



SAHTU 2008 2D

NEB Final Plan Report

GOA # 9224-E243-001P

September , 2008

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## Introduction

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This report accounts for the results of the work conducted on Sahtu 2008 seismic acquisition program initiated by Explor. The program was conducted in line with the benefits agreement reached with the community of K'asho Got'ine and as required by the benefits plan submitted to INAC.

In September of 2007, CGGVERITAS (CGGV) was awarded a dynamite 2D contract to record 196 kilometers of seismic in the Colville Lake District of the NWT for Explor.

Explor's contract with CGGVeritas assigned CGGVeitas as prime contractor. The contract also included specific requirements to comply with the provisions contained in Explor's Benefits Agreements with the community of K'asho Got'ine and our Benefits Plan approved by INAC.

At this point, mitigation was put in place for the risk assessment, emergency response plan and a time line along with a list for RFP's to what would be required to successfully complete the program.

On the week of November 15th to November 28th, bids were sent out for the following services.

The services that were required included:

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

Heavy Equipment consisted of cats for line clearing and moving the sleigh camps. Delta II and Delta III's for hauling fuel and water.

## Logistics

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Upon arrival of the Project Manager in Norman Wells on Jan 5<sup>th</sup>, meetings were held with the regulators and contractors to go over the equipment and the logistics of the program.

The road to Fort Good Hope and Colville Lake was still under construction along with the river crossing at Hare Indian River. The weather through out the winter remained in our favor. It stayed cold with the snow at a depth of about 3 feet.

To start the program, a small crew was situated in Colville Lake to open up line CVL-04, and proceed into the program core. Once a portion of line was opened up the camp along with auxiliary equipment was then moved from Norman Wells to site.

Once production started on CVL-04 with the drills, it was determined that the drill power would not stay ahead of the recording crew, so CVL-04 was then changed to a vibroseis line and extra drills were trucked in to complete the core program and it was then decided to add the western extension to CVL-03 into the program using dynamite as a source.

When the cutting, survey and drills finished on CVL-03, due to it being late in the season and the equipment having to be back in Norman Wells, the camp and recording crew was moved into Norman Wells and the recording crew utilized a Bell 212 helicopter and a fixed wing airplane to transport the crew to and from the field.

Other than the cold weather throughout the winter that slowed production down at times, the only other weather related problems was in late March where the recording crew was down for 4 days due to snow and white out conditions in Norman Wells where they were unable to fly to the program.

The core program consisted of 196 kilometers and with the addition of the western extension to CVL-03; the total program was at 276.05 kilometers.

## **Timeline**

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<b>Project Manager</b>	Dec 28 2007 to Mar 31 2008
<b>HSE Advisor</b>	Jan 04 2008 to April 12 2008
<b>Monitors</b>	Jan 18 2008 to Mar 26 2008
<b>Medic</b>	Jan 09 2008 to Apr 12 2008
<b>Line Clearing/Slashing</b>	Jan 02 2008 to Mar 14 2008
<b>Survey</b>	Jan 28 2008 to Mar 17 2008
<b>Drilling</b>	Feb 13 2008 to Mar 28 2008
<b>Recording</b>	Feb 25 2008 to Apr 13 2008

## **Equipment**

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**Project Manager / HSE Advisor** (1)-110 Nodwell / 2-4X4 Trucks

**Monitors** (2) - Ski-doos

**Survey** (1)-4 x 4 truck / 1Track Unit / 2-Ski-Doos

**Medic** (1)-Ski- Doo

**Slashers** (2)-4 x 4 Pick-ups / 2 Ski-doos

**Heavy Equipment**

- (4) 4 x 4 trucks
- (1) 110 Nodwell
- (3) D6 LGP Cats
- (4) D7 LGP Cats
- (3) Delta III's Water/Fuel
- (1) IT38G Loader
- (1) Jet Ranger 206 Helicopter
- (1) Grader
- (3) Fuel Sloops
- (1) Tandem Water Hauler
- (1) Tandem Fuel Hauler
- (1) Sleigh Mounted Survival Shack
- (1) BR 180 Snow Cat

**Camps** (1) 50 Man Sleigh Camp

**Drills**

- (4) 110 Nodwell Drills
- (3) LIS Tracked Drills
- (4) 4 x 4 Trucks
- (1) Sleigh Mounted Dynamite Magazine

**Recording Crew**

- (5) 110 Nodwells
- (2) Ski-Doos
- (4) Mertz HD 18's (48,000 lbs) Tracked Vib
- (2) 4X4 Trucks
- (1) Fixed Wing Airplane
- (1) 212 Helicopter

## **Crew Members**

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<b>Recording Crew</b>	(includes Project Manager/HSE Advisor)	<b>27</b>
<b>Medics</b>		<b>1</b>
<b>Monitors</b>		<b>1</b>
<b>Advance Man</b>		<b>1</b>
<b>Survey</b>		<b>3</b>
<b>Slashers</b>		<b>4</b>
<b>Cat Operators</b>		<b>12</b>
<b>Cat Foreman</b>		<b>1</b>
<b>Aircraft Personnel</b>		<b>3</b>
<b>Delta Operators</b>		<b>3</b>
<b>Grader Operator</b>		<b>1</b>
<b>Camp Staff</b>		<b>4</b>
<b>Loader Operator</b>		<b>1</b>
<b>Drillers / Helpers / Foremen</b>		<b>15</b>
<b>Drill Push</b>		<b>1</b>
<b>Total:</b>		<b>78</b>

## Production

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The **survey** production for a total of 276.05 kilometers was averaged out to 5.5 kilometers per day. This included control points. Mob and demob is excluded.

The **line clearing and slashing** production for a total of 276.05 kilometers was averaged out to 3.7 kilometers per day. Line clearing went very well with good frozen ground conditions and 3 feet of snow. Line clearing had some long detours on Line 03 due to lakes and an open creek.

The **drilling crew** averaged a total of 77 holes per day for a total of 3500 shot points, and this included walk time from line to line, along with some hard gravel drilling in areas.

The **recording crew** production, which included both vibroseis and dynamite, was at an average of 6.41 kilometers per day, and this included four days of weather.

## Weather











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The weather throughout the program was from minus 46.2 Celsius to plus 9.5 Celsius.











To follow are daily weather reports from Environment Canada for December 2007 to April 2008.











[http://www.climate.weatheroffice.ec.gc.ca/climateData/dailydata\\_e.html](http://www.climate.weatheroffice.ec.gc.ca/climateData/dailydata_e.html)













Daily Data Report for December 2007											
D a y	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 
<u>01</u>	-13.8	-22.4	-18.1	36.1	0.0	0.0	T	T	26	31E	56E
<u>02</u>	-21.9	-28.3	-25.1	43.1	0.0	0.0	0.0	0.0	26		<31
<u>03</u>	-25.9	-30.2	-28.1	46.1	0.0	0.0	0.0	0.0	26	13E	39E
<u>04</u>	-22.1	-32.2	-27.2	45.2	0.0	0.0	T	T	26	11E	56E
<u>05</u>	-29.5	-35.2	-32.4	50.4	0.0	0.0	0.0	0.0	26		<31
<u>06</u>	-28.9	-33.2	-31.1	49.1	0.0	0.0	0.0	0.0	25		<31
<u>07</u>	-20.3	-30.4	-25.4	43.4	0.0	0.0	0.0	0.0	25		<31
<u>08</u>	-17.2	-26.0	-21.6	39.6	0.0	0.0	T	T	24		<31
<u>09</u>	-11.4	-17.3	-14.4	32.4	0.0	0.0	4.8	3.2	24		<31
<u>10</u>	-12.2	-17.5	-14.9	32.9	0.0	0.0	2.8	2.0	30		<31
<u>11</u>	-11.8	-20.1	-16.0	34.0	0.0	0.0	T	T	30	11E	50E
<u>12</u>	-15.8	-25.1	-20.5	38.5	0.0	0.0	0.6	0.6	30		<31
<u>13</u>	-11.7	-15.9	-13.8	31.8	0.0	0.0	1.0	1.0	30		<31
<u>14</u>	-11.0	-15.7	-13.4	31.4	0.0	0.0	0.4	0.4	31		<31
<u>15</u>	-9.6	-17.1	-13.4	31.4	0.0	0.0	2.0	2.0	31	29E	43E
<u>16</u>	-17.0	-26.2	-21.6	39.6	0.0	0.0	2.8	2.8	35	28E	43E
<u>17</u>	-20.7	-27.2	-24.0	42.0	0.0	0.0	1.4	1.4	35		<31
<u>18</u>	-21.9	-31.6	-26.8	44.8	0.0	0.0	0.6	0.6	36		<31
<u>19</u>	-21.2	-29.0	-25.1	43.1	0.0	0.0	T	T	36		<31
<u>20</u>	-20.2	-29.3	-24.8	42.8	0.0	0.0	T	T	36		<31
<u>21</u>	-21.5	-32.1	-26.8	44.8	0.0	0.0	0.0	0.0	36		<31
<u>22</u>	-20.3	-31.1	-25.7	43.7	0.0	0.0	0.0	0.0	36		<31
<u>23</u>	-28.8	-33.5	-31.2	49.2	0.0	0.0	0.0	0.0	35		<31
<u>24</u>	-23.4	-33.0	-28.2	46.2	0.0	0.0	T	T	34		<31
<u>25</u>	-21.8	-28.5	-25.2	43.2	0.0	0.0	0.0	0.0	33		<31
<u>26</u>	-20.8	-27.3	-24.1	42.1	0.0	0.0	0.4	0.6	33		<31
<u>27</u>	-17.0	-21.0	-19.0	37.0	0.0	0.0	0.4	0.4	33	12E	48E
<u>28</u>	-18.1	-31.9	-25.0	43.0	0.0	0.0	0.0	0.0	33		<31
<u>29</u>	-27.1	-39.9	-33.5	51.5	0.0	0.0	T	T	33		<31
<u>30</u>	-23.0	-29.6	-26.3	44.3	0.0	0.0	T	T	33		<31
<u>31</u>	-24.2	-30.4	-27.3	45.3	0.0	0.0	T	T	33		<31
Sum				1288.0	0.0	0.0	17.2	15.0			
Avg	-19.7	-27.4	-23.5								
Xtrm	-9.6	-39.9								31B	56B

Daily Data Report for January 2008											
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	-17.8	-31.0	-24.4	42.4	0.0	0.0	0.0	0.0	32		<31
02	-16.4	-25.9	-21.2	39.2	0.0	0.0	0.6	0.6	32		<31
03	-22.9	-30.9	-26.9	44.9	0.0	0.0	0.0	0.0	33		<31
04	-23.4	-26.2	-24.8	42.8	0.0	0.0	0.2	0.2	33		<31
05	-22.7	-30.0	-26.4	44.4	0.0	0.0	3.4	3.2	34		<31
06	-20.3	-30.8	-25.6	43.6	0.0	0.0	T	T	36		<31
07	-21.0	-29.2	-25.1	43.1	0.0	0.0	T	T	37		<31
08	-29.2	-32.2	-30.7	48.7	0.0	0.0	T	T	36		<31
09	-26.6	-29.5	-28.1	46.1	0.0	0.0	0.4	0.4	36		<31
10	-28.0	-35.7	-31.9	49.9	0.0	0.0	0.6	0.6	36		<31
11	-26.6	-37.1	-31.9	49.9	0.0	0.0	T	T	36		<31
12	-26.4	-33.3	-29.9	47.9	0.0	0.0	0.0	0.0	34		<31
13	-25.9	-32.7	-29.3	47.3	0.0	0.0	2.0	1.6	34		<31
14	-27.9	-36.1	-32.0	50.0	0.0	0.0	T	T	35		<31
15	-34.3	-40.6	-37.5	55.5	0.0	0.0	T	T	34		<31
16	-23.4	-35.5	-29.5	47.5	0.0	0.0	T	T	38		<31
17	-20.0	-25.4	-22.7	40.7	0.0	0.0	3.0	3.0	38		<31
18	-17.9	-27.3	-22.6	40.6	0.0	0.0	T	T	41		<31
19	-23.6	-28.5	-26.1	44.1	0.0	0.0	T	T	41		<31
20	-15.3	-24.7	-20.0	38.0	0.0	0.0	0.0	0.0	41		<31
21	0.1	-21.2	-10.6	28.6	0.0	0.0	0.4	0.4	41	30E	56E
22	-4.2	-14.2	-9.2	27.2	0.0	0.0	0.0	0.0	38		<31
23	-2.8	-14.7	-8.8	26.8	0.0	0.0	0.0	0.0	36		<31
24	-9.6	-27.5	-18.6	36.6	0.0	0.0	T	T	34	32E	35E
25	-17.3	-25.8	-21.6	39.6	0.0	0.0	T	T	32	29E	57E
26	-25.8	-33.9	-29.9	47.9	0.0	0.0	T	T	32	30E	56E
27	-26.2	-35.7	-31.0	49.0	0.0	0.0	1.2	1.2	32	30E	46E
28	-33.4	-40.0	-36.7	54.7	0.0	0.0	T	T	33		<31
29	-37.9	-43.9	-40.9	58.9	0.0	0.0	0.0	0.0	32		<31
30	-35.7	-42.4	-39.1	57.1	0.0	0.0	0.0	0.0	29		<31
31†	-38.1	-44.9	-41.5	59.5	0.0	0.0	0.0	0.0			<31
Sum				1392.5	0.0	0.0	11.8	11.2			
Avg	-22.6	-31.2	-26.89								
Xtrm	0.1	-44.9								29E	57E

Daily Data Report for February 2008											
D a y	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†	-38.2	-45.5	-41.9	59.9	0.0	0.0	0.0	0.0	25		<31
02†	-35.8	-42.4	-39.1	57.1	0.0	0.0	0.0	0.0	23		<31
03†	-37.9	-44.7	-41.3	59.3	0.0	0.0	0.0	0.0	21		<31
04†	-32.7	-39.0	-35.9	53.9	0.0	0.0	0.6	0.8	21		<31
05†	-34.7	-44.3	-39.5	57.5	0.0	0.0	T	T	21		<31
06†	-40.0	-46.2	-43.1	61.1	0.0	0.0	T	T	21		<31
07†	-36.6	-43.9	-40.3	58.3	0.0	0.0	T	T	20		<31
08†	-30.3	-39.2	-34.8	52.8	0.0	0.0	1.2	0.8	20	30	37
09†	-28.5	-41.7	-35.1	53.1	0.0	0.0	0.0	0.0	21		<31
10†	-29.9	-39.0	-34.5	52.5	0.0	0.0	T	T	20		<31
11†	-25.0	-42.4	-33.7	51.7	0.0	0.0	0.0	0.0	20	13	33
12†	-20.0	-25.5	-22.8	40.8	0.0	0.0	T	T	18	11	67
13†	-20.5	-25.0	-22.8	40.8	0.0	0.0	T	T	18	13	50
14†	-20.3	-26.0	-23.2	41.2	0.0	0.0	T	T	18	13	33
15†	-20.1	-23.2	-21.7	39.7	0.0	0.0	1.6	1.6	20		<31
16†	-17.5	-24.0	-20.8	38.8	0.0	0.0	0.8	0.2	20		<31
17†	-15.0	-22.7	-18.9	36.9	0.0	0.0	0.0	0.0	20		<31
18†	-14.7	-20.1	-17.4	35.4	0.0	0.0	0.0	0.0	20		<31
19†	-9.3	-22.8	-16.1	34.1	0.0	0.0	0.0	0.0	19		<31
20†	-10.2	-19.1	-14.7	32.7	0.0	0.0	0.0	0.0	18		<31
21†	-10.2	-19.7	-15.0	33.0	0.0	0.0	0.0	0.0	16		<31
22†	-7.4	-16.3	-11.9	29.9	0.0	T	0.0	T	16		<31
23†	-3.6	-13.1	-8.4	26.4	0.0	0.0	0.4	0.4	15	28	35
24†	-11.2	-17.8	-14.5	32.5	0.0	0.0	0.2	0.2	15	28	32
25†	-17.8	-21.4	-19.6	37.6	0.0	0.0	1.4	1.0	15		<31
26†	-19.9	-29.5	-24.7	42.7	0.0	0.0	0.6	0.2	16		<31
27†	-23.7	-31.2	-27.5	45.5	0.0	0.0	0.0	0.0	16		<31
28†	-19.8	-34.3	-27.1	45.1	0.0	0.0	0.4	0.2	16	29	33
29†	-19.5	-33.3	-26.4	44.4	0.0	0.0	0.2	0.2	16	28	46
Sum				1294.7	0.0	T	7.4	5.6			
Avg	-22.4	-30.8	-26.61								
Xtrm	-3.6	-46.2								11	67

Daily Data Report for March 2008											
D a y	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†	-29.7	-38.5	-34.1	52.1	0.0	0.0	T	T	16		<31
02†	-24.0	-41.0E	-32.5E	50.5E	0.0E	M	M	0.0	15	M	M
03†	-23.9	-36.5	-30.2	48.2	0.0	0.0	0.0	0.0	15		<31
04†	-19.2	-32.9	-26.1	44.1	0.0	0.0	T	T	13		<31
05†	-10.8	-22.8	-16.8	34.8	0.0	0.0	0.0	0.0	13		<31
06†	-7.2	-13.8	-10.5	28.5	0.0	0.0	0.0	0.0	13		<31
07†	-5.6	-21.2	-13.4	31.4	0.0	0.0	0.0	0.0	12		<31
08†	-7.1	-15.2	-11.2	29.2	0.0	0.0	0.2	0.2	12	28	43
09†	-10.3	-18.3	-14.3	32.3	0.0	0.0	T	T	12	29	32
10†	-13.1	-17.0	-15.1	33.1	0.0	0.0	1.0	0.6	12		<31
11†	-11.4	-15.4	-13.4	31.4	0.0	0.0	3.2	2.4	14		<31
12†	-13.1	-17.3	-15.2	33.2	0.0	0.0	2.2	1.6	17		<31
13†	-16.3	-23.4	-19.9	37.9	0.0	0.0	0.2	0.2	18	29	44
14†	-19.5	-25.7	-22.6	40.6	0.0	0.0	0.2	0.2	17		<31
15†	-15.7	-32.9	-24.3	42.3	0.0	0.0	T	T	17		<31
16†	-18.8	-33.9	-26.4	44.4	0.0	0.0	T	T	17		<31
17†	-22.3	-29.3	-25.8	43.8	0.0	0.0	0.4	0.4	17		<31
18†	-21.3	-30.5	-25.9	43.9	0.0	0.0	0.2	0.2	17		<31
19†	-20.6	-30.1	-25.4	43.4	0.0	0.0	0.6	0.6	17		<31
20†	-18.9	-25.0	-22.0	40.0	0.0	0.0	1.6	0.8	18		<31
21†	-15.4	-32.0	-23.7	41.7	0.0	0.0	T	T	19		<31
22†	-16.3	-30.7	-23.5	41.5	0.0	0.0	T	T	18		<31
23†	-17.1	-23.5	-20.3	38.3	0.0	0.0	1.2	0.6	18		<31
24†	-14.8	-20.1	-17.5	35.5	0.0	0.0	0.4	0.2	18		<31
25†	-19.9	-25.0	-22.5	40.5	0.0	0.0	0.2	0.2	18	29	37
26†	-16.3	-27.4	-21.9	39.9	0.0	0.0	T	T	18		<31
27†	-13.9	-30.8	-22.4	40.4	0.0	0.0	0.0	0.0	17		<31
28†	-11.7	-25.3	-18.5	36.5	0.0	0.0	0.0	0.0	17		<31
29†	-10.6	-28.3	-19.5	37.5	0.0	0.0	0.0	0.0	16		<31
30†	-8.0	-33.1	-20.6	38.6	0.0	0.0	0.0	0.0	14		<31
31†	-2.9	-23.5	-13.2	31.2	0.0	0.0	2.0	0.8	12		<31
Sum				1206.7E	0.0E	0.0*	13.6*	9.0			
Avg	-15.3	-26.5E	-20.9E								
Xtrm	-2.9	-41.0E								29*	44*

Daily Data Report for April 2008											
D a y	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†	3.6	-6.0	-1.2	19.2	0.0	0.0	9.6	4.6	20		<31
02†	0.8	-11.8	-5.5	23.5	0.0	0.0	14.6	8.6	21		<31
03†	-7.2	-14.0	-10.6	28.6	0.0	0.0	18.6	10.6	37		<31
04†	-4.8	-8.9	-6.9	24.9	0.0	0.0	2.6	1.0	53		<31
05†	-4.6	-10.3	-7.5	25.5	0.0	0.0	0.0	0.0	51	13	41
06†	-3.5	-9.7	-6.6	24.6	0.0	0.0	0.0	0.0	48	12	44
07†	-0.5	-8.3	-4.4	22.4	0.0	0.0	T	T	46		<31
08†	-2.1	-12.9	-7.5	25.5	0.0	0.0	0.6	0.4	46		<31
09†	-1.0	-18.3	-9.7	27.7	0.0	0.0	T	T	46		<31
10†	0.8	-21.1	-10.2	28.2	0.0	0.0	0.0	0.0	46		<31
11†	-1.9	-16.0	-9.0	27.0	0.0	0.0	0.0	0.0	43		<31
12†	3.7	-10.5	-3.4	21.4	0.0	0.0	0.0	0.0	40	13	33
13†	-4.7	-9.4	-7.1	25.1	0.0	0.0	6.2	3.8	39	30	59
14†	1.1	-14.4	-6.7	24.7	0.0	0.0	0.0	0.0	43	29	37
15†	2.5	-9.3	-3.4	21.4	0.0	0.0	1.2	0.4	43		<31
16†	-1.5	-9.4	-5.5	23.5	0.0	0.0	4.6	3.0	44		<31
17†	-9.4	-14.7	-12.1	30.1	0.0	0.0	1.2	1.0	45	31	57
18†	-2.1	-21.9	-12.0	30.0	0.0	0.0	0.0	0.0	43		<31
19†	-1.2	-17.4	-9.3	27.3	0.0	0.0	0.0	0.0	42	12	41
20†	2.5	-9.6	-3.6	21.6	0.0	0.0	T	T	40		<31
21†	4.9	-3.2	0.9	17.1	0.0	0.0	2.4	1.8	37		<31
22†	0.0	-7.7	-3.9	21.9	0.0	0.0	0.0	0.0	34		<31
23†	-3.9	-16.9	-10.4	28.4	0.0	0.0	0.0	0.0	30		<31
24†	-3.8	-18.5	-11.2	29.2	0.0	0.0	0.0	0.0		12	43
25†	-3.2	-13.9	-8.6	26.6	0.0	0.0	T	T	26		<31
26†	4.8	-11.3	-3.3	21.3	0.0	0.0	0.0	0.0	25		<31
27†	6.6	0.3	3.5	14.5	0.0	0.0	0.0	0.0	21	13	43
28†	9.5	0.4	5.0	13.0	0.0	0.0	0.0	0.0	17		<31
29†	5.6	-1.3	2.2	15.8	0.0	0.0	0.0	0.0	14		<31
30†	6.9	-1.6	2.7	15.3	0.0	0.0	0.0	0.0	10		<31
Sum				705.3	0.0	0.0	61.6	35.2			
Avg	-0.1	-10.9	-5.5								
Xtrm	9.5	-21.9								30	59

## Instruments

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**Survey**                      Trimble GPS  
RTK ground base survey

**Recording**                Sercel 428 DDU's with 18-meter extensions  
Pelton-Vib Pro Vibroseis electronics

## Parameters

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**276.05 kilometers**

Receiver Spacing	10 meters
Source Spacing	60 meters / 20 meters Vibroseis
Number or Traces Recorded	800
Coverage	6,700 % / 20,000 %
Receiver array	1 DSU
Hole Depth	9 meters
Charge Size	2 Kilograms
Number of Sweeps	2
Sweep Length	16 seconds
Sweep Frequency	6 -130 Hz
Record Length	12 seconds
Sample Rate	1 Millisecond
Channels on Crew	1600

## **Local Contracting**

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Local contracts and supplies were first searched for within the K'ahsho Got'ine district towns of Fort Good Hope and Colville Lake. When goods or services were not found within this region, Norman Wells and finally southern suppliers were contacted.

Requests For Proposals (RFP's), were sent out to the K'asho Got'ine District Lands Corporation Business List as per Schedule B of the Benefits Agreement 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**

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Prior to the recording crew arriving in the field, an HSE / HR advisor was stationed in Colville Lake and Fort Good Hope 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 new employee orientation.

## **Geophysical Data Processing**

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The processing for each of the lines is summarized in the pages to follow.





## Geophysical Data Processing – CVL-05

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### Processing Parameters:

1 - Demultiplex/Reformat

2 - Geometry: Straight

3 - Manual Trace Edits

4 -Structure Statics:

Analysis Method:	Tomo
Datum Elevation:	450 M ASL
Replacement Velocity:	4000 M/S
Weathering Velocity:	3500 M/S
Application:	Surface Consistent Short Wavelength Component Only

5 - Data Integration

6 - Amplitude Recovery:

Type:	T-Square Function
	$A * t^{**N}$ A=1 N=2 . 0

7 - Noise Attenuation:

Type:	Coherent Noise Attenuation
Type:	High Amplitude Noise Suppression

8 - Surface Consistent Scaling:

Frequency:	10/15 – 50/65 Hz
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9 - Deconvolution – Surface Consistent:

Operator Length:	120 MS
Prewhitening:	1 %
Design Gate:	150 3300      2200 4200 MS
	8                      4000 M

10 – Trace Gather – Full Fold

11 – Preliminary Velocity Analysis – Double Square Root Normal Moveout

Type:	CVS
Reference:	Datum

- 12 – Statics - Automatic Surface Consistent (1):  
Window: Spatially Variable  
Filter: 10/15 - 30/40 Hz  
Max. Static: +/- 40 MS
- 13 – Noise Attenuation:  
Type: Shot Domain Revoke
- 14 – Surface Consistent Scaling  
Frequency: 10/15 – 80/100 Hz
- 15 – Second Velocity Analysis – Double Square Root Normal Moveout  
Type: CVS  
Reference: Datum
- 16 – Statics – Automatic Surface Consistent (2):  
Window: Spatially Variable  
Filter: 8/12 – 40/50 Hz  
Max. Static: +/- 30 MS
- 17 – Noise Attenuation:  
Type: Shot Domain Revoke
- 18 – Third Velocity Analysis – Double Square Root Normal Moveout:  
Type: CVS  
Reference: Datum
- 19 – Statics – Automatics Surface Consistent (3):  
Window: Spatially Variable  
Filter: 8/12 – 50/70 Hz  
Max. Static: +/- 30 MS
- 20 – Final Velocity Analysis – Double Square Root Normal Moveout:  
Type: CVS  
Reference: Datum
- 21 – Statics – Automatic Surface Consistent (4):  
Window: Spatially Variable  
Filter: 8/12 – 90/110 Hz  
Max. Static: +/- 30 MS
- 22 – Normal Moveout Correction From Surface

23 – Statics – CDP Trim:

Design Window:	Spatially Variable
Design Filter:	10/15 – 100/125 Hz
Max. Static:	+/- 20 MS

24 – First Break Mute

Distance:	44, 78, 147, 187, 214, 268 M
Time:	0, 36, 101, 138, 193, 305 MS

25 – Trace Scaling – AGC

Length 200ms

26 – Stack – Full Fold

27 – Long Wavelength Statics

28 – Post STK K. MIG

Smoothed Stack Vels – 100%	
DIP:	60 – 70 DEG.
ALIAS:	75 %

29 – Tie Parameters – Line CVL – 03 Used As A Reference

Static Shift = -38 MS  
Phase Rotation = 121 Degrees

30 – Trace Scaling – Overlapping Mean

Window Length:	500 MS
Overlap:	50 %

31 – Filter – Bandpass

Freq = 5/10 – 80/100, 5/10 – 60/80, 5/10 – 45/60 HZ  
Time = 0-1000, 1000-2000, 2000-6000MS

**Display Parameters:**

Horizontal:	25 Traces per Inch
Vertical:	4.75 Inches per Second

## Geophysical Data Processing – CVL-04

---

### Processing Parameters:

1 - Demultiplex/Reformat

2 - Geometry: Crooked

3 - Manual Trace Edits

4 -Structure Statics:

Analysis Method:	Tomo
Datum Elevation:	450 M ASL
Replacement Velocity:	4000 M/S
Weathering Velocity:	950 M/S
Application:	Surface Consistent Short Wavelength Component Only

5 - Data Integration

6 - Amplitude Recovery:

Type:	T-Square Function
	$A * t^{**N}$ A=1 N=2 . 0

7 - Noise Attenuation:

Type:	Coherent Noise Attenuation
Type:	High Amplitude Noise Suppression

8 - Surface Consistent Scaling:

Frequency:	10/15 – 50/65 Hz
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9 - Deconvolution – Surface Consistent:

Operator Length:	120 MS
Prewhitening:	1 %
Design Gate:	150 3300      2200 4200 MS
	8                      4000 M

10 – Trace Gather – Full Fold

11 – Preliminary Velocity Analysis – Double Square Root Normal Moveout

Type:	CVS
Reference:	Datum

- 12 – Statics - Automatic Surface Consistent (1):  
Window: Spatially Variable  
Filter: 10/15 - 30/40 Hz  
Max. Static: +/- 40 MS
- 13 – Noise Attenuation:  
Type: Shot Domain Revoke
- 14 – Surface Consistent Scaling  
Frequency: 10/15 – 80/100 Hz
- 15 – Second Velocity Analysis – Double Square Root Normal Moveout  
Type: CVS  
Reference: Datum
- 16 – Statics – Automatic Surface Consistent (2):  
Window: Spatially Variable  
Filter: 8/12 – 40/50 Hz  
Max. Static: +/- 30 MS
- 17 – Noise Attenuation:  
Type: Shot Domain Revoke
- 18 – Third Velocity Analysis – Double Square Root Normal Moveout:  
Type: CVS  
Reference: Datum
- 19 – Statics – Automatics Surface Consistent (3):  
Window: Spatially Variable  
Filter: 8/12 – 50/70 Hz  
Max. Static: +/- 30 MS
- 20 – Final Velocity Analysis – Double Square Root Normal Moveout:  
Type: CVS  
Reference: Datum
- 21 – Statics – Automatic Surface Consistent (4):  
Window: Spatially Variable  
Filter: 8/12 – 90/110 Hz  
Max. Static: +/- 30 MS
- 22 – Normal Moveout Correction From Surface

23 – Statics – CDP Trim:

Design Window:	Spatially Variable
Design Filter:	10/15 – 100/125 Hz
Max. Static:	+/- 20 MS

24 – First Break Mute

Distance:	44, 78, 147, 187, 214, 268 M
Time:	0, 36, 101, 138, 193, 305 MS

25 – Trace Scaling – AGC

Length 200ms

26 – Stack – Full Fold

27 – Long Wavelength Statics

28 – Post STK K. MIG

Smoothed Stack Vels – 100%	
DIP:	60 – 70 DEG.
ALIAS:	75 %

29 – Tie Parameters – Line CVL – 03 Used As A Reference

Static Shift = -9 MS  
Phase Rotation = 18 Degrees

30 – Trace Scaling – Overlapping Mean

Window Length:	500 MS
Overlap:	50 %

31 – Filter – Bandpass

Freq = 5/10 – 80/100, 5/10 – 60/80, 5/10 – 45/60 HZ  
Time = 0-1000, 1000-2000, 2000-6000MS

**Display Parameters:**

Horizontal:	25 Traces per Inch
Vertical:	4.75 Inches per Second

## Geophysical Data Processing – CVL-03

---

### Processing Parameters:

1 - Demultiplex/Reformat

2 - Geometry: Crooked

3 - Manual Trace Edits

4 -Structure Statics:

Analysis Method:	Tomo
Datum Elevation:	450 M ASL
Replacement Velocity:	4000 M/S
Weathering Velocity:	950 M/S
Application:	Surface Consistent Short Wavelength Component Only

5 - Data Integration

6 - Amplitude Recovery:

Type:	T-Square Function
	$A * t^{**N}$ A=1 N=2 . 0

7 - Noise Attenuation:

Type:	Coherent Noise Attenuation
Type:	High Amplitude Noise Suppression

8 - Surface Consistent Scaling:

Frequency:	10/15 – 50/65 Hz
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9 - Deconvolution – Surface Consistent:

Operator Length:	120 MS
Prewhitening:	1 %
Design Gate:	150 3300      2200 4200 MS
	8                      4000 M

10 – Trace Gather – Full Fold

11 – Preliminary Velocity Analysis – Double Square Root Normal Moveout

Type:	CVS
Reference:	Datum

- 12 – Statics - Automatic Surface Consistent (1):  
 Window: Spatially Variable  
 Filter: 10/15 - 30/40 Hz  
 Max. Static: +/- 40 MS
- 13 – Noise Attenuation:  
 Type: Shot Domain Revoke
- 14 – Surface Consistent Scaling  
 Frequency: 10/15 – 80/100 Hz
- 15 – Second Velocity Analysis – Double Square Root Normal Moveout  
 Type: CVS  
 Reference: Datum
- 16 – Statics – Automatic Surface Consistent (2):  
 Window: Spatially Variable  
 Filter: 8/12 – 40/50 Hz  
 Max. Static: +/- 30 MS
- 17 – Noise Attenuation:  
 Type: Shot Domain Revoke
- 18 – Third Velocity Analysis – Double Square Root Normal Moveout:  
 Type: CVS  
 Reference: Datum
- 19 – Statics – Automatics Surface Consistent (3):  
 Window: Spatially Variable  
 Filter: 8/12 – 50/70 Hz  
 Max. Static: +/- 30 MS
- 20 – Final Velocity Analysis – Double Square Root Normal Moveout:  
 Type: CVS  
 Reference: Datum
- 21 – Statics – Automatic Surface Consistent (4):  
 Window: Spatially Variable  
 Filter: 8/12 – 90/110 Hz  
 Max. Static: +/- 30 MS
- 22 – Normal Moveout Correction From Surface



23 – Statics – CDP Trim:

Design Window:	Spatially Variable
Design Filter:	10/15 – 100/125 Hz
Max. Static:	+/- 20 MS

24 – First Break Mute

Distance:	44, 78, 147, 187, 214, 268 M
Time:	0, 36, 101, 138, 193, 305 MS

25 – Trace Scaling – AGC

Length 200ms

26 – Stack – Full Fold

27 – Long Wavelength Statics

28 – Post STK K. MIG

Smoothed Stack Vels – 100%	
DIP:	60 – 70 DEG.
ALIAS:	75 %

29 – Tie Parameters – Line CVL – 03 Used As A Reference

30 – Trace Scaling – Overlapping Mean

Window Length:	500 MS
Overlap:	50 %

31 – Filter – Bandpass

Freq = 5/10 – 80/100, 5/10 – 60/80, 5/10 – 45/60 HZ
Time = 0-1000, 1000-2000, 2000-6000MS

**Display Parameters:**

Horizontal:	25 Traces per Inch
Vertical:	4.75 Inches per Second

## Geophysical Data Processing – CVL-02

---

### Processing Parameters:

1 - Demultiplex/Reformat

2 - Geometry: Straight Line

3 - Manual Trace Edits

4 -Structure Statics:

Analysis Method:	Tomo
Datum Elevation:	450 M ASL
Replacement Velocity:	4000 M/S
Weathering Velocity:	3500 M/S
Application:	Surface Consistent Short Wavelength Component Only

5 - Data Integration

6 - Amplitude Recovery:

Type:	T-Square Function
	$A * t^{**N}$ A=1 N=2 . 0

7 - Noise Attenuation:

Type:	Coherent Noise Attenuation
Type:	High Amplitude Noise Suppression

8 - Surface Consistent Scaling:

Frequency:	10/15 – 50/65 Hz
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9 - Deconvolution – Surface Consistent:

Operator Length:	120 MS
Prewhitening:	1 %
Design Gate:	150 3300      2200 4200 MS
	8                      4000 M

10 – Trace Gather – Full Fold

11 – Preliminary Velocity Analysis – Double Square Root Normal Moveout

Type:	CVS
Reference:	Datum

- 12 – Statics - Automatic Surface Consistent (1):  
 Window: Spatially Variable  
 Filter: 10/15 - 30/40 Hz  
 Max. Static: +/- 40 MS
- 13 – Noise Attenuation:  
 Type: Shot Domain Revoke
- 14 – Surface Consistent Scaling  
 Frequency: 10/15 – 80/100 Hz
- 15 – Second Velocity Analysis – Double Square Root Normal Moveout  
 Type: CVS  
 Reference: Datum
- 16 – Statics – Automatic Surface Consistent (2):  
 Window: Spatially Variable  
 Filter: 8/12 – 40/50 Hz  
 Max. Static: +/- 30 MS
- 17 – Noise Attenuation:  
 Type: Shot Domain Revoke
- 18 – Third Velocity Analysis – Double Square Root Normal Moveout:  
 Type: CVS  
 Reference: Datum
- 19 – Statics – Automatics Surface Consistent (3):  
 Window: Spatially Variable  
 Filter: 8/12 – 50/70 Hz  
 Max. Static: +/- 30 MS
- 20 – Final Velocity Analysis – Double Square Root Normal Moveout:  
 Type: CVS  
 Reference: Datum
- 21 – Statics – Automatic Surface Consistent (4):  
 Window: Spatially Variable  
 Filter: 8/12 – 90/110 Hz  
 Max. Static: +/- 30 MS
- 22 – Normal Moveout Correction From Surface

23 – Statics – CDP Trim:

Design Window:	Spatially Variable
Design Filter:	10/15 – 100/125 Hz
Max. Static:	+/- 20 MS

24 – First Break Mute

Distance:	44, 78, 147, 187, 214, 268 M
Time:	0, 36, 101, 138, 193, 305 MS

25 – Trace Scaling – AGC

Length: 200ms

26 – Stack – Full Fold

27 – Long Wavelength Statics

28 – Post STK K. MIG

Smoothed Stack Vels –	100%
DIP:	60 – 70 DEG.
ALIAS:	75 %

29 – Tie Parameters – Line CVL – 03 Used As A Reference

Static Shift = -91 MS  
Phase Rotation = 66 Degrees

30 – Trace Scaling – Overlapping Mean

Window Length:	500 MS
Overlap:	50 %

31 – Filter - Bandpass

**Display Parameters:**

Horizontal:	25 Traces per Inch
Vertical:	4.75 Inches per Second

## Geophysical Data Processing – CVL-06

---

### Processing Parameters:

1 - Demultiplex/Reformat

2 - Geometry: Straight

3 - Manual Trace Edits

4 -Structure Statics:

Analysis Method:	Tomo
Datum Elevation:	450 M ASL
Replacement Velocity:	4000 M/S
Weathering Velocity:	3500 M/S
Application:	Surface Consistent Short Wavelength Component Only

5 - Data Integration

6 - Amplitude Recovery:

Type:	T-Square Function
	$A * t^{**N}$ A=1 N=2 . 0

7 - Noise Attenuation:

Type:	Coherent Noise Attenuation
Type:	High Amplitude Noise Suppression

8 - Surface Consistent Scaling:

Frequency:	10/15 – 50/65 Hz
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9 - Deconvolution – Surface Consistent:

Operator Length:	120 MS
Prewhitening:	1 %
Design Gate:	150 3300      2200 4200 MS
	8                      4000 M

10 – Trace Gather – Full Fold

11 – Preliminary Velocity Analysis – Double Square Root Normal Moveout

Type:	CVS
Reference:	Datum

- 12 – Statics - Automatic Surface Consistent (1):  
Window: Spatially Variable  
Filter: 10/15 - 30/40 Hz  
Max. Static: +/- 40 MS
- 13 – Noise Attenuation:  
Type: Shot Domain Revoke
- 14 – Surface Consistent Scaling  
Frequency: 10/15 – 80/100 Hz
- 15 – Second Velocity Analysis – Double Square Root Normal Moveout  
Type: CVS  
Reference: Datum
- 16 – Statics – Automatic Surface Consistent (2):  
Window: Spatially Variable  
Filter: 8/12 – 40/50 Hz  
Max. Static: +/- 30 MS
- 17 – Noise Attenuation:  
Type: Shot Domain Revoke
- 18 – Third Velocity Analysis – Double Square Root Normal Moveout:  
Type: CVS  
Reference: Datum
- 19 – Statics – Automatics Surface Consistent (3):  
Window: Spatially Variable  
Filter: 8/12 – 50/70 Hz  
Max. Static: +/- 30 MS
- 20 – Final Velocity Analysis – Double Square Root Normal Moveout:  
Type: CVS  
Reference: Datum
- 21 – Statics – Automatic Surface Consistent (4):  
Window: Spatially Variable  
Filter: 8/12 – 90/110 Hz  
Max. Static: +/- 30 MS
- 22 – Normal Moveout Correction From Surface

23 – Statics – CDP Trim:

Design Window:	Spatially Variable
Design Filter:	10/15 – 100/125 Hz
Max. Static:	+/- 20 MS

24 – First Break Mute

Distance:	44, 78, 147, 187, 214, 268 M
Time:	0, 36, 101, 138, 193, 305 MS

25 – Trace Scaling – AGC

Length 200ms

26 – Stack – Full Fold

27 – Long Wavelength Statics

28 – Post STK K. MIG

Smoothed Stack Vels –	100%
DIP:	60 – 70 DEG.
ALIAS:	75 %

29 – Tie Parameters – Line CVL – 03 Used As A Reference

Static Shift = 27 MS  
Phase Rotation = 93 Degrees

30 – Trace Scaling – Overlapping Mean

Window Length:	500 MS
Overlap:	50 %

31 – Filter – Bandpass

Freq = 5/10 – 80/100, 5/10 – 60/80, 5/10 – 45/60 HZ  
Time = 0-1000, 1000-2000, 2000-6000MS

**Display Parameters:**

Horizontal:	25 Traces per Inch
Vertical:	4.75 Inches per Second