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G E O P H Y S I C A L S E R V I C E I N C O R P O R A T E D

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Dec. 01. 1997

NATIONAL ENERGY BOARD
311 Sixth Avenue, S.W.
Calgary, Alberta
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Chief Conservation Officer:
Mr. Terry Baker

Subject: FINAL REPORT FOR SPECULATIVE GEOPHYSICAL SURVEY
1997 FORT LIARD - Operation Identifier No. 9229-G005-001P

Please find enclosed the final report for the above mentioned survey near Fort Liard in the N.W.T..

Also enclosed is the final processed data:
One Mylar and two prints (normal Polarity) for each line
One Digital shot point map and two paper copies

We take this opportunity to thank you and the National Energy Board for the cooperation and support we received on this survey. We also look forward to working with you on other surveys in the near future.

Respectfully,


Sam Nader

**GEOPHYSICAL EXPLORATION SURVEY REPORT
FOR
GEOPHYSICAL SERVICE INCORPORATED**

CALGARY, ALBERTA

FORT LIARD Speculative 2D Seismic Survey

OPERATING LICENCE # 858

Land Use Permit # N96B681

**ACQUIRED BY ENERTEC GEOPHYSICAL SERVICES LTD.
Party 179**

May 1997

Reported By

Herb Zanger - Party Manager

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FORT LIARD
FINAL PLAN REPORT
MAY 1997

LINE #	NEW CUT	NEW CUT ACCESS	EXISTING ROAD	EXISTING CUT LINE	ACCESS EXISTING ROAD	RIVER ACCESS	HAND CUT
FL-97-02	34.05 KM				7 KM		
FL-97-03	13.7 KM	3.5 KM		10.3 KM	8 KM		1.1 KM

INTRODUCTION:

The Geophysical Service Incorporated (GSI) speculative 2D project is located in the Northwest Territories on the East side of Fort Liard River. Line FL-97-03 started approximately 4 Kilometers north-east of Fort Liard and Line FL-97-02 started approximately 6 Kilometers south-east of Fort Liard.

The survey was conducted by Enertec Geophysical Services Ltd. (Enertec), working on behalf of GSI. The project was under the supervision of Mr. Murray VanAlstine of Enertec. The field operation was coordinated by Party Manager Mr. Herb Zanger.

Most of the key personnel were employed by Enertec, with native support staff residents of Fort Liard, as well as local Field Support. People, Fuel, Food were all coordinated by the expeditors for the field operations.

The field crew setup in one camp. The recording crew started on the GSI speculative survey on March 29, 1997. The program was completed on April 6, 1997.

The fuel consumption per day was 2400 liters of diesel fuel and 600 liters of gasoline.

Weather conditions for the program were in the range of -14 to +1 Degree Celsius. The terrain for the program was mostly plains.

FIELD PROCEDURES:

Recording:

Instruments	ARAM
Number of Traces	360
Geophone Type	Mark UM-2A
Phone Frequency	10 Hz
Number of Detector Strings	720
Number of Detectors per Station	6
Distance Geophone over spread	6/15
Detector Spacing	3
Sample Rate	2 ms
Record Length	6 sec
Alias Filter	123 HZ
Low Cut Filter	5 HZ

The cable layout was 2745-45-45-2745 meters balanced spread. The Vibrator parameters were 4 sweeps, 8-96 Hz, linear, 6 sec. The station interval was 15 meters, 360 channels were recorded live.

Record quality ranged from fair to good through out the course of the survey.

LAND USE

Land use supervision was handled by the Northwest Territories. The permit was issued by the Fort Simpson Office of Indian and Northern Affairs. Prior to survey start up a meeting occurred in Fort Simpson between Land Use representative and Enertec's Advancman - Mr. Jean Guy Dallaire. Other meetings were held in Fort Liard with Mr. Dallaire and the local community

TESTS

Enertec Geophysical performed instrument tests at the beginning of this project.

DOZING

Beaver Enterprises - resident of Fort Liard - was hired to perform the work that consisted of line cutting, clearing and cleanup. This prospect consisted of both existing and new cut lines. The lines were cut to a 25 foot width with a slash wind rowed to one side. Local Slashers were used to slash the wind row.

Five D-6H cats were used in the operation to cut and clear line as well as the camp clean up.

SURVEY

This project was Surveyed for line, vibrator and detector location by Mr. W. Verbaan (Eagle). There was a chaining crew doing the field work. Vibrator and Geophone locations were derived Aircraft cable calibrated with Legal Chain. Pin flags marked the Geophone and the vibrator locations. This survey was controlled by GPS stations. Two TOPCON control units were used for Horizontal and Vertical control.

New cut line lines were derived from topographic features. Station elevations were computed by E. D.M. and horizontal latitude and departures.

All chaining notes, survey notes, location sheets, closure sheets and a base map were delivered to GSI.

All flagging and survey markers were removed from the surface behind the recording crew. Line clean up commenced soon after.

CREW COMPOSITION:

RECORDING

2 - OBSERVER
4 - VIBRATOR OPERATOR
4 - LTD's
1 - TROUBLE SHOOTER
10 - RECORDER HELPER
21 PERSONS

SURVEY

1 - CAT PUSH
1 - SURVEYOR
1 - SURVEY HELPER
2 - CHAINERS
5 PERSONS

CATERING (DIAMOND)

1 - COOK
1 - COOKS HELPER (LOCAL)
1 - CAMPY (LOCAL)
3 PERSONS

ADDITIONAL

1 - PARTY MANAGER
1 - CLERK
1 - VIB TECH
2 - MECHANICS
1 - FUEL DRIVER
1 - SUPPLY DRIVER
1 - MEDICS
8 PERSON

LINE CUTTING AND SLASHING

1 - FOREMAN
5 - CAT OPERATORS
6 - SLASHERS
12 PERSON

EQUIPMENT

CAMP

- 1 - KITCHEN
- 1 - WASH SHACK
- 1 - RECREATION AND SLEEPER
- 3 - SLEEPERS
- 2 - GENERATORS

RECORDING AND SUPPLY

- 1 - PM UNIT
- 2 - SUPPORT UNITS
- 3 - SERVICE TRUCKS
- 4 - VIBRATORS
- 4 - QUADS
- 5 - LINE TRUCKS
- 1 - RECORDING TRUCK
- 1 - BATTERY TRUCK
- 1 - WATER TRUCK

LINE CLEARING

- 5 - D6H CATS
- 2 - SERVICE TRUCKS
- 1 - FORMAN TRUCK

SLASHING CREW

- 3 - SERVICE TRUCKS

LOCAL SUPPLIERS

Beaver enterprises were the contractors to do the line cutting, camp cleanup, water hauling, campsite cleanup etc.

GEOPHYSICAL STATISTICAL DATA

PROJECT NAME: FORT LIARD SPECULATIVE SURVEY

CREW: 179

LAND USE PERMIT NUMBER: N96B681

DATES OF OPERATION:

Surveyors commences on :	March 21, 1997
recorders mobbed on :	March 28, 1997
Recording commenced on:	March 29, 1997
Recording completed on:	April 06, 1997
Vehicles released on:	April 07, 1997

PRODUCTION

No. of Kilometers shot:	59.16
No. of shots taken:	1004
No. of stations:	3946
No. recording days:	9

Average Daily Production	
Kilometers Shot:	6.57 km
S.P.'s Recorded:	111

Days Mobilization and Demobilization: 5 Days

Days Lost to Equipment Failure: 0

Summary of Local Employment and Expenditure

Relating to the 1997 Geophysical Survey

by

Enertec Geophysical Services Ltd.

for

Geophysical Service Incorporated

Fort Liard Speculative Survey

Reported by : Herb Zanger - Party Manager

Calgary, Alberta

Party 179

May, 1997

**A SUMMARY OF THE 1997 GEOPHYSICAL SERVICE INCORPORATED
FORT LIARD SPECULATIVE SURVEY ECONOMIC ASSISTANCE TO THE
COMMUNITY OF FORT LIARD AND TO THE NEIGHBORING COMMUNITIES
IN THE NORTHWEST TERRITORIES.**

PERMIT FEES	\$ 12,500.00
PERMITS	
VIBS	\$ 160.00
BATTERY TRUCK	\$ 24.00
RECORDER	\$ 24.00

FUEL	
BEAVER ENTERPRISES	\$ 15000.00
FORT SIMPSON	\$ 2000.00

ACCOMMODATION	
FORT SIMPSON	\$ 1200.00

WALKING OF LINE TRUCK	
FORT SIMPSON	\$ 945.00

TOTAL OF	\$ 31,853.00
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LOCAL SUPPLIERS AND EMPLOYMENT

BEAVER ENTERPRISES (CONSTRUCTION) LTD

LINE CUTTING	\$ 87,605.75
LINE CLEAN-UP	\$ 23,238.38
ACCOMMODATION AND CAMP	\$ 3,250.00
CAMP CLEAN-UP	\$ 632.00
HAUL CATS	\$ 2,200.00
HAUL WATER	\$ 6,170.00

TOTAL TO DATE	\$123,096.13
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LOCAL EMPLOYMENT

DARLENE BERTRAND
(THREE DAYS)

HELPER

\$300.00

SYLVIA BERTRAND
(HALF DAY)

HELPER

\$ 50.00

JEANNIE EDDA
(HALF DAY)

HELPER

\$ 50.00

MARGRET NELSON
(HALF DAY)

HELPER

\$ 50.00