

Program ID 9229-P033-009E

**FINAL REPORT
for**

**Finish of 2003 3D Program
Cameron Hills, NT**

LOCATION:

Latitude: 60° 01' N to 60° 11' Longitude: 117° 25' to 117° 36'

Start of Operation: February 22, 2004

End of Operation: March 29, 2004

Primary Contractor: Trace Energy Services Ltd.

Operator: Paramount Resources Ltd.
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**Working Interest
Partners:** Marathon Canada Ltd.

Submitted to: Bharat Dixit, Chief Conservation Officer
National Energy Board

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Date: March 9, 2009

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2.0 Introduction

This is the final report for our 3D Vibroseis seismic acquisition program number 9229-P033-009E conducted in the Cameron Hills area of the NWT during the winter of 2003/4.

The program is located between 2 and 20 km North of the NWT / Alberta border. The program is divided into two separate portions which are separated by approximately 11 kms. Please refer to Encl.1.1 Seismic Program Number Mineral Lease Number Index Map. This map shows the location of 3D seismic acquired as part of this geophysical operation, as well as from our previous operations in the area. The map also shows associated mineral rights lease numbers and existing well control.

This program was a continuation of a 3D program which was partially acquired in the winter of 2002/3 (Program ID 9229-P033-008E).

The Northern portion of program 9229-P033-009E comprised 69.96km of 4m wide receiver lines and 66.6km of 6m wide source lines. The Southern portion comprised 55.92km of 4m wide receiver lines and 61.9km of 6m wide source lines. The presence of near surface sands and gravels in the area have historically resulted in difficult dynamite shot hole drilling and poor data quality. The use of Vibroseis as an energy source has resulted in better overall data quality. Refer to Encl.1.95 for a map showing the location of the source and receiver lines and points.

Synterra Technologies Ltd. handled the compilation of Mackenzie Land and Water Board land use application. Lornel Consultants, Paramount Resources, Alpine and Golder Associates conducted a detailed Environmental Impact Assessment of the Cameron Hills area which formed part of the land use application.

Trace Energy Services Ltd. was the Prime Acquisition Contractor (Job# 9-618) hired to coordinate and shoot the proposed seismic program. All parties were working on behalf of Paramount Resources Ltd. and Marathon Canada Ltd. Paramount Resources Ltd. acted as the operator and the geophysical survey was for the exclusive use of Paramount Resources Ltd. and Marathon Canada Ltd.

Operations began with surveying and seismic line construction and finished with recording, clean-up and reclamation. Crew headquarters were based out of PTI Open Camp Indian Cabins, AB. The Northern 3D was approx. 56km North of the camp, and the southern 3D 36km north of the camp. The number of personnel on the job and in the camp ranged from about 20 during line construction to a peak of about 50 during the recording phase of the operation.

All operations were conducted in accordance with the applicable legislation, regulations, Land Use Permit conditions (MV2002B0057), and terms and conditions of the NEB Geophysical Operation Authorization dated February 20, 2004 having an Operation Identifier 9229-P33-009E.

Field data was processed at Geo-X Systems Ltd. to produce a migrated data volume having a 30m by 30m bin spacing. See enclosure 1.8 Seismic Processing History.

3.0 Data Acquisition

3.1 Weather and Terrain

Weather conditions for this program were in the temperature range of -24° to 7° Celsius throughout the course of the operations. Most of the working conditions were from -15° to around -10°.

The Cameron hills region consists of an upland plateau, elevated about 500m above the Northern Alberta Lowlands along the Southern and Eastern flanks and the Great Slave Plain along the Northern flank. The Cameron River flows Southwesterly from its headwaters near the plateau high, and continuous through the middle of the plateau within a comparatively wide, subdued floodplain before turning north, where it forms a significant valley about 300m deep.

The terrain North of the river is rolling and undulating with comparatively steep slopes. The terrain South of the river is generally more subdued, consisting of extensive lakes and lowlands (see Encl. 1.2 Topographic Map). Trembling Aspen-Pine forests (10 to 15m) are present throughout the project area. Trembling Aspen are dominant primarily in the Cameron River valley. Coniferous forests comprise stands of Black Spruce, White Spruce and Pine mixtures. Black Spruce bogs are common throughout the project area.

3.2 Safety, Health & Environment

Trace Energy Services Ltd. had a complete Health, Safety, and Environmental program in place. A site specific ERP was developed for the program and audited by Mr. Rick Turner, of the National Energy Board based in Calgary. Contingency plans include Injury, Accident and Spill. A First Aid Room (17.13) and Medical Transportation (17.15) were located at the program site along with the correct number of advanced level first aid certified workers (as per requirement as defined in Part 1 and section 17 of the Oil and Gas Occupational Safety and Health Regulations SOR/87-612). A copy of the Oil and Gas Occupational Safety and Health Regulations SOR/87-612 was kept in the field office.

First Aid supplies, a field radio, satellite telephone and/or mobile radio-telephones were available to the crew at all times to permit crew to crew communication as well as to permit the crew to communicate with offsite emergency personnel. Radio check-in was required on a regular basis. A site specific Hazard Awareness program was developed and daily safety meetings were held.

Field operations were inspected by Mr. Rick Turner, of the National Energy Board based in Calgary, and several times by Mr. Norm McCowan, a Resource Management Officer from DIAND. Their concerns were addressed in a timely manner and assisted Trace Energy employees in the running of an efficient program.

Environmental concerns were addressed by Lornel Consultants, Paramount Resources, Alpine and Golder Associates who conducted a detailed Environmental Impact Assessment of the Cameron Hills area. Local Elders were also hired as Environmental Monitors during the line clearing operation.

3.3 Logistics & Summary

Operations were based out of the PTI Open Camp Indian Cabins located 36 to 56km south of the project area in Alberta and at a staging area close to the 3D.

Prior to going to the field, tender requests were sent out to the local NWT based businesses to secure the sub-contractors needed to work on the program. The majority of sub-contractors hired were local NWT based businesses. The majority of personnel were local community hires involved in line construction (cat operators, slashers, and monitors), the dragging of source lines, recording (vib operators and line crew), and in any reclamation operations required at the end of the program.

Some of Trace Energy's personnel came from the South (i.e. Calgary – point of hire and from other communities in the NWT) and were mostly involved in supervisory, surveying, and recording aspects of the program.

3.4 Surveying Operations

Mercedes Surveys located in Alberta provided chaining, survey and quality control services on this project. A Lidar survey was flown over the program area for pre-planning and vertical survey control. The Lidar data showed where existing cleared lines and water bodies were located. This information was used to maximize the amount of existing cleared lines used in the survey design.

The coordinates for all source and receiver line locations were loaded into GPS navigation systems on the cats used to clear the lines. This allowed the cat

operators to stay on track while avoiding large stands of timber, keep away from hazards, maintaining set-backs from water bodies and allowing lines to meander.

A survey crew placed flagging at the geophone station intervals and identified the source points. Chaining notes were prepared every evening for the field operations and a final copy forwarded to survey audit company and seismic data processor at the completion of the project.

A survey crew recorded the point locations by GPS. A Novatel RTK-GPS system was used to establish the control and survey the locations of lines and access. Control was based upon Geodetic Survey of Canada benchmarks.

3.5 Line Clearing Operations

Aided by Lidar data and use of GPS on cats, avoidance cutting techniques were employed. Line of sight was also reduced by meandering the lines. Source lines were cat cut to a width of 6m to allow both windrow and safe passage of the Vibroseis units. Receiver lines were cat cut to a width of 4m to allow both windrow and safe passage of recording vehicles.

Debris and brush was disposed of by windrowing to the side of the line. Hand slashers followed the cats to remove all leaners from the seismic lines, ensure windrow was flat by cutting branches and bucking debris to suitable lengths. Lines were dragged to compact snow to improve ground coupling of the vibroseis energy source.

3.6 Acquisition Parameters / Recording Operations

3.6.1 Northern Summary

CLIENT:	Paramount Resources Ltd.	JOB NUMBER:	9-618	
GEO NUMBER	9229-P33-009E	LOCATION:	Cameron Hills , NT	
SUPERVISOR	Brett Cameron	CREW	201	
PROJECT MANAGER	Stephen Menduk	CLERK	Becky Barrows	
PARTY MANAGER	Dan Allen	CLERK	Lisa Crowe	
OBSERVER	Al Auttersen /John Wall	HSE REP	Marvin LeBeau	
3-D FIELD PARAMETERS				
Source:	Vibroseis	Instrument:	I/O System II	
No. of Receiver Lines	13	Sample Rate	2	ms
No. of Source Lines	24	Sweep	6-120	Hz
Receiver Line Interval	300m	No. of Sweeps	4	

Source Line Interval	300m	Sweep Length	24	Seconds
Station Interval	60m	Source Array	3 Over 25	Metres
Source Interval	60m	Record Length	3	Seconds
Total Receiver Kms	69.90	Geophone	SM-24, 10hz	
Total Source Kms	63.96			
Total Stations	1178			
Total Source Points	1090	LowCut Filter	out	Hz
Patch Size	11 x 50	High Cut Filter	3/4 Nyquist	Hz
Square Kms.	19	Group Array	6 over 20	Metres

RECEIVER LINES	BOL	EOL	NUM KM.	NUM STAS	SOURCE LINES	BOL	EOL	NUM KM.	NUM STAS
201	231	291	3.600	61	232	133	160	1.620	28
203	231	291	3.600	61	234	133	160	1.620	28
205	231	291	3.600	61	236	133	160	1.620	28
207	231	291	3.600	61	238	133	160	1.620	28
209	231	291	3.600	61	240	133	160	1.620	28
211	231	291	3.600	61	242	133	160	1.620	28
213	176	291	6.900	116	244	133	160	1.620	28
215	176	291	6.900	116	246	132	160	1.680	29
217	176	291	6.900	116	248	133	160	1.620	28
219	176	291	6.900	116	250	133	160	1.620	28
221	176	291	6.900	116	252	133	160	1.620	28
223	176	291	6.900	116	254	101	160	3.540	60
225	176	291	6.900	116	256	101	160	3.540	60
					258	101	160	3.540	60
					260	101	160	3.540	60
					262	102	161	3.540	60
					264	101	160	3.540	60
					266	101	160	3.540	60
					268	101	160	3.540	60
					270	101	160	3.540	60
					272	101	160	3.540	60
					274	101	160	3.540	60
					276	102	161	3.540	60
					278	101	161	3.600	61
TOTALS			69.900	1178				63.960	1090

3.6.2 Southern Summary

CLIENT:	Paramount Resources Ltd.	JOB NUMBER:	9-618	
GEO NUMBER	9229-P33-009E	LOCATION:	Cameron Hills , NT	
SUPERVISOR	Brett Cameron	CREW	201	
PROJECT MANAGER	Stephen Menduk	CLERK	Becky Barrows	
PARTY MANAGER	Dan Allen	CLERK		

OBSERVER	Al Autterson /John Wall	HSE REP	Stephen Menduk	
3-D FIELD PARAMETERS				
Source:	Vibroseis	Instrument:	I/O System II	
No. of Receiver Lines	20	Sample Rate	2	ms
No. of Source Lines	17	Sweep	6-120	Hz
Receiver Line Interval	300m	No. of Sweeps	4	
Source Line Interval	300m	Sweep Length	24	Seconds
Station Interval	60m	Source Array	3 Over 25	Metres
Source Interval	60m	Record Length	3	Seconds
Total Receiver Kms	130.68	Geophone	SM-24, 10hz	
Total Source Kms	126.66			
Total Stations	951			
Total Source Points	1028	LowCut Filter	out	Hz
Patch Size	11 x 50	High Cut Filter	3/4 Nyquist	Hz
Square Kms.	15.5	Group Array	6 over 20	Metres

RECEIVER LINES	BOL	EOL	NUM KM.	NUM STAS	SOURCE LINES	BOL	EOL	NUM KM.	NUM STAS
218	373	412	2.340	40	305	174	229	3.300	56
220	373	412	2.340	40	307	174	234	3.600	61
222	373	412	2.340	40	309	141	237	5.760	97
224	372	412	2.400	41	311	204	238	2.040	35
226	372	412	2.400	41	313	141	238	5.820	98
228	372	412	2.400	41	315	157	236	4.740	80
230	372	412	2.400	41	315	141	150	0.540	10
232	361	412	3.060	52	317	141	147	0.360	7
234	361	412	3.060	52	319	141	236	5.700	96
236	361	412	3.060	52	321	165	236	4.260	72
238	361	412	3.060	52	321	147	160	0.780	14
240	361	412	3.060	52	323	154	165	0.660	12
242	361	412	3.060	52	323	141	146	0.300	6
244	362	412	3.000	51	325	141	236	5.700	96
246	362	412	3.000	51	327	141	236	5.700	96
248	362	412	3.000	51	329	141	236	5.700	96
250	362	412	3.000	51	331	141	236	5.700	96
252	362	412	3.000	51					
254	362	412	3.000	51					
256	364	412	2.880	49					
TOTALS			55.86	951				60.66	1028

The recording crew removed all flagging, lath and survey markers upon completion of their operations on the project.

3.7 Dates of Operations

Line Clearing Commenced North		February 19, 2004
Line Clearing Completed North		February 29, 2004
Line Clearing Commenced South		March 1, 2004
Line Clearing Completed South		March 17, 2004
Surveying Commenced		March 10, 2004
Surveying Completed		March 20, 2004
Recording Commenced North		March 16, 2004
Recording Demobilized North		March 20, 2004
Recording Commenced South		March 21, 2004
Recording Demobilized South		March 31, 2004

3.8 Personnel

Supervisory	1	Operations Supervisor
	1	Safety Supervisor
Recording Crew	1	Party Manager
	2	Senior Observers
	1	Junior Observer
	1	Field Administrator
	1	HSE Advisor
	7	Vibe Operators
	5	Line Truck Drivers
	28	Recording Helpers
	3	Mechanic/Vibe Tech
Surveying	1	Survey Manager
	2	Surveyors
	3	Chainers
	1	Mapper
Line Clearing	2	Foreman
	9	Hand Cutters
	4	Cat Operators

3.9 Equipment

Recording	1	I/O II Recording System with
		1500 channels on 4X4 Vehicle
	6	4x4 Line Trucks
	7	Ski-doos for line crew
	1	Personnel Carrier
	1	4x4 Party Manager Vehicle
	2	4x4 Mechanics and Vibe Tech Truck
	4	Mertz 18 buggy vibrators
Surveying	1	GPS equipment
	5	Ski-doos for survey crew
Line Clearing	2	4x4 Cat Push Trucks
	3	4x4 Personnel Trucks

4.0 Data Processing

Field data was processed at Geo-X Systems Ltd. to produce a migrated data volume having a 30m by 30m bin spacing. Processing steps are outlined in Enclosure 1.8 Seismic Processing History. The data from all of the 3D surveys acquired in the area (Encl. 1.1) were processed together to yield a single, continuous migrated data volume for interpretation.

5.0 Discussion

5.1 Background

For the purposes of this final report a subset of lines were extracted at an interval of 1050m in both the North South and East West directions to generate a representative set of data from across the entire 3D survey area. These seismic sections are displayed at a vertical scale of 5 inches per second and a horizontal scale of 1:50,000. The East West seismic sections are included as enclosures 1.6-T35 to 1.6-T595 and the North South sections are included as enclosures 1.7-L35 to 1.7-L280. The location of these lines can be seen on the Program Outline Index Map (Encl. 1.3). Interpretive maps (Encl. 1.91 to 1.94) were also plotted at a scale of 1:50,000 to allow direct comparison with the displayed seismic sections.

5.2 Interpretation

One goal of the seismic interpretation is to identify hydrocarbon charged Middle Devonian Slave Point carbonates in structural closure. Data quality in the area is very good and correlation of key seismic reflections was possible across the

survey area. A synthetic seismogram was generated using well logs from the B-06 60°10' 117°30' (Encl.1.4) well which directly ties the East West seismic line T245 (Encl. 1.5). The synthetic was used to correlate key geologic markers from the well log with corresponding reflection events observed on the seismic data. The Wabamun (Upper Devonian carbonate), Fort Simpson (Upper Devonian shale), and Slave Point (Middle Devonian carbonate) are three key geologic markers that were identified and picked across the entire 3D volume. These seismic events were picked utilizing a Sun Unix Workstation and Paradigms' SeisX interpretation software.

Wabamun Time Structure (Encl. 1.91) and Fort Simpson Time Structure (Encl. 1.92) maps were made. These maps show that the Wabamun and Fort Simpson surfaces are generally smooth and planar with a gentle regional NE to SW structural dip. For this reason these two time surfaces are commonly used as datums for isochron maps made with the Slave Point seismic event.

Wabamun to Slave Point (Encl. 1.93) and Fort Simpson to Slave Point (Encl. 1.94) isochron maps were made. For both isochron maps, the red and white colors are associated with the isochron (and corresponding isopach) thins which highlight associated Slave Point structural highs and possible closures. The green colors highlight isochron (and corresponding isopach) thicks and associated Slave Point structural lows.

These maps are used to identify and target present day closed structures at the Slave Point level. A number of gas wells and oil wells can be seen to be associated with these mapped closed features.

5.3 Summary

A high quality 3-D seismic program was acquired in the winter of 2004 and successfully processed together with prior 3D surveys in the area to yield a single, continuous migrated data volume for interpretation.

Maps were created which will aid in identifying future exploratory and development well locations in the Cameron Hills area.