

Tulita 2010

NEB Final Plan Report

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NATIONAL ENERGY BOARD
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Enabling Statute: Canada Oil and Gas Operations Act
Canada Oil and Gas Geophysical Operations Regulations (SOR/96-117)
Regulation current to September 8th, 2009
Attention: See coming into force provision and notes, where applicable.
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PART V

REPORTING REQUIREMENTS

STATUS REPORT

37. Every operator shall submit to the Chief Conservation Officer, at the commencement and termination of the geophysical operation and once a week during the operation, in a manner and form approved by the Chief Conservation Officer, a report on the progress of the operation that includes

(*a*) the number assigned to the operation that is the subject of the geophysical operation authorization;

(*b*) the identification of the lines on which the data are collected;

(*c*) the quantity of data collected per line;

(*d*) the location and status of any vessels and platforms from which the operation is conducted;

(*e*) any unusual weather conditions or other incidents that cause downtime; and

(*f*) the location of any shot hole referred to in subsection 25(2).

FINAL REPORT

38. (1) Subject to subsection (3), within 12 months after the date of termination of a geophysical operation, every operator shall submit to the Chief Conservation Officer a report that includes

(*a*) a title page that indicates the number that is assigned to the operation that is the subject of the geophysical operation authorization, the report title, the type of operation conducted, the location of the operation, the duration of operations at that field location, the names of the contractors, the operator, the interest owners, if any, as defined in section 2 of the *Canada Petroleum Resources Act*, and the author, and the date of the report;

(*b*) a table of contents;

(*c*) an introduction or abstract;

(*d*) location maps that show the boundaries of the area that is subject to each interest covered by the operation and the identification number of each such interest;

(*e*) a summary of significant dates, the number of members of the complement, if applicable, the number of members of the geophysical crew, the type and number of each type of equipment used, the production data, the total distance surveyed, the downtime per day, and the number of kilometres of data recorded per day;

(*f*) a summary of weather, sea, ice and topographic conditions and their effect on the operation;

(*g*) a general description of the operation including the instrument type, the accuracy of the navigation, positioning and survey systems, the parameters for the energy source and recording system and the field configuration of the source lines and the receiver lines;

(*h*) a detailed description of the geophysical data processing method including the processing sequence and the processing parameters for seismic, magnetic, gravimetric and other geophysical surveys;

(*i*) shotpoint maps, track plots, flight lines with numbered fiducial points, gravity station maps and, for seabed surveys, location maps for core holes, grab samples and seabed photographs;

(*j*) a fully processed, migrated seismic section for each seismic line recorded and, in the case of a 3-D survey, each line generated from the 3-D data set;

(*k*) a high-resolution section for each line recorded in a well-site seabed survey or a pipeline route survey;

(*l*) a series of gravity and magnetic profiles across all gravimetric and magnetic surveys for which interpretative maps have not been made;

(*m*) shotpoint location data;

(*n*) bathymetric and topographic maps that are compiled from the data collected;

(*o*) interpretative maps that are appropriate to the data collected including

(i) structure and isopach maps, time structure and time interval maps, velocity and residual velocity maps, and seismic amplitude and character change maps,

(ii) final Bouguer gravity maps and any residual or other processed gravity maps, and

(iii) final total magnetic intensity contour maps and any residual, gradient or other processed magnetic maps;

(*p*) synthetic seismograms and seismic modelling studies that use synthetic seismograms, vertical seismic profiles at wells that were used in the interpretation of the operation data, amplitude versus offset studies, and seismic inversion sections, if any; and

(*q*) the interpretation of maps and seismic sections including

(i) geological and geophysical correlations,

(ii) where applicable, correlations between gravity, magnetic and seismic data,

(iii) in the case of seabed surveys, the geophysical correlation of shallow seismic data with data from cores and geotechnical boreholes,

(iv) details of corrections or adjustments that were applied to the data during processing or compilation, and

(v) the operator's velocity information that was used in a time-to-depth conversion.

(2) An operator shall incorporate in a map submitted pursuant to paragraph (1)(*o*) any previous data collected by the operator that are related to the area covered by the map and that are of a type similar to the data from which the map was produced.

(3) An operator who has conducted a non-exclusive survey need not, in the report required by subsection (1), provide the information and materials described in paragraphs (1)(*n*) to (*q*) in respect of data that are available for purchase by the public.

(4) Where an operator who has conducted a non-exclusive survey ceases to make available for purchase by the public any data from that survey that were so available, the operator shall, within 12 months after the date on which the operator ceased to make the data available, submit to the Chief Conservation Officer a supplementary report that contains the information and materials described in paragraphs (1)(*n*) to (*q*) in respect of the data, unless the Chief Conservation Officer has received a report pursuant to subsection (5) that includes such information and materials.

(5) Every purchaser of geophysical data that arise from a geophysical operation in an area that is subject to an interest, where the costs of the purchase of the data are credited against deposit or rental requirements of the interest, and every participant shall submit to the Chief Conservation Officer a report that contains all of the information and materials described in paragraphs (1)(*n*) to (*q*) that have been prepared by or for that purchaser or participant.

(6) Where a purchaser of geophysical data that arise from a geophysical operation in an area that is subject to an interest has reprocessed the data and the costs of the reprocessing are credited against deposit or rental requirements of the interest, the purchaser shall submit to the Chief Conservation Officer a report that contains the information and materials described in paragraphs (1)(*a*), (*h*), (*j*) to (*l*) and (*o*) to (*q*) that have been prepared in respect of the reprocessed data by or for the purchaser.

(7) The reports required by subsections (5) and (6) shall be submitted

(*a*) in the case of a participant, within 12 months after the date of termination of the geophysical operation; and

(*b*) in the case of a purchaser, by the time the costs referred to in subsection (5) or (6) are credited.

(8) A person who has submitted a report referred to in this section shall, in respect of data that pertain to the location of shotpoints or stations, immediately notify the Chief Conservation Officer of any errors, omissions or corrections identified in or made to the data subsequent to the submission of the report.

(9) A report referred to in this section shall be submitted in the form, manner and quantity approved by the Chief Conservation Officer.

RETENTION OF DATA

39. (1) Every operator shall, after completion of a geophysical operation, retain in Canada the following information and materials:

(*a*) seismic field data in digital format and a description of the data format, together with all supporting information;

(*b*) fully processed, migrated seismic data in digital format;

(*c*) in the case of a magnetic survey, the final digital field data, field analog monitors, diurnal charts, altitude profiles, and all other supporting information;

(*d*) in the case of a gravimetric survey, the location, elevation, final digital field data, and gravity profiles;

(*e*) in the case of seabed investigations at well-sites, all sidescan sonar records and mosaics, fathometer records, sub-bottom profile records, grab samples, cores, and seabed photographs; and

(*f*) all other observations or readings that were obtained during the field operation.

(2) No person shall destroy or discard any information or material referred to in subsection (1) after the period referred to in subsection (4) unless the person has given the Chief Conservation Officer not less than 60 days' notice of that intention and, if so requested within the notice period, has given the Chief Conservation Officer the information or material or a copy thereof.

(3) The Chief Conservation Officer may require an operator to supply the information and materials referred to in subsection (1), in a form approved by the Chief Conservation Officer.

(4) Subject to subsection (6), no person shall destroy, discard or remove from Canada any of the information or material referred to in subsection (1) within 15 years after the completion of the geophysical operation without the written approval of the Chief Conservation Officer.

(5) Where fewer than 15 years have elapsed since the completion of the geophysical operation, the Chief Conservation Officer shall approve the destruction, discarding or removal from Canada of any of the information or material referred to in subsection (1) if the Chief Conservation Officer is satisfied that the information or material is not of any significant use or value.

(6) Information or material referred to in subsection (1) may be removed from Canada without the approval of the Chief Conservation Officer for the purpose of being processed in a foreign country, provided that the information or material is returned to Canada as soon as the processing is complete.

(7) Every operator shall retain in Canada on reproducible film the most recent fully processed, migrated seismic sections of the geophysical operation and shall not destroy that film or remove it from Canada without the written approval of the Chief Conservation Officer.

(8) The Chief Conservation Officer shall approve the destruction or removal from Canada of the most recent fully processed, migrated seismic sections on reproducible film if the Chief Conservation Officer is satisfied that a copy of the film has been retained in Canada or the film is not of any

significant use or value in Canada.

PART VI

ACCIDENTS

REPORTS

40. Every operator shall inform the Chief Conservation Officer and the Chief Safety Officer immediately, by the most rapid and practical means, of any serious accident or incident that occurs during a geophysical operation and that causes injury to or loss of life of any person, or damage to property, or that constitutes a threat to the environment.

INVESTIGATION

41. The Chief Conservation Officer and Chief Safety Officer may investigate any accident or incident that occurs during a geophysical operation and that

(*a*) involves the death of or injury to any person;

(*b*) causes significant damage to or failure of geophysical equipment; or

(*c*) results in pollution or other damage to the environment.

program 5554141

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Tulita 2010 2D

NEB Final Plan Report

GOA # E243-5554141

N E B COPY

May 21, 2010

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- DVD Containing: SEGP1, SP Maps of CVL-02, CVL-03, CVL-04, CVL-05, CVL-06

Introduction

This report accounts for the results of the work conducted on Tulita 2010 seismic acquisition program initiated by Explor. The program was conducted in line conformance with NEB regulations under GOA# E243-5554141 and with the LUP# S08B-008 granted by the Sahtu Land and Water Board. Explor also conformed with the access and benefits agreements reached with the community of Tulita and with the benefits plan submitted to DIAND.

In November of 2009, Yamoria Geophysical (YGL) was awarded a vibroseis 2D contract to record approximately 60 kilometers of seismic in the Tulita District of the NWT for Explor.

Explor's contract with YGL assigned YGL as prime contractor. The contract also included specific requirements to comply with the provisions contained in all applicable regulations, permits and agreements.

During the week of November 12th, Explor and YGL went to Tulita to discuss the program with the locals in the community and also to discuss what would be needed for equipment and services.

The services that were required included:

- Medics
- Survey
- Slashing-Line Clearing
- Heavy Equipment for Line Clearing
- Trucking
- Communications
- Support Trucks
- Snowmobiles
- Fuel

Heavy Equipment consisted of cats for line clearing 4 2D seismic lines totaling 60 km. A sleigh camp was not necessary for this program as all personnel were accommodated in the hamlet of Tulita.

Logistics For National Energy Board – Tulita 2010 2D Seismic Program

Geophysical operation authorization submitted to and received by National Energy Board December 10, 2009.

National Energy Board letter to Mr. Vern Christensen executive director of MVEIRB advising him of the GOA for Explor Tulita 2010 Seismic Program on January 12, 2010.

GOA number E243-5554141 issued by National Energy Board to Explor Januray 15, 2010 for Bracket Lake, Tulita District, Tulita 2010 2D Seismic Program.

Upon arrival of the Project Manager in Norman Wells on February 3, 2010, meetings were scheduled with the regulators and contractors to go over the equipment and the logistics of the program.

On February 5, 2010 meetings were held with Gordon Yakeleya, President of Tulita Land and Financial Corporation, to review line locations and identify possible problem areas. and with David Menacho, President of the Renewable Resource Council (RRC), and board members of the RRC to discuss environmental monitors for the program.

On February 6, 2010, a meeting was held in the hamlet of Tulita with the DIAND inspector, Armin Johnson, for startup notification for the program. Another meeting was held that day with the RRC to finalize plans for environmental monitors for the program.

On February 8, 2010 Marty Swagar called the National Energy Board in Calgary and notified them of the startup date and meetings with INAC inspectors.

Line clearing began on February 11, 2010, slashing began on February 13, 2010.

On February 15, 2010, a hiring fair was held at the community center in Tulita to talk to potential employees for the recording crew. Response was excellent and as a result fourteen local residents were hired.

On February 17, 2010, catwork for line clearing was completed.

On Februray 18, 2010, there was a mid inspection done by Armin Johnson, INAC inspector. Response was excellent.

On February 21, 2010, the line survey was completed and recording began.

On February 22, 2010, slashers completed slashing on line.

On March 1, 2010 Marty Swagar phoned John Korec at the National Energy Board to discuss possible winter road shoot between Tulita and Norman Wells. Marty also informed Mr. Korec at that time that recording of the Tulita 2010 2D Seismic Program would be complete on March 5, 2010 and clean up would be complete on March 6, 2010.

On March 5, 2010, recording was completed. Equipment pickup and line clean up scheduled for March 6, 2010.

On March 7, 2010, recording equipment was loaded on a highboy and shipped to Fort McMurray, Alberta. This completed recording crew duties.

On March 15, 2010, Final Inspection conducted by Armin Johnson INAC Inspector. Mr. Johnson's response was excellent, therefore, no further work was required.

Throughout the program, weather and snow conditions were excellent and there were no delays encountered.

Timeline

Project Manager	Feb 01 2010 to Mar 08 2010
HSE Advisor	Feb 03 2010 to Mar 07 2010
Monitors	Feb 11 2010 to Mar 04 2010
Medic	Feb 07 2010 to Mar 07 2010
Cat Push	Feb 06 2010 to Feb 20 2010
Line Clearing/Slashing	Feb 11 2010 to Feb 22 2010
Survey	Feb 13 2010 to Feb 20 2010
Recording	Feb 19 2010 to Mar 05 2010

Equipment

Project Manager / HSE Advisor	(1)-110 Nodwell / 2-4X4 Trucks
Monitors	(2) - Ski-doos
Survey	(1)-4 x 4 truck / 2-Ski-Doos
Medic	(1)-4 x 4 Truck / 1 Ski- Doo
Slashers	(2)-4 x 4 Pick-ups / 4 Ski-doos
Heavy Equipment	(2) 4 x 4 Trucks (1) 110 Nodwell (4) D7 LGP Cats (1) Back Hoe
Recording Crew	(5) 110 Nodwells (1) Ski-Doos (4) Mertz HD 18's (48,000 lbs) Tracked Vibs (4) 4X4 Trucks (1) 206 Jet Ranger

Crew Members

Recording Crew	(includes Project Manager/HSE Advisor)	**25**
Medics		**1**
Monitors		**2**
Advance Man		**1**
Survey		**2**
Slashers		**4**
Cat Operators		**4**
Cat Foreman		**1**
Aircraft Personnel		**1**
	Total:	**41**

Production

The ***line clearing and slashing*** production for a total of 60.06 kilometers was averaged out to 4.87 kilometers per day. Line clearing went very well with good frozen ground conditions and 3 feet of snow. Three short line detours and one long detour on Line 04 due to the Great Bear River were necessary.

The ***survey*** production for a total of 59.46 kilometers was averaged out to 7.43 kilometers per day, included control points. Mob and demob is excluded.

The ***recording crew*** production was at an average of 4.004 kilometers per day, and this includedthe detour around the Great Bear River. A helicopter was utilized to fly a cable across the river to connect up both sides for continuous reasons and the crew utilitzed the same helicopter for retrieval of the cable from the river.

Weather

The weather throughout the program was from minus 36.4 Celsius to plus 5.6 Celsius.

To follow are daily weather reports from Environment Canada for February 2010 to March 2010.
http://www.climate.weatheroffice.ec.gc.ca/climateData/dailydata_e.html

Daily Data Report for February 2010											
Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days °C	Cool Deg Days °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
01†	-16.6	-18.2	-17.4	35.4	0.0	0.0	6.0	5.4	20		<31
02†	-16.6	-31.0	-23.8	41.8	0.0	0.0	1.4	1.4	24	30	39
03†	-24.4	-34.1	-29.3	47.3	0.0	0.0	0.0	0.0	23		<31
04†	-25.2	-34.9	-30.1	48.1	0.0	0.0	T	T	22		<31
05†	-28.2	-34.1	-31.2	49.2	0.0	0.0	T	T	22		<31
06†	-17.0	-30.5	-23.8	41.8	0.0	0.0	T	T	22		<31
07†	-16.4	-25.0	-20.7	38.7	0.0	0.0	0.0	0.0	21		<31
08†	-20.0	-26.6	-23.3	41.3	0.0	0.0	0.0	0.0	21		<31
09†	-18.0	-25.5	-21.8	39.8	0.0	0.0	0.0	0.0	21		<31
10†	-20.2	-28.6	-24.4	42.4	0.0	0.0	0.0	0.0	20		<31
11†	-17.7	-28.4	-23.1	41.1	0.0	0.0	0.4	0.4	20		<31
12†	-17.5	-19.5	-18.5	36.5	0.0	0.0	T	T	20		<31
13†	-12.9	-23.3	-18.1	36.1	0.0	0.0	T	T	20		<31
14†	-12.3	-23.6	-18.0	36.0	0.0	0.0	T	T	20		<31
15†	-9.0	-19.4	-14.2	32.2	0.0	0.0	0.6	0.6	20		<31
16†	-11.3	-22.4	-16.9	34.9	0.0	0.0	0.0	0.0	20		<31
17†	-9.3	-16.6	-13.0	31.0	0.0	0.0	T	T	18		<31
18†	-6.8	-16.6	-11.7	29.7	0.0	0.0	0.0	0.0	18		<31
19†	-7.7	-16.1	-11.9	29.9	0.0	0.0	0.0	0.0	17		<31
20†	-12.8	-19.6	-16.2	34.2	0.0	0.0	0.2	0.2	17		<31
21†	-11.6	-14.6	-13.1	31.1	0.0	0.0	2.2	0.8	17		<31
22†	-11.2	-18.0	-14.6	32.6	0.0	0.0	T	T	18	13	35
23†	-15.3	-17.8	-16.6	34.6	0.0	0.0	5.0	4.4	18	29	39
24†	-16.7	-30.5	-23.6	41.6	0.0	0.0	T	T	21	28	48
25†	-22.9	-36.4	-29.7	47.7	0.0	0.0	0.0	0.0	21		<31
26†	-22.8	-29.4	-26.1	44.1	0.0	0.0	0.0	0.0	20		<31
27†	-18.8	-30.8	-24.8	42.8	0.0	0.0	T	T	20		<31
28†	-10.8	-27.9	-19.4	37.4	0.0	0.0	T	T	20		<31
Sum				**1079.3**	**0.0**	**0.0**	**15.8**	**13.2**			
Avg	**-16.1**	**-25**	**-20.53**								
Xtrm	**-6.8**	**-36.4**								**28**	**48**

Daily Data Report for March 2010											
Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days °C	Cool Deg Days °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's Deg	Spd of Max Gust km/h
01†	-15.6	-22.6	-19.1	37.1	0.0	0.0	0.0	0.0	19		<31
02†	-14.4	-23.1	-18.8	36.8	0.0	0.0	0.0	0.0	19		<31
03†	-13.8	-25.0	-19.4	37.4	0.0	0.0	0.0	0.0	19		<31
04†	-13.7	-24.5	-19.1	37.1	0.0	0.0	0.0	0.0	18		<31
05†	-3.6	-22.8	-13.2	31.2	0.0	0.0	0.0	0.0	18		<31
06†	4.0	-20.0	-8.0	26.0	0.0	0.0	0.0	0.0	17		<31
07†	5.6	-7.5	-1.0	19.0	0.0	0.0	0.0	0.0	16	21	39
08†	0.0	-14.8	-7.4	25.4	0.0	0.0	0.0	0.0	16		<31
09†	3.8	-7.1	-1.7	19.7	0.0	0.0	0.0	0.0	14	12	37
10†	2.5	-8.8	-3.2	21.2	0.0	0.0	0.0	0.0	14		<31
11†	1.0	-16.2	-7.6	25.6	0.0	0.0	0.0	0.0	12	11	43
12†	-0.5	-19.5	-10.0	28.0	0.0	0.0	0.0	0.0	12	12	37
13†	-9.4	-25.3	-17.4	35.4	0.0	0.0	T	T	12		<31
14†	-6.5	-23.1	-14.8	32.8	0.0	0.0	0.0	0.0	11		<31
15†	-13.4	-17.7	-15.6	33.6	0.0	0.0	1.0	1.0	11	28	59
16†	-15.6	-19.0	-17.3	35.3	0.0	0.0	0.4	0.4	12	29	59
17†	-14.3	-23.5	-18.9	36.9	0.0	0.0	0.2	T	12		<31
18†	-8.6	-29.7	-19.2	37.2	0.0	0.0	0.0	0.0	11		<31
19†	-5.8	-22.4	-14.1	32.1	0.0	0.0	T	T	11	28	35
20†	-11.1	-26.3	-18.7	36.7	0.0	0.0	0.4	0.2	11	29	54
21†	-15.9	-32.9	-24.4	42.4	0.0	0.0	0.0	0.0	11	30	37
22†	-14.2	-25.7	-20.0	38.0	0.0	0.0	0.0	0.0	10	29	39
23†	-16.7	-28.9	-22.8	40.8	0.0	0.0	T	T	10		<31
24†	-14.0	-23.6	-18.8	36.8	0.0	0.0	0.0	0.0	10	13	44
25†	-13.0	-24.9	-19.0	37.0	0.0	0.0	0.0	0.0	10		<31
26†	-11.0	-29.9	-20.5	38.5	0.0	0.0	0.0	0.0	10		<31
27†	-6.2	-20.4	-13.3	31.3	0.0	0.0	0.0	0.0	9		<31
28†	-0.6	-15.8	-8.2	26.2	0.0	0.0	0.0	0.0	9		<31
29†	-2.9	-13.8	-8.4	26.4	0.0	0.0	T	T	9		<31
30†	-4.8	-8.7	-6.8	24.8	0.0	0.0	0.0	0.0	9		<31
31†	-0.3	-8.4	-4.4	22.4	0.0	0.0	0.0	0.0	9		<31
Sum				**989.1**	**0.0**	**0.0**	**2.0**	**1.6**			
Avg	**-7.4**	**-20.4**	**-13.89**								
Xtrm	**5.6**	**-32.9**									

Instruments

Survey Trimble GPS
RTK ground base survey

Recording Sercel 408 DDU's with 18-meter extensions
Pelton-Vib Pro Vibroseis electronics

Parameters

60.06 kilometers

Receiver Spacing	10 meters
Source Spacing	20 meters Vibroseis
Number or Traces Recorded	400
Coverage	2000 %
Receiver array	1 DSU
Number of Sweeps	2
Sweep Length	16 seconds
Sweep Frequency	6 -130 Hz
Record Length	10 seconds
Sample Rate	2 Millisecond
Channels on Crew	800

Local Contracting

Local contracts and supplies were from the Town of Tulita, Norman Wells, and various suppliers from the south for goods or services not obtainable in the region.

Contracts were sent out to the District Lands Corporation Business List and also distributed among local contractors to bid on the goods or services that were required to successfully complete the program.

Awarded contracts were based on commercial terms, safety and the ability to supply the goods or services.

Local Benefits

Prior to the recording crew arriving in the field, an HSE / HR advisor was stationed in Tulita to work with the local employment office to hire on and train potential re-hires and new hires.

After passing a company drug testing policy, the candidates were then trained in WHIMS, H2S, and CORE (Crew Orientation Recording Education).

Geophysical Data Processing

The processing for each of the lines is enclosed.

-125°45'00" -125°30'00" -125°15'00"

65°10'00"

65°00'00"

B-62
PETROCAN

SAHTU
Settlement Area

TULITA
DISTRICT

EL454
MGM

TUL-02
10.91 kms

EL454
MGM

EL440
MGM

GREAT BEAR RIVER

O-20
CNRL

TUL-03
10.84 kms

TUL-01
22.89 kms

NO X-ING AT GREAT BEAR
MICROWAVE TX LINK ONLY
ALL VEHICLES DETOUR BACK ALONG SEISMIC LINES
& AROUND VIA EXISTING DOT OPERATED WINTER ROAD

BLOCK LAND TRANSFER

HAMLET OF TULITA

TUL-04
15.35 kms

K-14
CANDEL OIL LTD.

MACKENZIE RIVER

A-53
NSM RESOURCES LTD

EL454 EL440
MGM MGM

-125°45'00" -125°30'00" -125°15'00"

WELL LEGEND

ALL WELL SYMBOLS ARE BOTTOM HOLE LOCATIONS

- BITUMEN
- LOCATION
- SUSPENDED
- DRY & ABANDONED
- WATER INJECTED
- ABANDONED WATER INJ.
- SUSPENDED OIL & GAS
- SERVICE
- ABANDONED OIL & GAS
- DRILLING
- SURFACE HOLE LOCATION
- GAS
- OIL & GAS
- ABANDONED GAS
- SUSPENDED GAS
- CAPPED GAS
- OIL
- ABANDONED OIL
- SUSPENDED OIL
- CAPPED OIL
- STANDING

LEGEND

- PROPOSED SEISMIC EXISTING CUT
- PROPOSED SEISMIC NEW CUT
- AIRSTRIP
- WINTER ROAD
- CUTLINE
- ENBRIDGE PIPELINE
- PIPELINE CROSSING
- EXPLORATION LICENCE (EL)
- FIRST NATIONS ARE SURFACE OWNERS (NO MINERAL RIGHTS)

TULITA SEISMIC

	NEW CUT	EXISTING	TOTALS
TUL-01	18.43 km	4.46 km	22.89 km
TUL-02	10.91 km	0 km	10.91 km
TUL-03	0.79 km	10.05 km	10.84 km
TUL-04	6.23 km	9.12 km	15.35 km
TOTALS	36.36 km	23.63 km	59.99 km

NOTE:
SEISMIC LINE THICKNESS DEPICTED ON MAP ARE MUCH THICKER THAN ACTUAL SCALE FOR ENHANCED VISIBILITY

SCALE 1:75,000
KILOMETRES
1 .5 0 1 2 3
.5 .25 0 1 2
MILES
UTM PROJECTION
NAD 1927 - UTM ZONE 9 (CM129)

CONTOUR INTERVAL - 20M

explor
Suite 1800, 717 - 7th Ave. SW
Calgary, Alberta T2P 0Z3
PH: (403) 263-5950 FX: (403) 269-5252

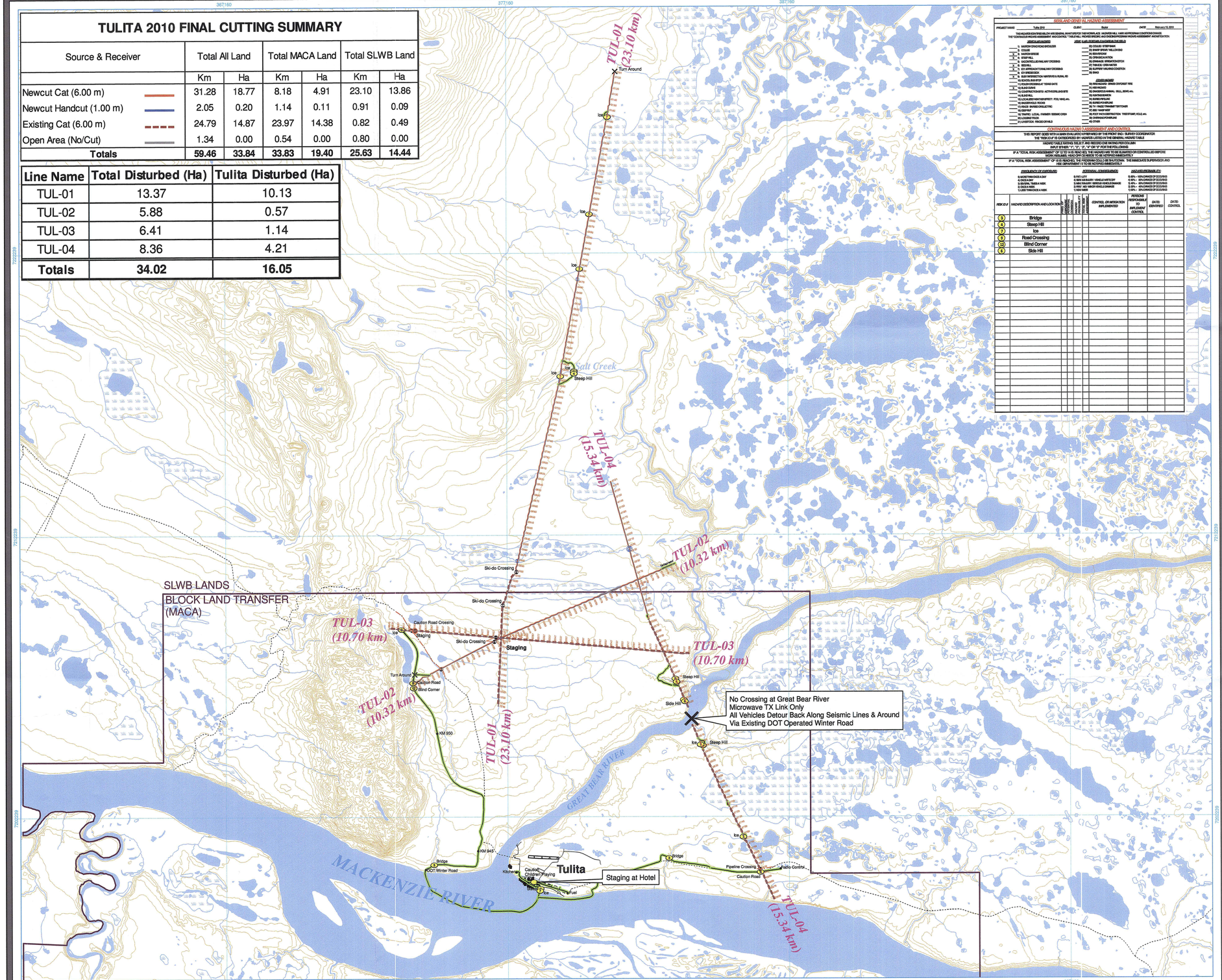
TULITA 2010

090182.bor (Steinkey) | November 26, 2009

TULITA 2010 FINAL CUTTING SUMMARY

Source & Receiver	Total All Land		Total MACA Land		Total SLWB Land	
	Km	Ha	Km	Ha	Km	Ha
Newcut Cat (6.00 m)	31.28	18.77	8.18	4.91	23.10	13.86
Newcut Handcut (1.00 m)	2.05	0.20	1.14	0.11	0.91	0.09
Existing Cat (6.00 m)	24.79	14.87	23.97	14.38	0.82	0.49
Open Area (No/Cut)	1.34	0.00	0.54	0.00	0.80	0.00
Totals	**59.46**	**33.84**	**33.83**	**19.40**	**25.63**	**14.44**

Line Name	Total Disturbed (Ha)	Tulita Disturbed (Ha)
TUL-01	13.37	10.13
TUL-02	5.88	0.57
TUL-03	6.41	1.14
TUL-04	8.36	4.21
Totals	**34.02**	**16.05**



SEISLAND GRID HAZARD ASSESSMENT

CONTINUOUS HAZARD ASSESSMENT AND CONTROL

RISK ID #	HAZARD DESCRIPTION AND LOCATION	PRE-CONTROL PROBABILITY	PRE-CONTROL SEVERITY	PRE-CONTROL RISK ASSESSMENT	CONTROL OR INTERACTION IMPLEMENTED	PERSON RESPONSIBLE TO IMPLEMENT CONTROL	DATE(S) IDENTIFIED	DATE(S) CONTROL
3	Bridge							
4	Steep Hill							
5	Ice							
9	Road Crossing							
10	Blind Corner							
6	Side Hill							

Seisland Surveys Ltd.
7235 Flint Road, SE
Calgary, Alberta Canada
T2H 1G2
Tel. 403.255.2770
Fax. 403.253.2049
www.seisland.com

TULITA 2010

AS SURVEYED

PARAMETERS

Source	Receiver
Total Number of Source Points: 2,848	Total Number of Receiver Points: 2,978
Source Point Interval: 20 m	Receiver Point Interval: 20 m
Source Line Interval: N/A	Receiver Line Interval: N/A
Total Length of Source Line: 59.46 km	Total Length of Receiver Line: 59.46 km

Total Kilometers: 59.46 km Program Area: N/A

SEGP1 Version: Surveyed SEGP1's (rcv'd February 22, 2010)

PROGRAM INFORMATION

Licensee: TBA
License #: TBA
Equipment: Wheels/Track
Line Type: TBA
Clearing Type: TBA

Permitee: TBA
Permit #: TBA
Energy Source: Vibrosels
Government Approval #: TBA

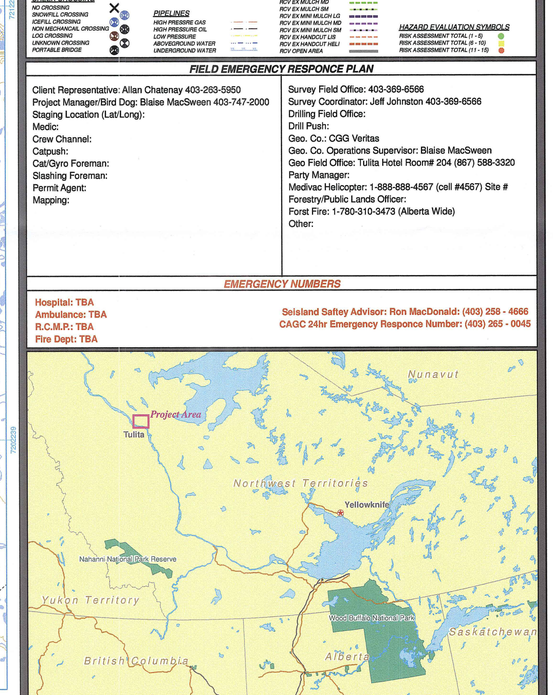
2 1 0 2 Kilometers
1 :65,000
1 " = 1.65 KM

NAD 83 UTM Zone 10
NTS 1:50K Mapsheets: 96-C-13,14, 96-F-03,04

Date: June 02, 2010
Seisland Job#: 09-0085

Disclaimer:
This map was assembled from multiple data sources topographical, oil & gas, government, orthophoto) and is designed as a reference only for the area of interest. Seisland Surveys Limited does not guarantee its accuracy or assume any responsibility for errors or omissions which may occur. The Legend is standardized for all map types, therefore not all legend features may appear on every map.

LEGEND



FIELD EMERGENCY RESPONCE PLAN

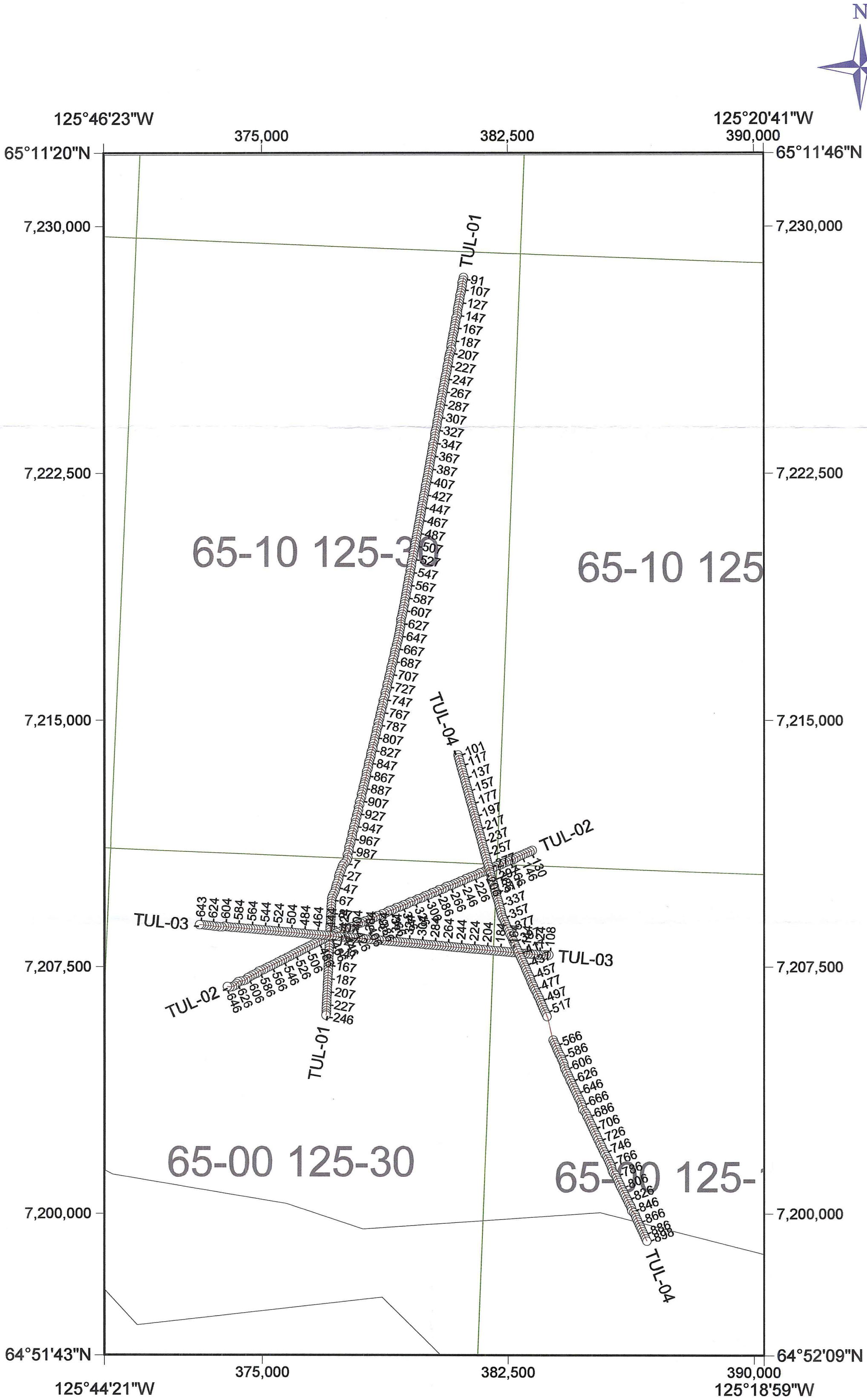
Client Representative: Allan Chatenay 403-263-5950
Project Manager/Bird Dog: Blaise MacSween 403-747-2000
Staging Location (Lat/Long):
Medic:
Crew Channel:
Catpush:
Cat/Gyro Foreman:
Slashing Foreman:
Permit Agent:
Mapping:

Survey Field Office: 403-369-6566
Survey Coordinator: Jeff Johnston 403-369-6566
Drilling Field Office:
Drill Push:
Geo. Co.: CGG Veritas
Geo. Co. Operations Supervisor: Blaise MacSween
Geo Field Office: Tulita Hotel Room# 204 (867) 588-3320
Party Manager:
Medivac Helicopter: 1-888-888-4567 (cell #4567) Site #
Forestry/Public Lands Officer:
Forst Fire: 1-780-310-3473 (Alberta Wide)
Other:

EMERGENCY NUMBERS

Hospital: TBA
Ambulance: TBA
R.C.M.P.: TBA
Fire Dept: TBA

Seisland Saftey Advisor: Ron MacDonald: (403) 258 - 4666
CAGC 24hr Emergency Responce Number: (403) 265 - 0045



Scale - 1 : 250,000

2.5 0 2.5 5 7.5 10 12.5 Kilometers

2.5 0 2.5 5 7.5 Miles

Software by Accu-Audit Ltd.

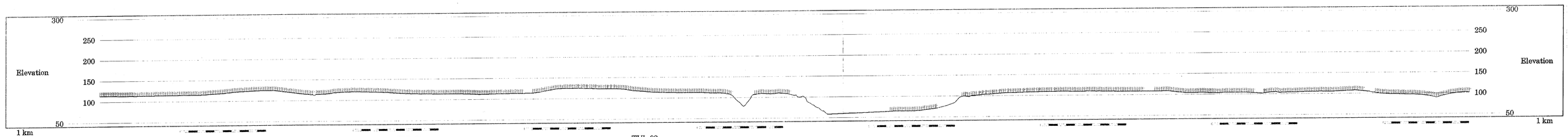
Explor

Tulita

TUL-01, TUL-02, TUL-03, TUL-04

Datum: NAD27	Ellipsoid: Clarke 1866
Projection: UTM Zone 10	Grid: ATS 4.1
Made By: Shayleen Carmichael	April 8, 2010

South East



TV Stack Fold (Final Mute)

Shotpoint

CDP

Stack Fold

Tulita, N.W.T.
Line TUL-04

NTS 96-C

SP 101 - 898

PostStack Migrated Stack

Normal Polarity

1:20000

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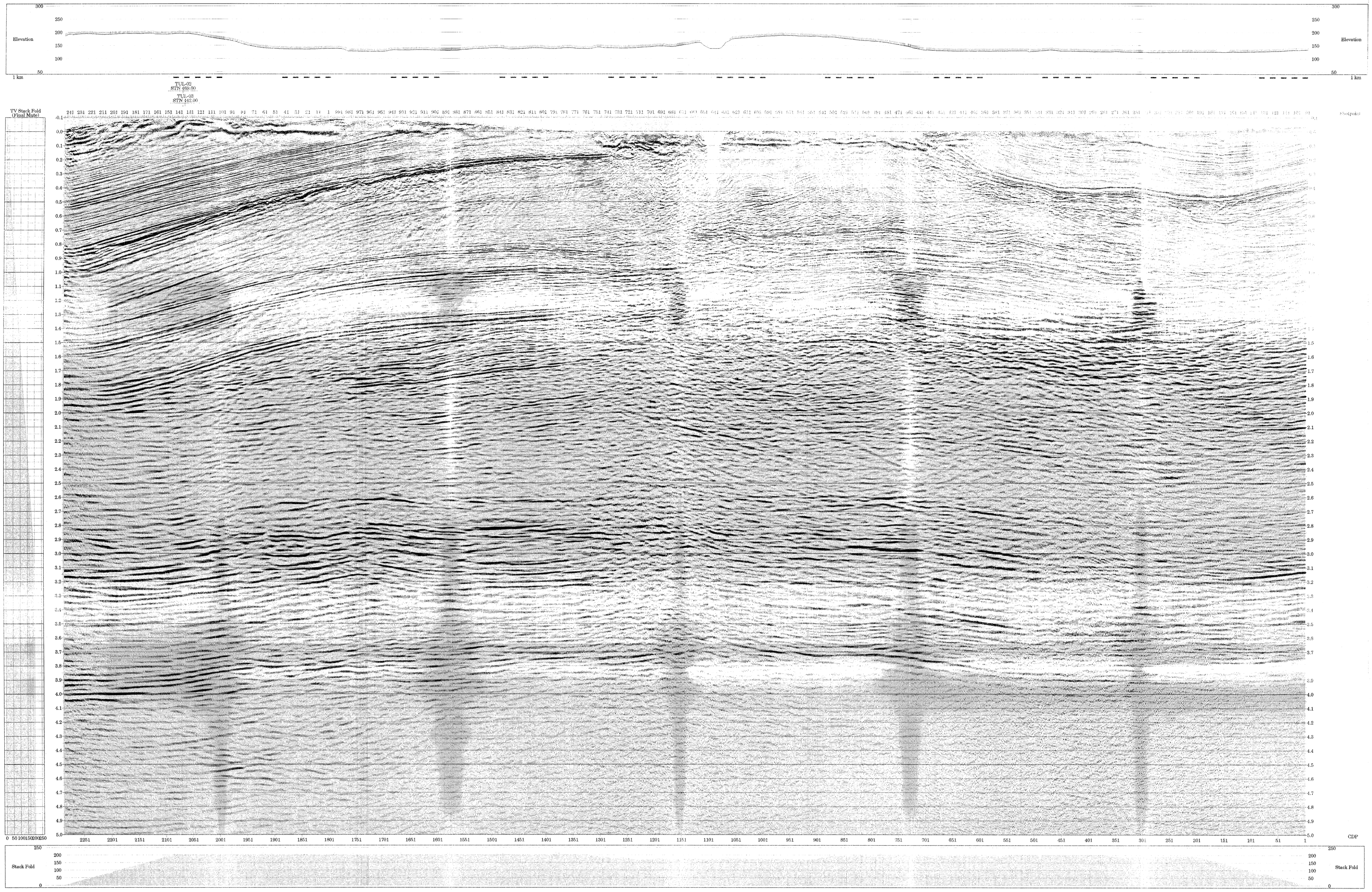
FIELD PARAMETERS

Recorded by	VDSC, Crew# 697 2010
Recorded for	Explor
Amplifier	Sercel 408XL, 401 channels SIG-D format, IEEE Floating Point 3/4 Nyquist, Minimum Phase, Notch OUT
Record Length	10.0 seconds 2 ms sample interval
Source	Vibrosis, 3 vibs over 90 meters 6-150 Hz, 2 sweeps of 16 sec, linear
Sensors	DSU-3, single 3-component 3 degrees tolerance, not 2 orientated
Source Interval Group Intervals Nominal Fold	20 meters 20 meters 2000%
All line nine rolling through	
Trace Balancing	Shot/Receiver
Time-Variant Spectral Whitening Balancing window length Balancing bandwidth Number of frequency panels	500 ms 4/10-120/150 Hz 12
CDP Trim Statics Model Maximum allowed shift Correlation window	5x filtered structure stack 6 ms 200-2600 ms
Normal Moveout Correction	
Front-End Muting Offset Mute time	**820 340 720 4000 m** **0 300 660 8000 ms**
Automatic Gain Control AGC operator length	**500 ms, 10/15-60/80 Hz band**
CDP Stack	mean +300 ms bulk shift
Time-Variant Spectral Whitening Balancing window length Balancing bandwidth Number of frequency panels	500 ms 4/10-120/150 Hz 12
Trace Equalization	mono 0-4000 ms
F-X Predictive Filtering Operator size Horizontal window length Time window length Time window taper	7 samples 40 traces 100 ms 50 ms
Diffusion Filter **Design window size** **Number of diffusion steps** **Diffusion rate**	**11 traces x 15 ms** **1** **0.25**
Poststack Time Migration From Surface Method Dip aperture Velocity function	Implicit Finite Difference 0-65 degrees 100% of smoothed stacking velocities
Time Variant Bandpass Filter Zero-phase Ormsby	5/10-120/140 Hz at 0-1000 ms 5/10-80/80 Hz at 2000-6000 ms
Time Variant Scaling	mean, centre-to-centre multiple gates

DISPLAY PARAMETERS

Trace/Inch =	80.5	Display Gain =	0.7
Inches/Second =	5	Clip Limit =	3
NORMAL POLARITY		Wed Apr 28 16:01:53 2010	

SENSOR GEOPHYSICAL LTD.



North

Tulita, N.W.T.
Line TUL-01

NTS 96-C

SP 246-0.999-91

PostStack Migrated Stack
Normal Polarity

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film, tape, etc. This does not limit
use of unaltered or otherwise
work for any application for

FIELD PARAMETERS

Recording Instrument	24-bit
Geophone Array	12 in line
Sample Interval	2 ms
Record Length	10 seconds
Source	3-degree magnetic north orientation
Source Interval	12 m
Source Array	2 holes
Receiver Interval	25 m
Receiver Array	12 in line
Fold	60

PROCESSING SEQUENCE

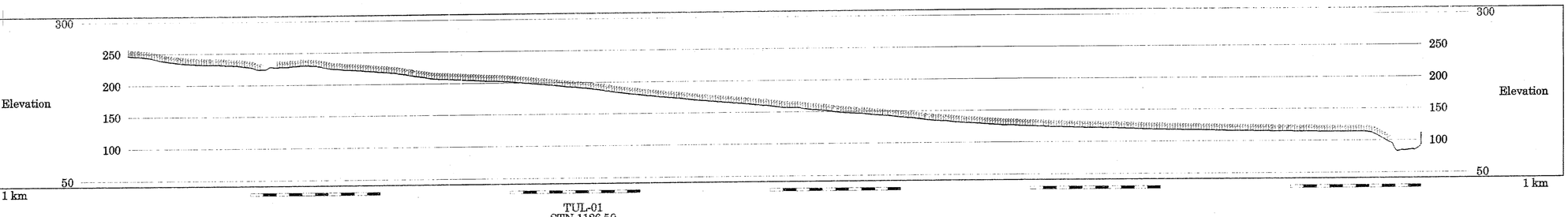
Processed by	Seismic Geophysical Inc. April, 2010
Reformat	
Record length	10.0 seconds
Sample interval	2 ms
2D Geometry Assignment	Crooked Line Binning
CDP Bin size	10 meters
Trace Edits	
Sinusoidal Noise Removal	25, 45, 50 Hz
Singular Value Decomposition	to remove surface generated noise
True Amplitude Recovery	
Method	Spherical divergence correction
Additional gain	4 dB/second
Surface-Consistent Deconvolution	
Components	Resolved: Source, Receiver, Offset
	Applied: Source, Receiver
Type	Spiking
Operator length	100 ms
Prewhitening	1%
Design window	0-3400 ms at 0 m offset, 2000-3480 ms at 4000 m offset
Vibroseis Deco; Compensation	
Reflection Statics Correction	
Datum elevation	300 m
Replacement velocity	2500 m/s
Number of iterations	Floating
Number of layers replaced	2
Surface-Consistent Statics	
Method	MASTI Correlation
Maximum allowed shift	20 ms
Correlation window	200-2600 ms
Surface-Consistent Statics	
Method	Stack power maximization
Maximum allowed shift	20 ms
Correlation window	200-2600 ms
Velocity Analysis	
Surface Consistent Amplitude Scaling	Shot/Receiver
F-X Adaptive Noise Suppression	
Offset Consistent Gain Control	
Time-Variant Spectral Whitening	
Balancing window length	500 ms
Balancing bandwidth	4/10-150/150 Hz
Number of frequency panels	12
CDP Trim Statics	
Model	f-k filtered structure stack
Maximum allowed shift	6 ms
Correlation window	200-2600 ms
Normal Moveout Correction	
Panel-End Muting	
Offset	220 840 @ 4000 m
Mute time	0 300 @ 8000 ms
Automatic Gain Control	
AGC operator length	500 ms, @12-40/80 Hz band
CDP Stack	
Type	mean
Time-Variant Spectral Whitening	+500 ms bulk shift
Balancing window length	100 ms
Balancing bandwidth	4/10-120/150 Hz
Number of frequency panels	12
Trace Equalization	Static
	0-4000 ms
F-X Prediction Filtering	
Operator size	7 samples
Horizontal window length	6 traces
Time window length	100 ms
Time window ovprp	50 ms
Diffusion Filter	
Design window size	11 traces x 15 ms
Number of diffusion steps	1
Diffusion rate	0.25
Time Migration	
Migration aperture	0-60 degrees
Velocity function	100% of smoothed stacking velocities
Time Variant Bandpass Filter	
Zero-phase Ormsby	8/10-120/140 Hz at 0-1000 ms
	8/10-80/80 Hz at 2000-6000 ms
Time Variant Scaling	mean, centre-to-centre multiple gates

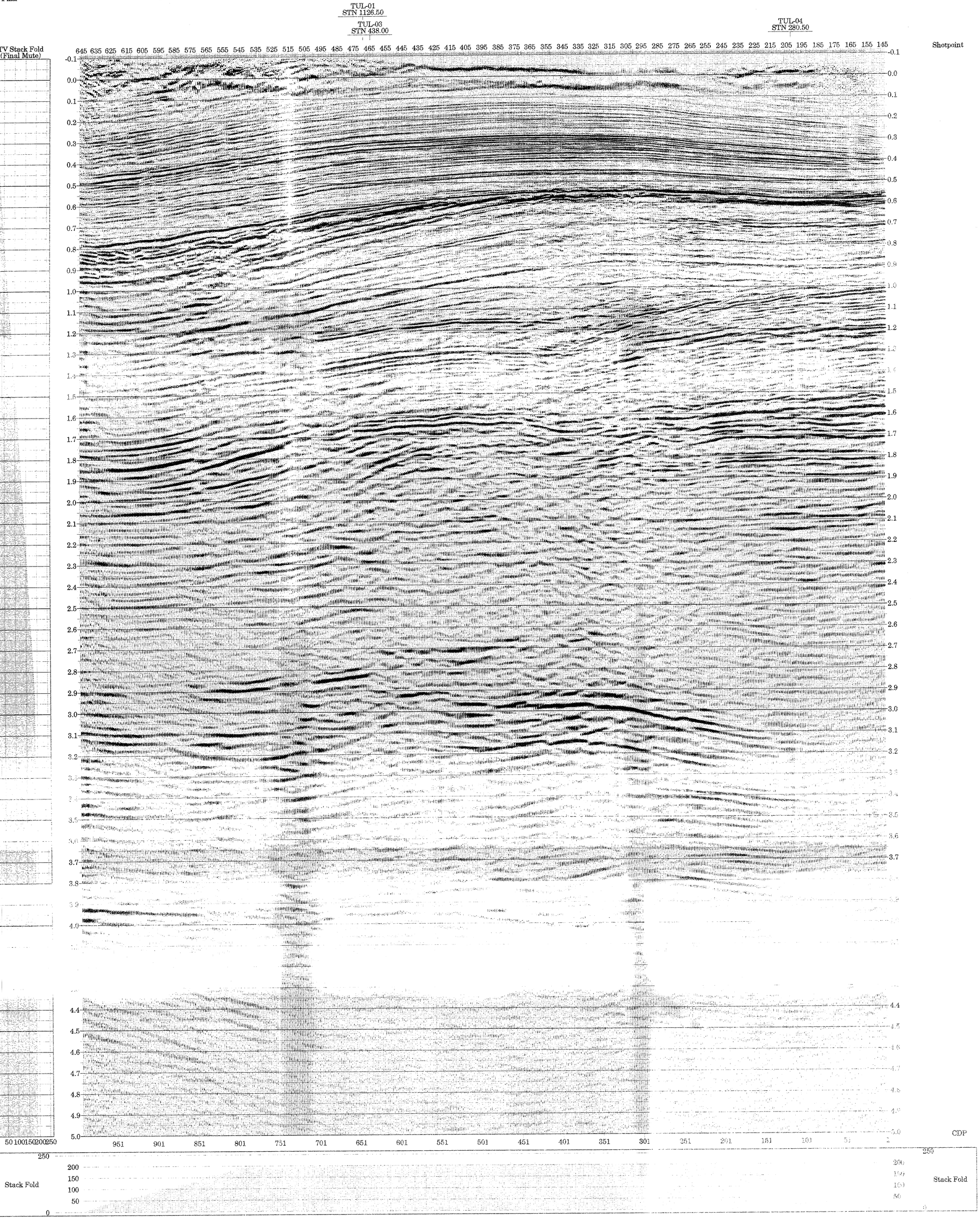
DISPLAY PARAMETERS

Trace/inch =	10.0	Display Gain =	0.1
Inches/Second =	5	Clip Limit =	3
NORMAL POLARITY		Wed Apr 28 15:46:25 2010	

SENSOR GEOPHYSICAL LTD.

North East





explor

Tulita, N.W.T.
Line TUL-02

NTS 96-C

SP 646 - 157

PostStack Migrated Stack
Normal Polarity
1:20000

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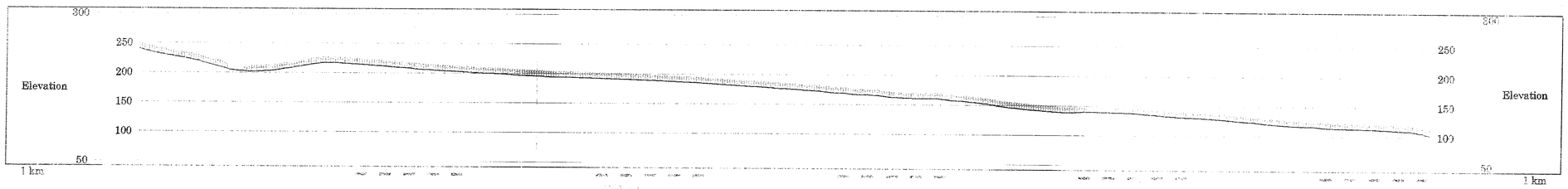
FIELD PARAMETERS

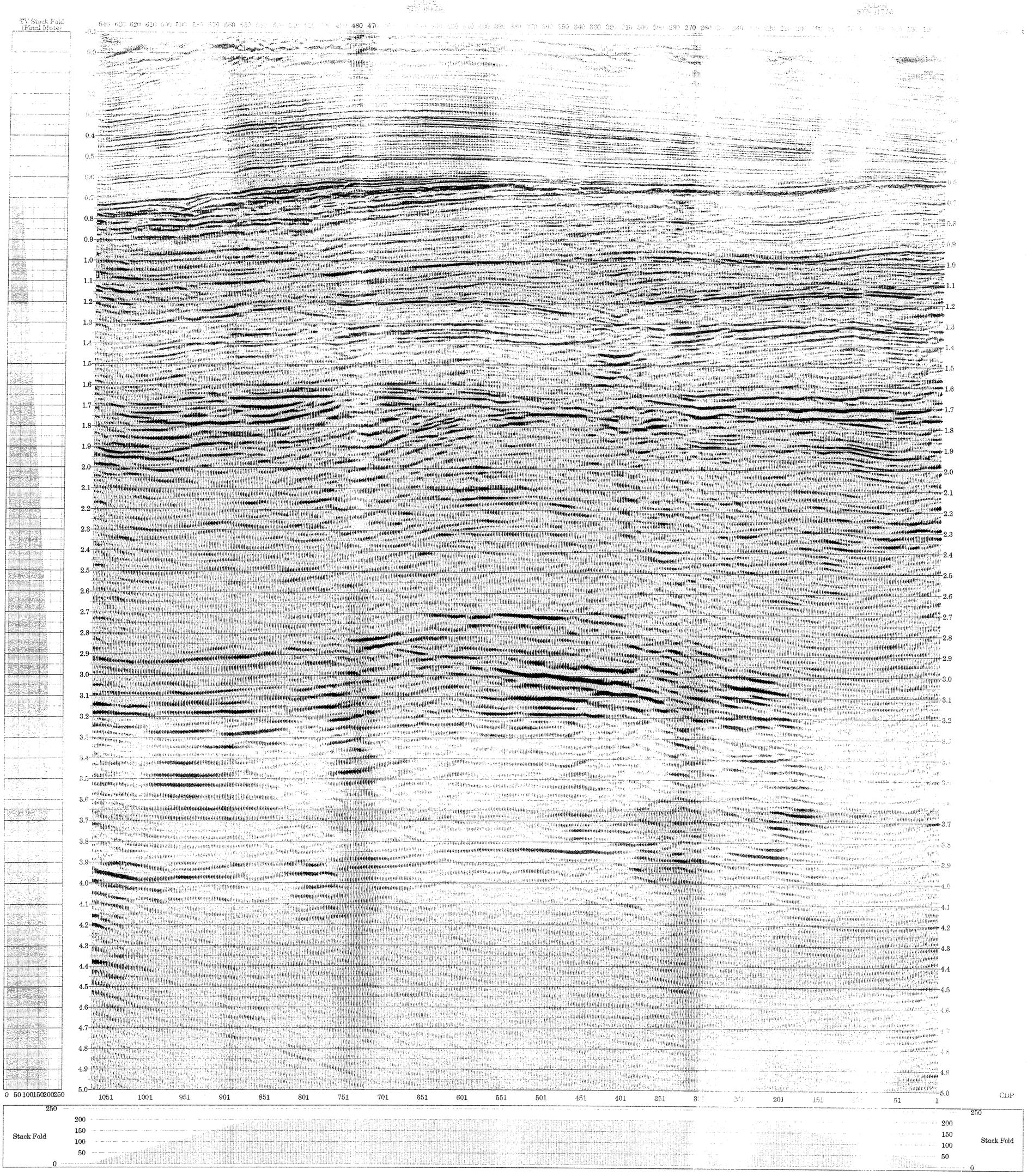
Recorded by	[illegible]
Recorded for	[illegible]
Amplifie	[illegible]
Record Length	10.0 seconds 2 ms sample interval
Source	Vibroseis, 3 vibs over 80 meters 6-180 Hz, 2 sweeps of 16 sec, linear
Sensors	DSU-3, single 3-component 0 degrees magnetic north orientation
Source Interval Group Interval Nominal Fold All arrays rolling through	20 meters 20 meters 240%

PROCESSING SEQUENCE

Processed by	Sensor Geophysical Ltd. April, 2010
Reformat Record length Sample interval	 10.0 seconds 2 ms
2D Geometry Assignment CDP Bin size	Crooked Line Binning 10 meters
Trace Kills	
Sinuscidal Noise Removal	25, 45, 50 Hz
Singular Value Decomposition	to remove surface generated noise
True Amplitude Recovery Method Additional gain	 Spherical divergence correction 4 dB/second
Surface-Consistent Deconvolution Components Type Operator length Prewhitening Design window	 Resolved: Source, Receiver, Offset Applied: Source, Receiver Spiking 100 ms 0.1% 86-8400 ms at 0 m offset 2000-8480 ms at 4000 m offset
Vibroseis Decon Compensation	
Refraction Statics Correction Datum elevation Replacement velocity Processing datum Number of layers replaced	 300 m 3300 m/s Floating 2
Surface-Consistent Statics Method Maximum allowed shift Correlation window	 MASTT Correlation 20 ms 200-2600 ms
Surface-Consistent Statics Method Maximum allowed shift Correlation window	 Stack power maximization 20 ms 200-2600 ms
Velocity Analysis	
Surface Consistent Amplitude Scaling	Shot/Receiver
T-F Adaptive Noise Suppression	
Offset Consistent Gain Control	
Time-Variant Spectral Whitening Balancing window length Balancing bandwidth Number of frequency panels	 500 ms 4/10-130/150 Hz 12
CDP Trim Statics Model Maximum allowed shift Correlation window	 f-x filtered structure stack 6 ms 200-2600 ms
Normal Moveout Correction	
Front-End Muting Offset Mute time	 320 340 720 4000 m 0 300 680 3000 ms
Automatic Gain Control AGC operator length	 500 ms, 10/15-60-80 Hz band
CDP Stack	[illegible] [illegible] ms shift
Time-Variant Spectral Whitening Balancing window length Balancing bandwidth Number of frequency panels	 [illegible] ms [illegible] Hz [illegible]
Trace Equalization	[illegible] [illegible]
F-X Prediction Filtering Operator size Horizontal window length Time window length Time window taper	 [illegible] [illegible] traces [illegible] ms [illegible] ms
Diffusion Filter Design window size Number of diffusion steps Diffusion rate	 11 traces x 15 ms 1 0.25
Poststack Time Migration From Surface	[illegible]

East





explor

Tulita, N.W.T.
Line TUL-03

SP 640 - 10[illegible]

PostSt[illegible]ted

Nor[illegible]

© [illegible]
Explor[illegible] as the [illegible] Geos, [illegible] used, transm[illegible] without licence[illegible] from Explor.

FIELD PARAMETERS

Recorded by	[illegible]
Recorded for	Explor
Amplifier	Sercel 408XL, 401 channels SEG-D format, IEEE Floating Point 3/4 Nyquist Minimum Phase, Notch OUT
Record Length	10.0 seconds 2 ms sample interval
Source	Vibroseis, 3 vibe over 30 meters 6-130 Hz, 2 sweeps of 16 sec, linear
Sensors	DSU-3, single 3-component 0 degrees magnetic north orientation
Source Interval	20 meters
Group Interval	20 meters
Nominal Fold	2000[illegible]
All live shots rolling through	

PROCESSING SEQUENCE

Processed by	Sensor Geophysical Ltd. April, 2010
Reformat	
Record length	10.0 seconds
Sample interval	2 ms
2D Geometry Assignment	Crooked Line Binning
CDP Bin size	10 meters
Trace Kills	
Sinusoidal Noise Removal	25, 45, 50 Hz
Singular Value Decomposition	to remove surface generated noise
True Amplitude Recovery	
Method	Spherical divergence correction
Additional gain	4 dB/second
Surface-Consistent Deconvolution	
Components	Resolved: Source, Receiver, Offset Applied: Source, Receiver
Type	Spiking
Operator length	160 ms
Prewhitening	0.1%
Design window	85-3400 ms at 0 m offset 2000-3480 ms at 4000 m offset
Vibroseis Decon Compensation	
Refraction Statics Correction	
Datum elevation	300 m
Replacement velocity	3300 m/s
Processing datum	Floating
Number of layers replaced	2
Surface-Consistent Statics	
Method	MASTT Correlation
Maximum allowed shift	20 ms
Correlation window	200-2600 ms
Surface-Consistent Statics	
Method	Stack power maximization
Maximum allowed shift	20 ms
Correlation window	200-2600 ms
Velocity Analysis	
Surface Consistent Amplitude Scaling	Shot/Receiver
T-F Adaptive Noise Suppression	
Offset Consistent Gain Control	
Time-Variant Spectral Whitening	
Balancing window length	500 ms
Balancing bandwidth	4/10-130/150 Hz
Number of frequency panels	12
CDP Trim Statics	
Model	f-x filtered structure stack
Maximum allowed shift	6 ms
Correlation window	200-2600 ms
Normal Moveout Correction	
Front-End Muting	
Offset	320 840 720 4000 m
Mute time	0 800 680 3000 ms
Automatic Gain Control	
AGC operator length	500 ms, 10/15-80/80 Hz band
CDP Stack	[illegible]
Time-Variant Spectral Whitening	
Balancing window length	[illegible] ms
Balancing bandwidth	[illegible] Hz
Number of frequency panels	[illegible]
Trace Scaling	[illegible]
Time-Variant Filtering	[illegible]
Diffusion Filter	
Design window size	11 traces x 15 ms
Number of diffusion steps	1
Diffusion rate	0.25
Post-stack Time Migration From Surface	
Method	[illegible] Finite Difference
Dip aperture	0-65 degrees
Velocity function	100% of smoothed stacking velocities
Time Variant Bandpass Filter	
Zero-phase Ormsby	5/10-130/140 Hz at 0-1000 ms 5/10-90/80 Hz at 2000-4000 ms
Time Variant Scaling	mean centre-to-centre multiple gates

DISPLAY PARAMETERS

Traces/Inch =	[illegible]	Display Gain =	0.7
Inches/Second =	5	Clip Limit =	3
NORMAL POLARITY		Wed Apr 28 15:59:43 2010	

SENSOR GEOPHYSICAL LTD.