page 2
Significant Dates, Weather Summary and Topographic Conditions	Page 3
General Description of Operation and Acquisition	Page 17
Figure 2: Acquisition Fold Diagram	Page 18
Geophysical Data Processing	Page 19
Geophysical Interpretation.....	Page 20

Enclosures

Shot point Map and Segp1 Diskette.....	Enclosure 1
Copies of Time Seismic Sections (blank).....	Enclosure 2
Interpreted copies of Key Time Seismic Sections.....	Enclosure 3
Time Structure Map – Top Nahanni.....	Enclosure 4
Synthetic Seismograms if Key Wells Within 3D Volume.....	Enclosure 5
NavPak Positioning Product Information.....	Appendix 1

Appendix

Abstract

A 3D acquisition program in the area of Fort Liard, N.W.T. was conducted by Canadian Forest Oil Ltd. in conjunction with its partners. Approximately 73 square km of 3D dynamite data were acquired under this seismic program approval.

This program was shot during summer and fall conditions. Heliportable acquisition techniques were employed in conjunction with hand cut, avoidance line clearing methods to achieve efficient, safe and low-impact operations. Canadian Forest Oil Ltd. assigned Synterra Technologies Ltd and Geco-Prakla (Schlumberger) to oversee the entire program. Impact Exploration Services Inc. were contracted to secure necessary regulatory approvals. Beaver Enterprises were hired for line clearing and to provide camp services. Double R Drilling provided heli shot-hole services. Deh Cho Air was the supplier of helicopter support on all aspects of the job. The approximate time taken to complete the program was 120 days.

The seismic source was 20kg charge of dynamite loaded at a 20 m depth. The fold at the target depth of 3000m was 10-12. Shotpoint interval of 170 m and group interval of 60 m. Sample Rate was 2 ms and record length was 6 sec, processed to 4 sec. East - West receiver lines were spaced at 480m and Northeast oriented shot lines were 635m apart. The live recording patch was 1220 channels in size.

The data quality for this sparse 3D program was fair to good. Many of the lines exhibit noise interference attributed to rugged topography, multiples and near surface effects. The seismic raypaths were subjected to distortion by compressional tectonic structures (both near surface and deep subsurface) and near surface velocity variations. Only some of this distortion could be corrected through seismic processing. In addition, gravel deposits located toward the Liard River created considerable signal to noise loss through poor coupling and raypath scattering. The low fold portion of this survey, terminating in rugged topography are prone to poor signal to noise ratio and erroneous resolution of dips. Despite these issues, an interpretation of the Devonian Nahanni time structure, constrained by well control and surface geology has been generated with reasonable confidence.

Processing was completed by Kelman Seismic Processing of Calgary. Data was then loaded to a SeisX workstation for in-house interpretation.

Line Name	Work Bonus Range	Actual Range	Work Bonus Mileage	Actual Mileage
3D	Receiver lines 33-77	R 33-77	73 km sq	73 km sq
	Shot lines 76 - 32	S 76-32	73 km sq	73 km sq
	Approximately Total Mileage		73 km sq	73 km sq

60-40N 123-45W

60-40N 123-30W

10

10

60-30N 123-45W

60-30N 123-30W

10

10

60-20N 123-45W

60-20N 123-30W

South Flett 3d

Scale 1:10

Printed 13-DEC-2000

Datum NAD27

Projection Mercator

Origin: Lon W66° Lat 0°

10 C Intervals

Figure 1 - Location Map

CANADIAN FOREST OIL LTD.

Significant Dates, Weather Summary and Topographic Conditions

A summary of the significant dates are chronologically listed below.

REGULATORY

April 1, 1999 Application for several lines submitted under N1998B0934
May 17, 1999 Revision 5 applied for by Impact Exploration Services no individual lines listed
May 31, 1999 Amendment for Land Use 1998B0934 authorized to conduct seismic revision dates April 21, 1999
June 1, 1999 Preliminary screening notification from NEB 9229-C131-2E
July 13, 1999 Approval given via Fisheries and Oceans File #SC99045
July 21, 1999 Approval received from NEB File #9180-C831-4
July 21, 1999 A copy of authorization received includes expansion of 3D survey
Sept 17, 1999 Indian Northern Affairs approval received file #N1998B0934
Nov 3, 1999 Received approval from NEB Operation Identifier #9229-C131-3E
November 3, 1999 Inspection completed by Indian and Northern Affairs

SURVEY

Navpac Survey and Slashing Production details & notes are found on pages 4,5,6,7
Conventional Survey Production notes and comments are found on pages 8.

DRILLING

Drilling Production details and notes are found on pages 9 & 10.

OTHER

Production statistics for other miscellaneous segments of the program are found on pages 11&12.
This includes Ambulance Service, Geco Staff, Canadian Forest Staff and Alpine Data Services
(Mountain Climbers)

RECORDING

Recording statistics are found on pages 13-16.

G-P NAVPAC Input

34 NAVIGATOR Input

NAVPAC PRODUCTION COMMENTS

DATE	
28/07/00	NavPac crew moved from Rocky Mountain House to Grande Prairie
29/07/00	NavPac crew moved from Grande Prairie to Fort Liard
30/07/00	Nav crew received site and camp orientation/ assembled equipment to get ready for production and a production meeting
31/07/00	Two Nav crews out, working in thick brush throughout day/ Nav3 fixed 5 GPS control points
01/08/00	three Paks out for 2 38k
02/08/00	crews moving into steeper terrain, continue to work in thick undergrowth - 2 72k
03/08/00	crew member evacuated from field for heat related problems/ cutting crew late to line
04/08/00	Nav A and C cutting crews having equipment problems
05/08/00	Nav B down, no production due to broken Lemo connector/ Nav A lost fuel out of supply container - ran out of fuel
06/08/00	Nav C resurveyed 5 points due to shutdown of previous day/
07/08/00	Nav C experienced cable problem, shut down early/
08/08/00	no production due to weather
09/08/00	weather continue w/ no production
10/08/00	attempted to fly a crew but weather moved in/ weather day- no production
11/08/00	lost time due to keying error by operator, had to re-align for a restart/ Nav C pak drained CDU, shut down early
12/08/00	Nav 3 had power drain problem with CDU, shut down early/ Nav 2 experienced alignment problems/ 2 72k all crews
13/08/00	Nav 2 had one saw down in p.m / Nav 3 CDU was drained again by Pak- shutdown early with 4 points/
14/08/00	CDU drain again on Nav 3 /
15/08/00	Nav 3 pack drained CDU again, shut down after 7 points
16/08/00	chainsaw problems on Nav 2 - 2 hour for replacement/ Nav 3 drained CDU/ crews working rough line in mountains
17/08/00	Nav 3 cutting in willows all day/ CDU pack drain for the seventh consecutive day/
18/08/00	all crews working steep slopes / CDU problems continue with Nav 3/ CDU cable failure on Nav 2/ 2 89k for the day
19/08/00	Nav 3 CDU problem ongoing, surveyed 9 points prior to failure/ Nav 1 had cable problems
20/08/00	cutter on Nav 8 incurred a light injury due to a broken chain, medevac initiated. Injury summary - small cut/ abrasion
21/08/00	Nav A experienced cable failure, no replacement yet/ Nav C pak drained CDU had to shut down early. Was working in thick willow from mid PM
22/08/00	Nav A had another cable failure mid-day - Nav C also had a cable failure midday, both crews stop production mode as there are no spares available
23/08/00	Nav A cable failure / RC Party Manager has been assisting in repair of cables but the lemo end(s) are deteriorated too badly
24/08/00	Nav A resurveys due to cable failure from previous day. Nav C cable failure mid-day / received cable shipment mid-day
25/08/00	NavPac and conventional survey crews working in steep terrain all day/ Nav encountering heavy brush / 1st day for conventional crew
26/08/99	Second drill crew arrived late day. Intermittent rain throughout the day/ survey crews still working in steep terrain
27/08/99	moved heli-drills onto S-76 & S-76 EOLs but fog rolled in/ survey crews affected by weather - rained out
28/08/99	10 sp's drilled, drill crew shut down at 13:30 due to heavy fog/ conventional survey crew completed S-56- too late too get bumped to another line/ Nav B had to cut 1.8 due to a cliff avoidance
29/08/99	9 sp's drilled late day/ unable to access line due to fog and intermittent rain/ winds also very strong- crews cautious due to high winds
30/08/99	No crews out on 3D, heavy fog with intermittent rain throughout day/ drill crew scheduled to pull off for Max 2D lines
31/08/99	moved drills off of 3D to Max-2 line 14 late day due to weather/ released the remainder of crews mid-day/ clients out inspecting lines for LIS
01/09/99	Nav#2 operator fell down a steep slope, no injuries- Pak disabled and crew pulled from line/ large Griz sighted in NW corner of 3D
02/09/99	moved a cutting crew (2 man) to NE to work on heli-pads/ all NavPaks out / Nick Coates travelled out/
03/09/99	Nav operator having problem with an swollen knee, put on light duty till further assessment/ split crew to assist Catpush with R-line setup for 'C'
04/09/99	problems with cutters being a no show/ able to support the Nav crews but only one C crew in the field
05/09/99	working with the same crew count as yesterday, no new slashers in / additional sleeper moved into Muskeg
06/09/99	no crews out due to low ceiling and intermittent rain/ LIS rigs barged across river but could only get to km42 due to road conditions/ Roly Tang in/ moved Bryn into Muskeg to be close with survey group(s)
07/09/99	new cutters arriving to increase crew count to conventional plan- 7 incoming from Watson Lake/ pulled 3 cutters for LIS task
08/09/99	overcast and light rain, weather moved in and crews pulled mid-day/ meeting with Doug Graham re- alternate camp site for RC
09/09/99	no crews out due to heavy fog throughout the valley
10/09/99	weather continues / no production / rain intermittent

11/09/99	all crews out late morning due to fog. crews remained in field late/ problems with Nav -3/ RayMac catpush travel in
12/09/99	Heath Houston overlapping with Cook/ full production day / NavPac X 4/
13/09/99	
14/09/99	
15/09/99	
16/09/99	
17/09/99	
18/09/99	
19/09/99	
20/09/99	
21/09/99	
22/09/99	
23/09/99	
24/09/99	
25/09/99	
26/09/99	
27/09/99	
28/09/99	
29/09/99	
30/09/99	ALL CREWS WEATHER DAY
01/10/99	4 NAV PAKS AND 3 CONVENTIONAL SURVEY CREWS
02/10/99	4 NAV PAKS AND 1 CONVENTIONAL SURVEY CREWS
03/10/99	ALL CREWS WEATHER DAY
04/10/99	ALL CREWS WEATHER DAY
05/10/99	ALL CREWS WEATHER DAY
06/10/99	4 NAV PAKS AND 1 CONVENTIONAL SURVEY CREWS
07/10/99	ALL CREWS WEATHER DAY
08/10/99	WEATHER DAY 1 DRILL CREW WORKING
09/10/99	NAV PAKS WORKED TWO HOURS UNTIL WEATHER TURNED BAD
10/10/99	4 NAV PAKS
11/10/99	4 NAV PAKS
12/10/99	4 NAV PAKS
13/10/99	4 NAV PAKS / DRILLING COMPLETED ON 3D- LATE DAY- WILL BE MOVING TO SAWMILL
14/10/99	WEATHER INTERMITTENT THROUGHOUT DAY BUT CREWS ABLE TO WORK/ CUTTING COMPLETED
15/10/99	production due to extreme winds
16/10/99	no production due to extreme winds/
17/10/99	four NavPac crews out/ three continue on rcvr production, one dedicated to skids
18/10/99	last day of line production- remaining receiver lines completed/ one crew surveying drill skids
19/10/99	high winds unable fly. Clients Can Forest and Ranger Orientation & Operations Meeting discussing efficiencies
20/10/99	four personnel demobbed/ two pack to Edson- two personnel for time-off/
21/10/99	winds stabilised/ two crews out for full day, surveyed in 17 drill skids/ meeting in evening to plan follow-up meeting of contractor incident
22/10/99	two crews out for drill skids-15 completed/ safety meeting reviewing non-work related vehicle rollover/ J. Bryant travel out
23/10/99	NavPac had to be pulled due to wind in their working area/ 10 skids remaining/ Nick and conventional surveyor working on survey notes
24/10/99	Freezing rain till 09:00, then turned to rain, cleared mid-day- too treacherous to work/ 3rd party medevac- involvement with a downed A-Star
25/10/99	Weather clear/full day for last day of skids/ continue to work notes on conventional/ fire reported North of 3D on Sawmill line

DATE	CONVENTIONAL SURVEY COMMENTS
03/09/00	First day Direct slash/survey crews on prospect after partial re-negotiation of contract. All con costs direct
04/09/00	PM, CP, FA, 1x4 man slash crew. 3 crews did not show for work today
05/09/00	Same comments as yesterday
06/09/00	Weather day, rain and fog, no crews on prospect
07/09/00	
08/09/00	
09/09/00	Short day, crews pulled for rain and fog
10/09/00	Weather day. No production by any crews. Advance party scouts east of ridge for LIS rigs
11/09/00	Six x 4 man slash crews. LIS rigs shut down, no access. Late start due to fog, 1100 hrs. Two x 2 man survey crews
12/09/00	Six x 4 man slash crews, LIS drills de-mob. Two x 2 man survey crews
13/09/00	Six x 4 man conventional slash crews, 2 x 2 man conventional survey crews
14/09/00	Six x 4 man slash crews and 1 x 2 man drop zone crew. 2x2 man survey crews
15/09/00	Six x 4 man crews and 2 man DZ crew
16/09/00	Five x 4 man slash crews, 2x2 man survey crews
17/09/00	Six x 4 man crews, 2x2 man survey crews
18/09/00	Four x 4 man slash crews and 2 x 2 man DZ crews, 2 x 2 man survey crews
19/09/00	Four x 4 man slash crews, 2 x 2 man survey crews
20/09/00	Stand by day due to extreme winds
21/09/00	All crews working, 4x4 slash crews and 2x2 survey
22/09/00	Four x 4 man crews, 1x2 man survey crew. renegotiation of contract
23/09/00	Five x 4 man slash crews, no conventional survey, some crews not online, extreme winds
24/09/00	Six x 4 man slash crews, only 2 online. No conventional survey. Extreme winds kept most crews off line
25/09/00	Seven x 4 man slash, 5 Beaver, 2 Seisland, Seisland CP. New 212 for support

Drilling Input

CLIENT:	CANADIAN FOREST OIL						
PROSPECT:	MAXHAMISH 3D						
Company:	CANFOR	CANFOR	CANFOR	CANFOR	CANFOR	CANFOR	CANFOR
Description:	DRILL PUSH	DRILLERS	DRILLERS	Drill push	Drill push	FLIGHT	FLIGHT
	ACCOM (B)	ACCOM (M)	ACCOM (B)	ACCOM (B)	ACCOM (B)	ACCOM (D)	ACCOM (M)
Date	Points	Meters	Days	Days	Days	Days	Days
26-Jul-99							
27-Jul-99							
28-Jul-99							
29-Jul-99							
30-Jul-99							
31-Jul-99						1.00	
01-Aug-99							
02-Aug-99						1.00	
03-Aug-99							
04-Aug-99						1.00	
05-Aug-99							
06-Aug-99						1.00	
07-Aug-99							
08-Aug-99						1.00	
09-Aug-99							
10-Aug-99						1.00	
11-Aug-99							
12-Aug-99							
13-Aug-99						1.00	
14-Aug-99						1.00	
15-Aug-99							
16-Aug-99							
17-Aug-99							
18-Aug-99							
19-Aug-99							2.00
20-Aug-99							2.00
21-Aug-99							
22-Aug-99							
23-Aug-99							
24-Aug-99							
25-Aug-99							
MTD Totals	0.00	0.00	0.00	0.00	0.00	8.00	4.00
PTD Totals	0.00	0.00	0.00	0.00	0.00	8.00	4.00
26-Aug-99			12.00				
27-Aug-99			13.00			2.00	
28-Aug-99	10.00	193.00	13.00	1.00		2.00	
29-Aug-99	9.00	181.00	13.00	1.00		2.00	
30-Aug-99			13.00	1.00		2.00	
31-Aug-99	2.00	38.00	14.00	1.00		2.00	
01-Sep-99							
02-Sep-99							
03-Sep-99							
04-Sep-99							
05-Sep-99							
06-Sep-99							
07-Sep-99	2.00	40.00					
08-Sep-99	42.00	845.00		17.00		1.00	2.00

09-Sep-99	4.00	80.00	13.00	17.00	1.00	1.00		2.00
10-Sep-99			16.00	16.00	1.00	1.00		2.00
11-Sep-99	23.00	445.00	16.00	17.00	1.00	1.00		2.00
12-Sep-99	51.00	1036.00	16.00	17.00	1.00	1.00		2.00
13-Sep-99	58.00	1142.00	16.00	17.00	1.00	1.00		2.00
14-Sep-99	63.00	1257.00	16.00	17.00	1.00	1.00		2.00
15-Sep-99	62.00	1221.00	15.00	17.00	1.00	1.00		2.00
16-Sep-99	52.00	1012.00	15.00	17.00	1.00	1.00		2.00
17-Sep-99			15.00	17.00	1.00	1.00		4.00
18-Sep-99	61.00	1218.00	15.00	17.00	1.00	1.00	1.00	3.00
19-Sep-99	27.00	555.00	15.00	17.00	1.00	1.00	25.00	2.00
20-Sep-99			15.00	16.00	1.00	1.00	3.00	1.00
21-Sep-99	35.00	686.00	15.00	18.00	1.00	1.00	3.00	1.00
22-Sep-99	67.00	1317.00	15.00	18.00	1.00	1.00	3.00	1.00
23-Sep-99	27.00	542.00	16.00	18.00	1.00	1.00	2.00	1.00
24-Sep-99			16.00	17.00	1.00	1.00	2.00	1.00
25-Sep-99	63.00	1212.00	16.00	17.00	1.00	1.00	2.00	1.00
MTD Totals	658.00	13020.00	339.00	307.00	21.00	18.00	51.00	33.00
PTD Totals	658.00	13020.00	339.00	307.00	21.00	18.00	59.00	37.00
26-Sep-99	51.00	1000.00	16.00	17.00	1.00	1.00	2.00	1.00
27-Sep-99	50.00	963.00	16.00	17.00	1.00	1.00	2.00	1.00
28-Sep-99			16.00	17.00	1.00	1.00	2.00	1.00
29-Sep-99	40.00	758.00	16.00	17.00	1.00	1.00	2.00	1.00
30-Sep-99			16.00	17.00	1.00	1.00	2.00	1.00
01-Oct-99	53.00	1000.00	16.00	17.00	1.00	1.00	2.00	2.00
02-Oct-99	46.00	869.00	16.00	17.00	1.00	1.00	2.00	2.00
03-Oct-99	12.00	216.00	16.00	17.00	1.00	1.00	2.00	2.00
04-Oct-99			16.00	17.00	1.00	1.00	2.00	2.00
05-Oct-99			16.00	17.00	1.00	1.00	2.00	2.00
06-Oct-99	22.00	480.00	16.00	17.00	1.00	1.00	2.00	2.00
07-Oct-99			16.00	17.00	1.00	1.00	2.00	2.00
08-Oct-99	16.00	312.00	16.00	17.00	1.00	1.00	2.00	2.00
09-Oct-99	7.00	131.00	16.00	17.00	1.00	1.00	2.00	2.00
10-Oct-99	4.00	77.00	16.00	17.00	1.00	1.00	2.00	2.00
11-Oct-99	61.00	1199.00	16.00	17.00	1.00	1.00	2.00	2.00
12-Oct-99	61.00	1194.00	16.00	17.00	1.00	1.00	2.00	2.00
13-Oct-99	18.00	325.00	16.00	17.00	1.00	1.00	2.00	2.00
14-Oct-99								
15-Oct-99								
16-Oct-99								
17-Oct-99								
18-Oct-99								
19-Oct-99								
20-Oct-99								
21-Oct-99								
22-Oct-99								
23-Oct-99								
24-Oct-99								
25-Oct-99								
26-Oct-99								
MTD Totals	441.00	8524.00	288.00	306.00	18.00	18.00	36.00	31.00
PTD Totals	1099.00	21544.00	627.00	613.00	39.00	36.00	95.00	68.00

Other Sub-Con Input

Company:	CLIENT: CANADIAN FOREST OIL							
Description:	PROJECT: BARNABISH 50							
Date	Days	Days	Days	Days	Days	Days	Days	Days
26-Jun-99								
27-Jun-99								
28-Jun-99								
29-Jun-99								
30-Jun-99								
01-Jul-99								
02-Jul-99								
03-Jul-99								
04-Jul-99								
05-Jul-99								
06-Jul-99								
07-Jul-99								
08-Jul-99								
09-Jul-99								
10-Jul-99								
11-Jul-99								
12-Jul-99								
13-Jul-99								
14-Jul-99								
15-Jul-99								
16-Jul-99								
17-Jul-99								
18-Jul-99								
19-Jul-99								
20-Jul-99					30.00	2285.70		
21-Jul-99								
22-Jul-99								
23-Jul-99								
24-Jul-99								
25-Jul-99	1.00							
26-Jul-99								
MTD Totals	0.00	1.00	0.00	0.00	30.00	2285.70	0.00	0.00
PTD Totals	0.00	1.00	0.00	0.00	30.00	2285.70	0.00	0.00
26-Jul-99								
27-Jul-99		1.00						
28-Jul-99		1.00						
29-Jul-99		1.00						
30-Jul-99		1.00						
31-Jul-99		1.00						
01-Aug-99		1.00						
02-Aug-99	1.00	1.00						
03-Aug-99		1.00						
04-Aug-99	1.00	1.00						
05-Aug-99		1.00						
06-Aug-99	1.00	1.00						
07-Aug-99		1.00						
08-Aug-99	1.00	1.00						
09-Aug-99		1.00						
10-Aug-99	1.00	1.00						
11-Aug-99		1.00						
12-Aug-99	1.00	1.00						
13-Aug-99		1.00	1.00					
14-Aug-99		1.00	1.00	1.00				
15-Aug-99		1.00	1.00					
16-Aug-99		1.00	1.00	1.00				
17-Aug-99		1.00	1.00					
18-Aug-99		1.00	1.00	1.00				
19-Aug-99		1.00					30.00	
20-Aug-99		1.00					120.00	
21-Aug-99		1.00						
22-Aug-99		1.00	1.00					
23-Aug-99		1.00						
24-Aug-99		1.00	1.00					
25-Aug-99		1.00						
MTD Totals	6.00	26.00	11.00	6.00	0.00	0.00	150.00	0.00
PTD Totals	6.00	27.00	11.00	6.00	30.00	2285.70	0.00	180.00
26-Aug-99		2.00	1.00					
27-Aug-99		2.00						
28-Aug-99		1.00	1.00	180.00				
29-Aug-99		2.00						
30-Aug-99		2.00	1.00					
31-Aug-99		2.00				6.00		
01-Sep-99		2.00	1.00					
02-Sep-99		2.00						
03-Sep-99		2.00	1.00					
04-Sep-99		2.00	1.00			180.00		
05-Sep-99		2.00	1.00			180.00		
06-Sep-99		2.00	1.00			180.00		
07-Sep-99		2.00	1.00			180.00		
08-Sep-99		2.00	1.00			180.00		

09 Sep 99		2.00	1.00		160.00			
10 Sep 99		2.00	1.00					
11 Sep 99		2.00	1.00					
12 Sep 99		2.00	1.00					
13 Sep 99		2.00	1.00					
14 Sep 99		2.00	1.00					
15 Sep 99		2.00	1.00					4.00
16 Sep 99		2.00	1.00					4.00
17 Sep 99		2.00	7.00					4.00
18 Sep 99		2.00	2.00					4.00
19 Sep 99		2.00	2.00					4.00
20 Sep 99		2.00	2.00					4.00
21 Sep 99		2.00	2.00					4.00
22 Sep 99		2.00	2.00					4.00
23 Sep 99		2.00	2.00					4.00
24 Sep 99		2.00	2.00					4.00
25 Sep 99		2.00	2.00					4.00
MTD Totals	0.00	0.00	61.00	41.00	150.00	960.00	6.00	0.00
PTD Totals	6.00	27.00	72.00	47.00	180.00	3245.70	6.00	150.00
26 Sep 99		2.00	2.00					8.00
27 Sep 99		2.00	2.00					4.00
28 Sep 99		2.00	2.00					4.00
29 Sep 99		2.00	2.00					4.00
30 Sep 99		2.00	2.00					4.00
01 Oct 99		2.00	2.00					3.00
02 Oct 99		2.00	2.00					3.00
03 Oct 99		2.00	2.00					3.00
04 Oct 99		2.00	2.00					3.00
05 Oct 99		2.00	2.00					3.00
06 Oct 99		2.00	2.00					3.00
07 Oct 99		2.00	2.00					3.00
08 Oct 99		2.00	2.00					4.00
09 Oct 99		2.00	2.00					2.00
10 Oct 99		2.00	2.00					
11 Oct 99		2.00	2.00					
12 Oct 99		2.00	2.00					2.00
13 Oct 99		2.00	2.00					
14 Oct 99		1.00	1.00					
15 Oct 99		1.00	1.00					
16 Oct 99		1.00	1.00					
17 Oct 99		1.00	1.00					
18 Oct 99		1.00	1.00					
19 Oct 99		1.00	1.00					
20 Oct 99		1.00	1.00					
21 Oct 99		1.00	1.00					
22 Oct 99		1.00	1.00					3.00
23 Oct 99		1.00	1.00					
24 Oct 99		1.00	1.00					
25 Oct 99		1.00	1.00					
26 Oct 99								
MTD Totals	0.00	0.00	48.00	48.00	0.00	0.00	0.00	58.00
PTD Totals	6.00	27.00	120.00	95.00	180.00	3245.70	6.00	150.00
27 Oct 99								10.00
28 Oct 99								
29 Oct 99								
30 Oct 99								
31 Oct 99								
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25 Nov 99								
MTD Totals	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
PTD Totals	6.00	27.00	120.00	95.00	180.00	3245.70	6.00	150.00
								108.00

DATE	CLIENT	PROJECT NAME	ON CREW	SAL/DLY WORKING	HOURLY WORKING	TOTAL L/O	L/O THRU	TOTAL P/U	TIME OF 1st SHOT	TOTAL PROFILES	3D KM2/MI2	HOURS PAID	TOTAL HOURS	ARGEABLE KMs/Mls
14/09/00	CANADIAN FOREST OIL	MAXHAMISH 3-D	48	10	39	0				0	0.000	13.500	12	0.000
15/09/00	CANADIAN FOREST OIL	MAXHAMISH 3-D	50	11	43	0				0	0.000	13.500	12	0.000
16/09/00	CANADIAN FOREST OIL	MAXHAMISH 3-D	45	11	37	0		0		0	0.000	12.000	12	0.000
17/09/00	CANADIAN FOREST OIL	MAXHAMISH 3-D	44	12	37	0		0		0	0.000	14.000	12	0.000
18/09/00	CANADIAN FOREST OIL	MAXHAMISH 3-D	44	12	37	0		0		0	0.000	12.000	12	0.000
19/09/00	CANADIAN FOREST OIL	MAXHAMISH 3-D	44	12	37	0		0		0	0.000	12.000	12	0.000
20/09/00	CANADIAN FOREST OIL	MAXHAMISH 3-D	44	12	37	0		0		0	0.000	12.000	12	0.000
21/09/00	CANADIAN FOREST OIL	MAXHAMISH 3-D	43	11	37	0		0		0	0.000	12.000	12	0.000
22/09/00	CANADIAN FOREST OIL	MAXHAMISH 3-D	23	12	18	0		0		0	0.000	12.000	12	0.000
23/09/00	CANADIAN FOREST OIL	MAXHAMISH 3-D	23	12	18	0		0		0	0.000	12.000	12	0.000
24/09/00	CANADIAN FOREST OIL	MAXHAMISH 3-D	10	11	4	0		0		0	0.000	8.000	8	0.000
25/09/00	CANADIAN FOREST OIL	MAXHAMISH 3-D	10	11	4	0		0		0	0.000	8.000	12	0.000
26/09/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	10	9	4	0		0		0	0.000	8.000	12	0.000
27/09/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	24	10	20	0		0		0	0.000	8.000	0	0.000
28/09/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	24	10	20	0		0		0	0.000	8.000	12	0.000
29/09/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	24	10	20	101		0		0	0.000	12.000	12	0.000
30/09/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	36	12	28	0		0		0	0.000	11.000	12	0.000
01/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	36	12	28	117	R-33	0		0	0.000	12.000	12	0.000
02/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	37	12	29	274	R-37	0		0	0.000	12.500	12.5	0.000
03/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	37	12	29	0		0		0	0.000	12.000	12	0.000
04/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	37	12	29	0		0		0	0.000	12.000	12	0.000
05/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	37	12	29	0		0		0	0.000	12.000	12	0.000
06/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	37	12	29	0		0		0	0.000	12.000	12	0.000
07/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	37	12	29	0		0		0	0.000	12.000	12	0.000
08/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	36	12	27	0		0		0	0.000	12.000	12	0.000
09/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	36	12	27	56	R-37	0		0	0.000	12.000	12	0.000
10/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	36	12	27	66	R-37	0		0	0.000	12.000	12	0.000
11/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	36	24	27	258	R-41	0		0	0.000	12.000	12	0.000
12/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	34	11	27	243	R-43	0		0	0.000	20.000	12	0.000
13/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	40	12	32	0		0		0	0.000	12.000	12	0.000
14/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	36	12	28	174	R-43	0		0	0.000	12.000	12	0.000
15/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	44	12	37	0		0		0	0.000	12.000	12	0.000
16/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	44	12	37	0		0		0	0.000	12.000	12	0.000
17/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	43	12	36	0		0		0	0.000	12.000	12	0.000
18/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	43	12	36	132	R-45	0		0	0.000	12.000	12	0.000
19/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	43	12	36	0		0		0	0.000	12.000	12	0.000
20/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	47	12	39	0		0		0	0.000	12.000	12	0.000
21/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	49	12	41	77	R-47	0	16.20	7	0.828	12.000	12	0.828
22/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	49	12	41	151	R-43	0	10.40	76	8.986	12.000	12	8.986
23/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	49	12	41	279	R-51	0		0	0.000	12.000	12	0.000
24/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	49	12	41	0	R-51	0		0	0.000	12.000	12	0.000
25/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	49	12	41	130	R-51	0	14.52	24	2.838	12.000	12	2.838

26/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	49	13	41	205	R-55			0	0.000	12 000	12	0 000	
27/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	52	15	47	9	R-55			13.46	53	6.266	12.000	12	6 266
28/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	52	11	44	104	R-53			10.59	78	9.222	12.000	12	9.222
29/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	52	11	44	139	R-57	145		10.28	53	6.266	12.000	12	6 266
30/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	52	11	44	0	R-57	82		0	0.000	12.000	12	0.000	
31/10/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	52	11	44	249	R-57	158	R-35	12.34	27	3.192	12.000	12	3.192
01/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	52	11	44	0	R-57	0	R-35		0	0.000	12.000	12	0.000
02/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	52	11	44	190	R-59	23	R-37	10.34	51	6.030	12.000	12	6.030
03/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	58	12	48	0	R-59	96	R-37		11	1.301	12.000	12	1.301
04/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	51	12	42	0	R-59	64	R-39	11.16	30	3.547	12.000	12	3.547
05/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	51	12	42	160	R-61	106	R-39	10.00	37	4.375	12.000	12	4.375
06/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	51	12	42	111	R-63	100	R-41	12.07	23	2.719	12.000	12	2.719
07/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	52	13	42	148	R-65	117	R-41	11.05	50	5.912	12.000	12	5.912
08/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	52	13	42	150	R-69	109	R-41	9.45	49	5.793	12.000	12	5.793
09/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	52	13	42	0	R-69	0	R-41		0	0.000	12.000	12	0.000
10/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	60	14	49	0	R-69	0	R-41		0	0.000	12.000	12	0.000
11/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	50	26	42	0	R-69	27	R-41		0	0.000	20.000	12	0.000
12/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	49	13	41	46	R-69	120	R-41	14.39	2	0.236	12.000	12	0.236
13/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	47	13	39	87	R-69	200	R-41	14.25	10	1.182	12.000	12	1.182
14/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	47	13	39	95	R-75	9	R-41		0	0.000	12.000	12	0.000
15/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	48	13	39	0	R-75	0	R-41		0	0.000	12.000	12	0.000
16/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	48	13	39	0	R-75	0	R-41		0	0.000	12.000	12	0.000
17/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	48	13	39	0	R-75	160	R-41	10.27	17	2.010	12.000	12	2.010
18/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	47	13	38	0	R-75	149	R-45	11.35	25	2.956	12.000	12	2.956
19/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	47	13	38	0	R-75	272	R-45	14.04	24	2.838	12.000	12	2.838
20/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	47	13	38	0	R-75	295	R-45	11.17	41	4.847	12.000	12	4.847
21/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	48	13	37	0	R-75	228	R-45	10.01	9	1.064	12.000	12	1.064
22/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	48	13	37	0	R-75	272	R-45		0	0.000	12.000	12	0.000
23/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	48	13	37	0	R-75	268	R-53		0	0.000	12.000	12	0.000
24/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	62	15	48	0	R-75	230	R-53		0	0.000	12.000	12	0.000
25/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	51	13	41	0	R-75	234	R-63		0	0.000	12.000	12	0.000
26/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	51	13	41	0	R-75	0	R-63		0	0.000	12.000	12	0.000
27/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	51	13	41	0	R-75	172	R-75		0	0.000	12.000	12	0.000
28/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	50	13	41	0	R-75	75	R-75		0	0.000	12.000	12	0.000
29/11/99	CANADIAN FOREST OIL	MAXHAMISH 3-D	50	26	70	0	R-75	0	R-75		0	0.000	12.000	12	0.000

DATE	COMMENTS
14/09/00	9 crew depart via charter plane for Ft. Liard today
15/09/00	7 crew to fly via charter in morning to Ft. Liard
16/09/00	7 crew mob out on charter to Ft. Liard. crew in Nordegg complete packing of equipment and office, ready to begin the mob out tomorrow morning
17/09/00	25 crew on mob from Nordegg, AB to Ft. St. John, BC. Crew will stay overnight and continue on to Liard in morning
18/09/00	Crew continues mob, from Ft. St. John and arrives safely to Ft. Liard
19/09/00	10 men out to field to unload hi-boys and set up staging. Rest of crew stood by all day. On the 16th, 4 men to advance crew ongoing
20/09/00	High winds today, crew on standby
21/09/00	Flew 18 crew home today @ 4:00 from Ft Nelson Rest of Crew standing by
22/09/00	5 crew went to staging. Crew standing by
23/09/00	Flew remaining 16 crew home, 4 left behind to assist advance crew. 3 to work around staging
24/09/00	Moved hi-boys across river to set up for next project. 4 crewmen charged batteries and checked equipment
25/09/00	crewmenn charging batteries and checking equipment
26/09/00	crew charging batteries and checking equipment. 18 crew to arrive by charter tomorrow evening. Analyzing at the lead of advance crew over receiver layout. Should have 7 lines ready tomorrow. With the additional climbers arriving Monday, possibly 7 lines ready
27/09/00	Flew 185 bags from staging today. Used the 204 helicopter to fly bags to mini-remote staging to save helicopter time. Line crew arriving tonight. 4 men back from helping the advance crew today. Checking on survey lead again tonight
28/09/00	Flew crew to the field this morning, attempted to fly bags until 10:30 am. Could not fly bags due to fog and snowfall. Crew stood by in the field until 1:00 when the pilots called the day
29/09/00	Line crew laying out, helicopter flying bags. Kodiak repeater antenna blew over on top of mountain, snapped the mast in half. Engineers got the machine running, should be serviceable tomorrow. Delay in the morning. Helicopter shut down due to contaminated fuel
30/09/00	Snowfall all day, helicopters could not fly due to snowfall and ice on rotors. Client meeting, discussed plan of attack for snow-covered hills. Received 13 more crewmen.
01/10/00	Cold weather, clear day. Waited on helicopter for 2 hrs today for a crew change. Very slow going due to the snow fall received in the last couple of days.
02/10/00	Cold weather, clear day. Continued to fly bags onto line Due to the severity of Near Miss Cards on slipping and falling, crew is putting on a Move Smart course tonight. Informal course with Paul Linkin. Crew still getting their legs back from the break, slow
03/10/00	Snowing today. More training on line crew, management system and emergency response plan. Shutdown all day.
04/10/00	Helicopters would not fly due to icing conditions. Line crew stood by in camp, discussed Risk Management as pertaining to this job
05/10/00	Started the Loss Prevention Team today. Also, a safety committee meeting. Bad weather of low fog, ice rain, etc. prevented crew from working today. Orientation of Doh Cho airport with Doh Cho manager Jim Warren
06/10/00	Flew crew to K29 in am. Attempted to place crew in field, weather conditions were too foggy.
07/10/00	Weather day. Low fog all day long until late afternoon. Al Chaterney, John Bryant, Doug Rainey and Mardon Day went out to line 36, SRC58, SRC40 and walked to assess the situation.
08/10/00	Partial weather day. Not able to fly in am due to fog. Partial line crew and climbers out in afternoon.
09/10/00	Partial weather day. Two crews laying out today. Came in early due to low-lying fog on prospect.
10/10/00	Partial crew out today. 2 crews laying out. Low fog surrounding the job once again. MEC winter equipment came in today and was distributed throughout the crew
11/10/00	Crew lays out 258 stations. Two incidents with crew members falling today, medevac to hospital. RIR's to follow shortly
12/10/00	Crew laid out 243 stations.
13/10/00	Weather day. Crew on stand-by. Light snow, low-lying cloud & fog
14/10/00	Started snowing about noon. Had to call half the crew back, other half continued laying. Line R-41 complete
15/10/00	Weather day. End of day moved recorder to top of ridge
16/10/00	Weather day. Ice fog
17/10/00	Weather most of the day. Climbers able to close gaps on ridge. Were able to do some troubleshooting
18/10/00	Troubleshooting all day. Bad gear due to remaining out on line for three weeks without being checked due to bad weather
19/10/00	Very windy. Unable to fly helicopters
20/10/00	Windy helicopters unable to fly
21/10/00	Crew out working all day. 7 shots taken today. Began to snow around 5 pm
22/10/00	Crew had a morning safety meeting. Ready to shoot at 10:00, unable due to high wind. Started shooting at 10:40 am. 76 shots taken today. Crew working well
23/10/00	Ridge was fogged in, unable to troubleshoot. Laid out 279 stations
24/10/00	Ice rain in am prevents crew from working today. On weather standby
25/10/00	Generator down in morning, lots of line problems
26/10/00	High winds all day. Unable to get to recorder until noon. When got to recorder, spread noise exceeding 80% failure rate. Unable to take any shots at all due to the high winds that lasted all day long. Able to layout on east side of ridge on R55 & R57

27/10/99	Minimal wind today, clear skies. Used 3 sets of shooters today. Had 3 troubleshooters and line tap crew
28/10/99	Client rep discussed dropping the west and south portion of the program at OPS meeting in the evening. Further details to be available in am
29/10/99	Client confirmation on cancelling west portion of 3-D below R-61, west of ridge and dropping lines below R-71. Recorder moved to R-51 in late pm
30/10/99	Snowing in am, windy, low clouds. Unable to shoot. Partial crew went out in afternoon to pick stations. 82 stations picked today
31/10/99	Good day by crew. Helicopter fuel contamination contributed to roughly 3 hours lost crew time because helicopter needed to return to Muskeg to fuel. Fuel leak in bowsers noted by Chevron. Dealt with, reported and action plan in motion.
01/11/99	Tried all morning to get out, couldn't due to extreme wind conditions. Training of new jughounds on camp site.
02/11/99	Problems on ridge due to line break and weather impeding access. Commenced shooting at 10:34 am. Crews pulled in late pm due to incoming snow. Due to previous weather day, line crew ended up waiting on pick-up and layout.
03/11/99	Weather downtime until 11:30 am. Three crews picking up at 12:00 noon. Had to pull early due to weather. Six crew members in Stepping, Handling, Lifting course. Remainder of crew reviewed job descriptions.
04/11/99	Initial flight turned back due to weather. Flew everyone to the field at 10:00. Only 2 pick-up crews in field today picking, the rest were in staging due to icy conditions with the helicopter
05/11/99	We had problems with 1 Kodiak, it is down. Found a fire between R-61 and R-63 Src 60. Safety meeting with crew at night with regards to defensive driving habits
06/11/99	12 hours of work. Medivac today. Vertical Systems employee fell and injured shoulder. Lifted to Fort Nelson hospital. RIR has been completed and sent. Snow in late afternoon.
07/11/99	Full day. Into shorter lines on layout. Jumper line down on Chevron Lease Rd. 2nd Kodiak working. Changed plan on usage of mountain guides.
08/11/99	Line R-69 laid out in completion. Everything shot up to R-59 complete. Climbers have line R-37 picked up complete on the ridge top. Line R-43 picked up complete by line crew (with the exception of the ridge top.) Started pulling crews 15 min. earlier
09/11/99	Crew down today due to heavy snowfall
10/11/99	Snowy weather conditions prevent crew from working.
11/11/99	27 stations picked up in early afternoon. Attempted to work again, however, weather was prohibitive. Low-lying cloud ceiling.
12/11/99	Flying this morning was delayed due to weather. Initial weather check between 9:00 to 9:10. Supplied fuel to the generator then allowed instruments to warm up. Heavy fog throughout the day delayed all production.
13/11/99	Many line br. skis delaying shooting all day. The effects of three down days in a row are still causing delays along with colder temperatures and snow covering solar panels on batteries. Moving the gear was slowed due to weather as well as temperature change.
14/11/99	Line breaks were a problem today. Poor weather conditions and medivac halted production at 11:40. Crew mobilized back to camp after that time due to deteriorating weather conditions.
15/11/99	Heavy snowfall throughout the day. Crew not able to work. QHSE audit team arrives on site.
16/11/99	Heavy snowfall throughout the day. Crew not able to work. QHSE audit continued. Crew had GPS and avalanche training. Travelled to staging briefly to check generator and spread.
17/11/99	Due to heavy snowfall for 2 days, lots of troubleshooting and slow going due to deep snow. QHSE audit team concludes their visit and discusses action points with crew.
18/11/99	Due to high winds, our 212 helicopters could not land at staging. Few shooters and troubleshooters out with A-Stars; pick up crew transported later when winds subsided. Also due to high winds, some areas on the ridge could not be troubleshoot. Excessive noise.
19/11/99	Five line breaks this morning. Moved six pick-up crews in first thing. Shot with two shooters on a partial spread for all shots of the day. Limited helicopter support cost roughly 1 additional hour.
20/11/99	Longer travel time using 206 and A-star in place of two 212 helicopters for moving crews to and from K-29. Completed shooting. Ice fog over and around the ridge caused delay and early finish for some crews. Waist-deep snow in some places caused shooting.
21/11/99	Six crews picking up and two shooters. Trouble picking up on west side of the ridge due to high winds. Not not able to put climbers out due to windy conditions. Pilots could not long line all day. Final day of shooting.
22/11/99	Picking up with 6 crews. Course for 5 Seeing Habits for 8 crew
23/11/99	6 crews doing pick up, one crew doing LT line. Beaver sent party out to put out fire on line 57
24/11/99	Continuing final pick-up of prospect.
25/11/99	Continuing final pick-up of prospect.
26/11/99	Ice fog and low-lying ceiling prevented helicopters from flying
27/11/99	80 stations remaining to be picked by climbers (2 to 3 days) and 35 by line crew. Crew concentrating on flying in bags
28/11/99	Crew picked up 35 stations. Climbers picked 40 stations. Remaining crew hooked up bags all day as there were 120 bags left to pick up. 52 bags moved in to staging today. One kodiak down and patches of ice fog reduced helicopter efficiency
29/11/99	Crew flying out bags. Picking up jumper line and breaking down bags in staging

General Description of Operation and Acquisition

Seismic Equipment Used

Geco-Prakla (Schlumberger) employed an I/O System II for acquisition of this survey. This system is an advanced delta sigma technology data acquisition system offering numerous advanced recording and signal processing features found on no other recording system. Amongst these features are:

- Full 24 bit analog to digital recording
- Spectral Shaping Filter (SSF)
- Enhanced Hi-Line Pickup Eliminator
- Total Self Calibration Testing
- Increased Spatial Sampling
- Reduced field battery power requirements
- 32 available low cut frequencies and appropriate low cut filters

Acquisition Parameters

The energy source for this survey was dynamite. The program configuration and instruments are listed below:

Configuration: 10 Receiver Lines of 122 stations. 1220 live channel patch.

Instruments

Make/model: I/O System II
Sample Rate: 2 ms
Length: 4 sec
Filter: $\frac{1}{4}$ Nyquist Min
Notch: out
Format: SEG-D

Geophones

Number/Group 6
Spacing : 0.6m
Group Length: 3 m

Source

Type: Dynamite
Charge: 20 kg
Depth: 20 m
No inline: 1

Spread

Fold : see diagram
S.P. Int: 170 m
Grp. Int: 60 m
Rx Line Spacing 480m
Shot Line Spacing 635m
Live Patch 1220ch

Survey Equipment Used

The Geco-Prakla survey equipment employed was a combination of conventional survey methods and real time GPS. To complement this effort, NAVPAC Inertial Navigation System was used to reduce line clearing demands.

Equipment included Wild T1, T16 and DI-41 theodolites or Topcon GTS-3B Total Stations with integral infra-red distomats and electronic data recorders. Data reduction was assisted by the Proseis positioning software which produced SEGPI formatted survey. The GPS equipment was a Trimble 4000SE/Sse receiver with an antennae, radio modem and supporting software. The software enables

upload and download of preplots as well as transformation from WGS-84 to a local datum (NAD 27) and map projection (UTM).

The system configuration features a reference receiver located at a known point that broadcasts via the Radio modem, the code and carrier phase data in a compressed format to rover receivers. The rover receivers receive the broadcast to enable computation of a refined position. The real time GPS crew used 1 master GPS unit and rover GPS units complete with modem and radio link. The results of this survey methodology provided spatial accuracy approximately +/- 1 meter.

Further information on the NAVPAC system is provided in Appendix 1.

Geophysical Data Processing

The data was processed by Kelman Seismic Processing of Calgary employing a 3D structural processing runstream. (See section side labels for full detail.) Surface consistent spiking deconvolution was applied, followed by GLI refraction static analysis and correction. Normal moveout velocity analysis and corrections were run, followed by a pass of surface consistent residual statics. The velocity and residual static solution was performed in two iterations. After a trim static pass, the data were taken into a full 3D prestack time migration, using a Kirchoff summation algorithm. An FK noise attenuation filter was applied, followed by a 500ms gate AGC. The resulting product was then archived to tape and loaded onto a Seis-X workstation for interpretation purposes.

Film sections and prints of these data exhibit a negative time buffer. This is necessitated by the selection of the 500m datum and the fact that portions of the survey have ground elevation higher than this. To allow for the display of seismic data that is above 500m elevation, the negative time labeling has been used. The reader will therefore note that workstation output times differ by a static from the film sections. This is due to the circumstance that Seis-X software cannot accommodate negative time values. Therefore workstation output sections have a time shift of +275ms from the film sections and prints.

Copies of the processing procedures are found in enclosure 1.

Geophysical Interpretation

This survey was designed to provide data for mapping of the Devonian Nahanni Formation. Three wells that penetrate the Nahanni are within the 3D survey. These wells are the CFOL N-61, Chevron et al K-29 and the Nahanni gas discovery well Paramount et al D-29. Synthetic seismograms for these wells were used to correlate reflectors observed on the 3D data to lithologies in the well bores. The best of these correlations was made at the N-61 well location where continuity of reflections and S/N of the 3D were good.

Within the survey area, the Devonian Nahanni Carbonate horizon is observed to be broken and lifted by east verging thrust faults. These thrusted structures can be prospective if they demonstrate three-way closure against such faults. The most attractive of these prospective structures are observed at the leading edge of a major thrust fault system that is defined, to date, by the P-66a, K-29 and D-29 and F-25a wells. Nahanni gas was discovered in the mid 1980's by the Paramount D-29 and Purcell F-25a wells. Ranger/CFOL's discovery at P-66a extended this trend to the north of SDL 99. The P-66a success, along with recent development drilling at K-29 on SDL 99 has demonstrated high-deliverability gas and created much new interest in the area.

Samples of representative E-W crosslines with interpretation can be found in Enclosure 3.

The map of the Nahanni demonstrates a scallop-style plan view of the faulting that is common in the Ft Liard area. These scallops tend to coalesce, interfere and cross-cut into several, larger scale fault traces that define the main structural trends in the area.

The seismic data, alone, cannot predict reservoir quality of these structures. However, it is anticipated that the best relative permeability on any of these structures will occur where the Nahanni is located closest to the leading edge of a thrust fault. Here, open fractures will be most intense and therefore should enhance reservoir quality.

In this 3D survey, the thrusted, gas-bearing structural trend of the K-29 and D-29 wells is observed to continue north onto EL363. Although beyond the limits of this 3D survey, it is likely that this structural trend extends further north, all the way to the Ranger-CFOL P-66e Nahanni discovery. Interpretation of this 3D survey demonstrates that the south end of EL 363 is highly prospective and, in fact, the Nahanni reservoir is likely continuous across the EL 363 – SDL 99 land boundary.

The N-61 well penetrates a three way dip closure Nahanni, trapped against a thrust fault. However, this structure is lower than ~2500 m (sub sea depth) that is the known gas-water contact as established by P-66a, D-29, F-25a and K-29. Therefore, the N-61 well confirms the down dip limit of the Nahanni reservoir. Since the N-61 structure is not at the leading edge of the Nahanni thrust fault, it does not create a trap significant enough to establish its own gas-water elevation. However, using the known gas-water elevation data integrated with this 3D data, we conclude that there is considerable potential for Nahanni gas at the south end of EL363.

Navpac*

Inertial navigation system

Most ruggedized inertial system

Navpac is a ruggedized inertial Navigation System (INS) that can be integrated into any mobile application. The system is designed to provide accurate navigation in any environment, including areas where GPS signals are not available.

Navpac is designed to be a cost-effective alternative to GPS. It is a compact, ruggedized system that can be easily integrated into any mobile application. The system is designed to provide accurate navigation in any environment, including areas where GPS signals are not available.

The core feature of the Navpac inertial navigation system is its high-precision, low-cost design. The system is designed to be a cost-effective alternative to GPS. It is a compact, ruggedized system that can be easily integrated into any mobile application. The system is designed to provide accurate navigation in any environment, including areas where GPS signals are not available.

The Navpac inertial navigation system is designed to be a cost-effective alternative to GPS. It is a compact, ruggedized system that can be easily integrated into any mobile application. The system is designed to provide accurate navigation in any environment, including areas where GPS signals are not available.

Product

The Navpac inertial navigation system is designed to be a cost-effective alternative to GPS. It is a compact, ruggedized system that can be easily integrated into any mobile application. The system is designed to provide accurate navigation in any environment, including areas where GPS signals are not available.

- ▼ High-precision, low-cost design
- ▼ Compact, ruggedized system
- ▼ Easy to integrate into any mobile application
- ▼ Accurate navigation in any environment, including areas where GPS signals are not available
- ▼ Low cost of ownership

Industrial and Commercial

The Navpac inertial navigation system is designed to be a cost-effective alternative to GPS. It is a compact, ruggedized system that can be easily integrated into any mobile application. The system is designed to provide accurate navigation in any environment, including areas where GPS signals are not available.

Mobile Navigation

The Navpac inertial navigation system is designed to be a cost-effective alternative to GPS. It is a compact, ruggedized system that can be easily integrated into any mobile application. The system is designed to provide accurate navigation in any environment, including areas where GPS signals are not available.

Features

- ▼ High-precision, low-cost design
- ▼ Compact, ruggedized system
- ▼ Easy to integrate into any mobile application
- ▼ Accurate navigation in any environment, including areas where GPS signals are not available
- ▼ Low cost of ownership

Benefits

- ▼ Most ruggedized inertial system
- ▼ Accurate navigation in any environment, including areas where GPS signals are not available
- ▼ Easy to integrate into any mobile application
- ▼ Compact, ruggedized system
- ▼ Low cost of ownership
- ▼ Accurate navigation in any environment, including areas where GPS signals are not available
- ▼ Low cost of ownership
- ▼ Accurate navigation in any environment, including areas where GPS signals are not available

Ideal environments

- ▼ Under vegetation where GPS signals are not available
- ▼ In urban environments where GPS signals are not available
- ▼ In commercial or industrial environments
- ▼ In heavily built-up urban areas

Specifications

- ▼ Built to Mil-Spec MIL-STD-810G
- ▼ Unbiased inertial specifications
- $\text{FOV} \approx 60^\circ \text{ (Azimuth, Elevation)}$
- $\text{where } \text{FOV} = \text{horizontal angle of view}$
- $\text{V} = \text{vertical accuracy (Azimuth, Elevation)}$
- $\text{T} = \text{traverse time (Azimuth, Elevation)}$
- ▼ Inertial GPS specifications
- Tracking: 12.2 channel continuous tracking of code and phase
- Elevation accuracy: 50 cm RMS

Schlumberger
Geo-Prakla

www.connect.slb.com

