

GEOPHYSICAL EXPLORATION REPORT

Geophysical Operation Identifier: 9227-A61-2DA

Keele Arch Area

In the

Northwest Territories

AEC West - Exploration Licence EL 392

**Purchase, Reprocessing and Reinterpretation
of 109.9 km of Chevron Seismic Data**

Land Use Permit:

N/A

Area Coordinates:

Latitude 64° 20' - 64° 50' North

Longitude 124° 55' - 125° 40' West

Seismic Data Processing:

Exploration Innovations Ltd.

Submitted by:



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Senior Geophysicist**

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See companion report 9229-A61-3E which encompasses the integrated interpretation of purchased / reprocessed data, proprietary seismic data recorded in winter 1999 and winter 2000 and High Resolution Aeromagnetic data from the GSC.

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REFERENCES

- Cook, D.G. 1975. The Keele Arch, a pre-Devonian and pre-Late Cretaceous Paleo-upland in the Northern Franklin Mountains and Colville Hills. *In* Geological Survey of Canada, Paper 75-1, Part C, p. 243-246
- Dixon, J. and Stasiuk, L.D. 1998. Stratigraphy and hydrocarbon potential of Cambrian strata, Northern Interior Plains, Northwest Territories. *Bulletin of Canadian Petroleum Geology*, v.46, p. 445-470.
- MacLean, B.C. and Cook, D.G. 1999. Salt Tectonism in the Fort Norman area, Northwest Territories, Canada, *Bulletin of Canadian Petroleum Geology*, v.47, p. 104-135.
- Williams, G.K. 1987. Cambrian geology of the Mackenzie corridor. Geological Survey of Canada Open File 1429, 58p
- _____. 1989. Tectonic evolution of the Fort Norman Area, Mackenzie Corridor, N.W.T. Geological Survey of Canada Open File 2045, 44p.

SECTION ONE

INTRODUCTION

AEC West, a unit of AEC Partnership, acquired exploration licences EL 392 and EL 387 in June 1997 based on regional geologic understanding of the Central Mackenzie Valley area (Figure 1.) and on interpretation of stacked seismic sections made available by the National Energy Board (N.E.B). After obtaining the exploration licences, four lines in EL 392 in the Keele Arch area (Figure 2.), totaling 109.9 km which were shot by Chevron in 1991, were purchased and reprocessed in 1999.

The objective of this work was to improve the stacked data quality to interpret better the pre Cretaceous structure and subcrop configuration as a complement to concurrent shooting of new seismic data over the most prospective areas. The purchased data represent part of a regional grid of seismic over the licence.

This report, submitted to the N.E.B. to partially fulfill the requirements of the exploration licence terms, summarizes the seismic data reprocessing procedures. Results of the interpretation of these data are included in a companion report, Geophysical Operation Identifier **9229-A61-3E**, which encompasses an integrated interpretation of these data as well as other purchased / reprocessed data, data shot in winters of 1999-2000 and 2000-2001, and High Resolution Aeromagnetic data recorded by the GSC in 1999.

SECTION TWO

DATA PROCESSING

2.1 Summary of Acquisition Parameters

The four lines (26X, 36X, 52X and 64X), which were purchased from the operator by AEC West, were originally shot in 1991. These data were originally acquired for Chevron by Western Geophysical using a 120 trace split spread. They were shot with a 2 kg. dynamite source in 13 meter single holes which were spaced 90 meters apart. For receivers, SM-4 14 Hz geophones were used in the following configuration:

9 geophones per group over 30 m. (105 ft.)

Group interval of 30 meters

Source offset to near trace - 45 m. (148 ft.)

Offset from source to far trace - 1815 m. (5955 ft.)

TRACE	1	60	x	61	120
DISTANCE	1815	_____	45	_____	* _____ 45 _____ 1815 M

Data were recorded to 15.0 sec. at a 2 msec. using DFS V instruments.

2.2 Processing

The four purchased lines were processed for AEC West by EI Processing Inc. in April 1999 using the following processing flow:

- 1) Demultiplex from SEG-B
- 2) Gain Correction – Type: Exponential
- 3) Line Geometry and Trace Edits
- 4) Surface Consistent Deconvolution & Scaling:
 - Operator length: 100 msec.
 - Prewhitening: 0.1 %
 - Design gate: 0.35 – 3.5 sec. at 45 m.
0.85 – 3.70 sec. at 1815 m.
- 5) Zero Phase Frequency Deconvolution
- 6) Trace Balance
- 7) Elevation Corrections Only
 - Replacement velocity: 3047 m/sec.
 - Datum elevation: 305 m. A.M.S.L.
- 8) Velocity Analysis Type: coherency spectra
- 9) Automatic Residual Statics
 - Window: 0.200 – 2.500 sec.
 - Maximum static: + / - 30 msec.
- 10) Repeat steps 8 & 9
- 11) NMO
- 12) Mute:

Offset	Mute Time
465 m.	0.000 sec.
525 m.	0.396 sec.
675 m.	0.636 sec.
1815 m.	0.896 sec.
- 13) Spectral Whitening: 10 – 115 Hz.
- 14) Trim Statics:
 - Window: 0.200 – 2.500 sec.
 - Maximum static: + / - 12 msec.

15) Stack

16) AGC Scaling Window: 500 msec.

17) F-X Deconvolution Noise Suppression. Addback: 50%

18) Finite Difference Migration 100% of stacking velocities
20 msec. Tau step

19) Bandpass Filter: 12/16 - 75/85 Hz. 0-1.5 sec.

The final processed data were written to CD in SEG-Y format for archiving and loading onto a geophysical workstation for interpretation. See Figure 3 for a section label.

****NOTE**** The first breaks were picked but were very noisy and inconsistent over many portions of these lines, which resulted in static busts in the refraction static calculations. Consequently, only elevation and datum static corrections were used leaving long wavelength weathering statics in the data. However, the resulting data time tie very well line to line.

SECTION THREE

INTERPRETATION OF RESULTS

Results of the interpretation of these data are included in a companion report, Geophysical Operation Identifier 9229-A61-3E, which encompasses an integrated interpretation of these data as well as purchased / reprocessed seismic data, data shot in winter 1999 – 2000 and High Resolution Aeromagnetic data recorded by the GSC.

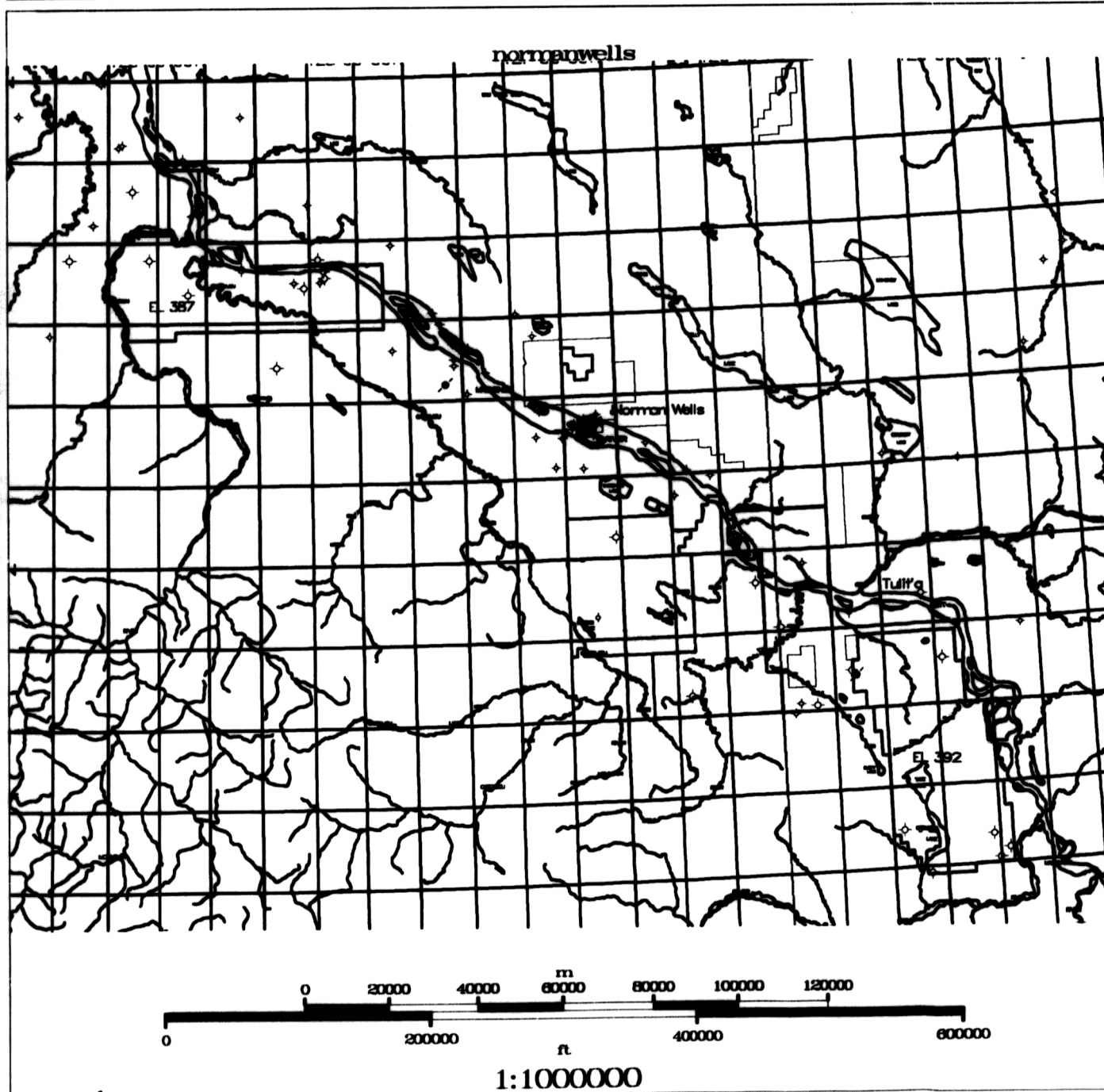
PROJECT INFORMATION

normanwells

DATE: Tue May 08 2001

Central Mackenzie Valley
Norman Wells Area
AEC West Licences
EL 387 and EL 392

Figure 1.

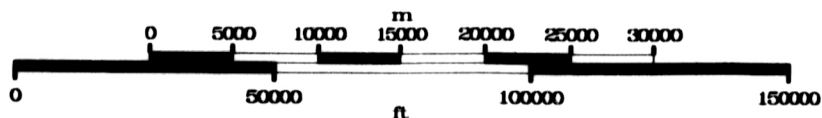


PROJECT INFORMATION

Keele

DATE: Tue May 08 2001

Central Mackenzie Valley
Keele Arch Area
AEC/Husky EL 392
Chevron reprocessed
lines shown in blue



1:325000

MIGRATION STACK

NORMAL POLARITY

RECORDING PARAMETERS

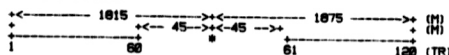
SHOT FOR : CHEVRON CANADA RESOURCES LTD.
SHOT BY : WESTERN GEOPHYSICAL
ACQUISITION DATE : FEB. 1991.

ENERGY SOURCE : DYNAMITE
SOURCE PATTERN : SINGLE HOLE
CHARGE SIZE : 2.0 KG 15 M

RECORDING SYSTEM : DFS-V
FORMAT : SEG 8
FIELD FILTER : 8 - 100 HZ
NOTCH FILTER : OUT
RECEIVERS : 54-4, 14 HZ, 9 PHONES OVER 30 M
SCALE RATE : 2 MS
RECORD LENGTH : 15 SEC

NO. OF CHANNELS : 120
GROUP INTERVAL : 30 M
S.F. INTERVAL : 30 M
FOLD : 2000%

SPREAD DIAGRAM



PROCESSING SEQUENCE

DATE PROCESSED: APRIL, 1990.

- 1) DEMULTIPLEX FROM SEG-8 FORMAT
- 2) GAIN CORRECTION - TYPE: EXPONENTIAL
- 3) LINE GEOMETRY
- 4) SURFACE CONSISTENT DECONVOLUTION & SCALING
OPERATOR LENGTH: 100 M
PREWHITENING: 0.1X
DESIGN GATE: 0.350 - 3.500 SEC AT 45 M
0.650 - 3.700 SEC AT 1015 M
- 5) ZERO PHASE FREQUENCY DECONVOLUTION
- 6) TRACE BALANCE
- 7) ELEVATION CORRECTIONS ONLY (SEE NOTE 1)
REPLACEMENT VELOCITY: 3047 M/SEC
DATUM ELEVATION: 305 M A.S.L.
- 8) VELOCITY ANALYSIS
TYPE: COHERENCY SPECTRUM
- 9) AUTOMATIC RESIDUAL STATICS
WINDOW: 0.200 - 2.500 SEC
MAXIMUM STATIC: +/- 30 MSEC
- 10) REPEAT STEPS 8 & 9 4
- 11) NMO
- 12) MUTE:
OFFSET MUTE TIME
455 M. 0.000 SEC.
505 M. 0.000 SEC.
675 M. 0.030 SEC.
1015 M. 0.030 SEC.
- 13) SPECTRAL WHITENING 10 - 115 HZ
- 14) TRIM STATICS
WINDOW: 0.20 - 2.5 SEC
MAXIMUM STATIC: +/- 12 MSEC
- 15) STACK
- 16) AGC SCALING: WINDOW = 500 MSEC
- 17) F-X DECONVOLUTION: AIDBACK = 50%
- 18) FINITE DIFFERENCE MIGRATION
TAU STEP: 20 MS
VELOCITY: 100%
- 19) BANDPASS FILTER : 12/16 - 75/85 HZ

*****NOTE 1) THE FIRST BREAKS WERE PICKED BUT WERE VERY NOISY AND INCONSISTENT OVER MANY PORTIONS OF THE LINE. REFRACTION STATICS WERE CALCULATED AND APPLIED, BUT BUSTED THE LINE IN MANY PLACES. CONSEQUENTLY, ONLY ELEVATION AND DATUM STATIC CORRECTIONS WERE USED, LEAVING LONG WAVELENGTH AX STATICS IN THE DATA.

DISPLAY PARAMETERS

HORIZONTAL SCALE : 24 TRACES/INCH
VERTICAL SCALE : 5.0 INCHES/SECOND

Figure 3.