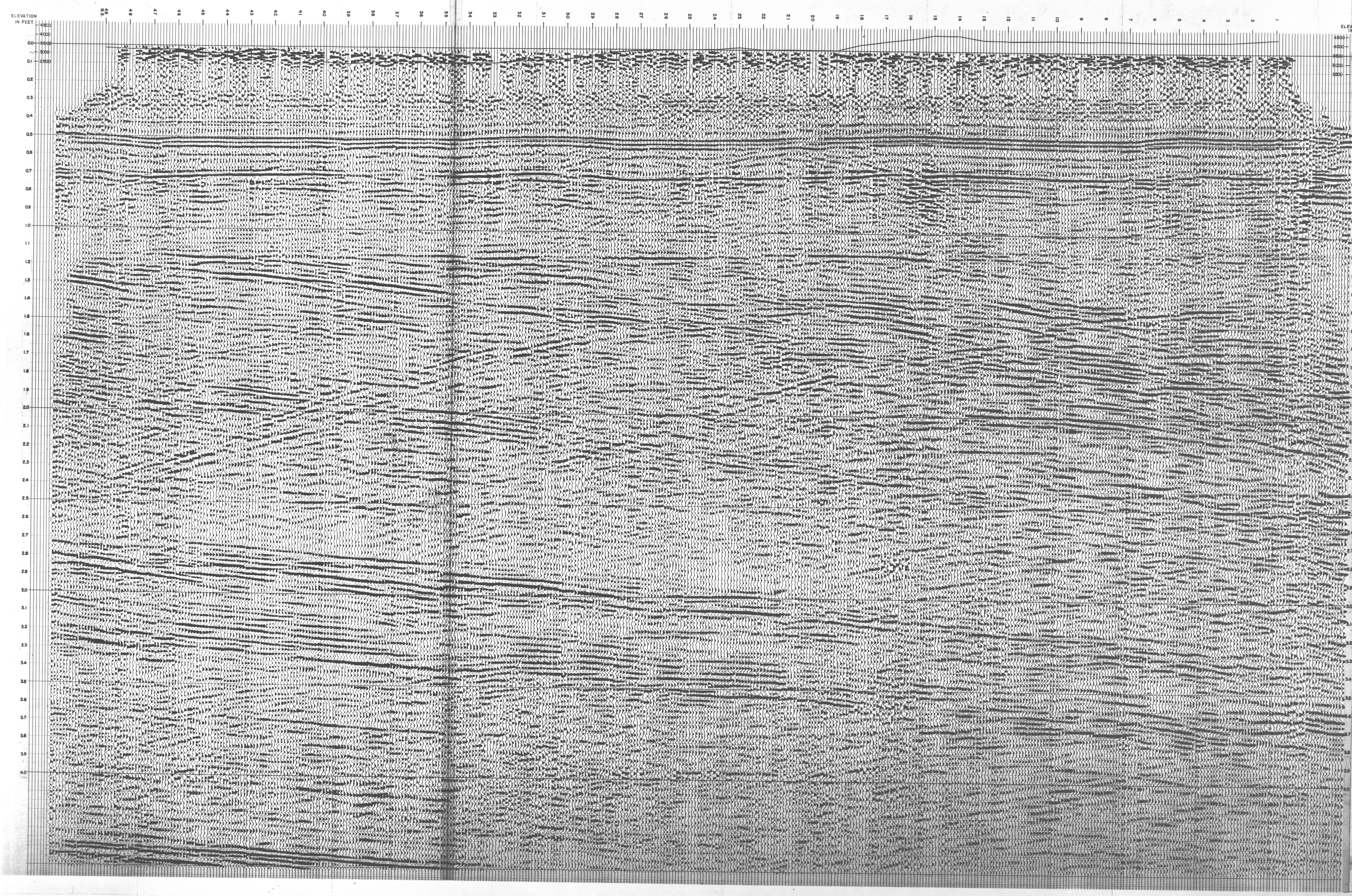
063-06-06-020

WEST CANADIAN GRAPHIC INDUSTRIES LTD.
810 - 5th Avenue S.W. CALGARY 1, ALBERTA
Phone 263-2555

MICROMAT
105 M.M.

11x

November 1973



063-06-06-020

SEFEL J. & ASSOCIATES
DATA PROCESSING CONSULTANTS

TREE RIVER
PROSPECT

MURPHY OIL COMPANY LTD
CLIENT

LINE No: I
DIRECTION: E →

DATA PREPARATION BY: SEFEL J. & ASSOCIATES LTD
PARAMETER SELECTION BY: MURPHY OIL CO LTD
RECORDED BY: GLOBE UNIVERSAL SCIENCES CANADA LTD

RAW	☐
NMO	☐
STACKED ISOCHRON	☐
STACKED STRUCTURAL	☒
100% ISOCHRON	☐
100% STRUCTURAL	☐
TRACE GATHER	☐

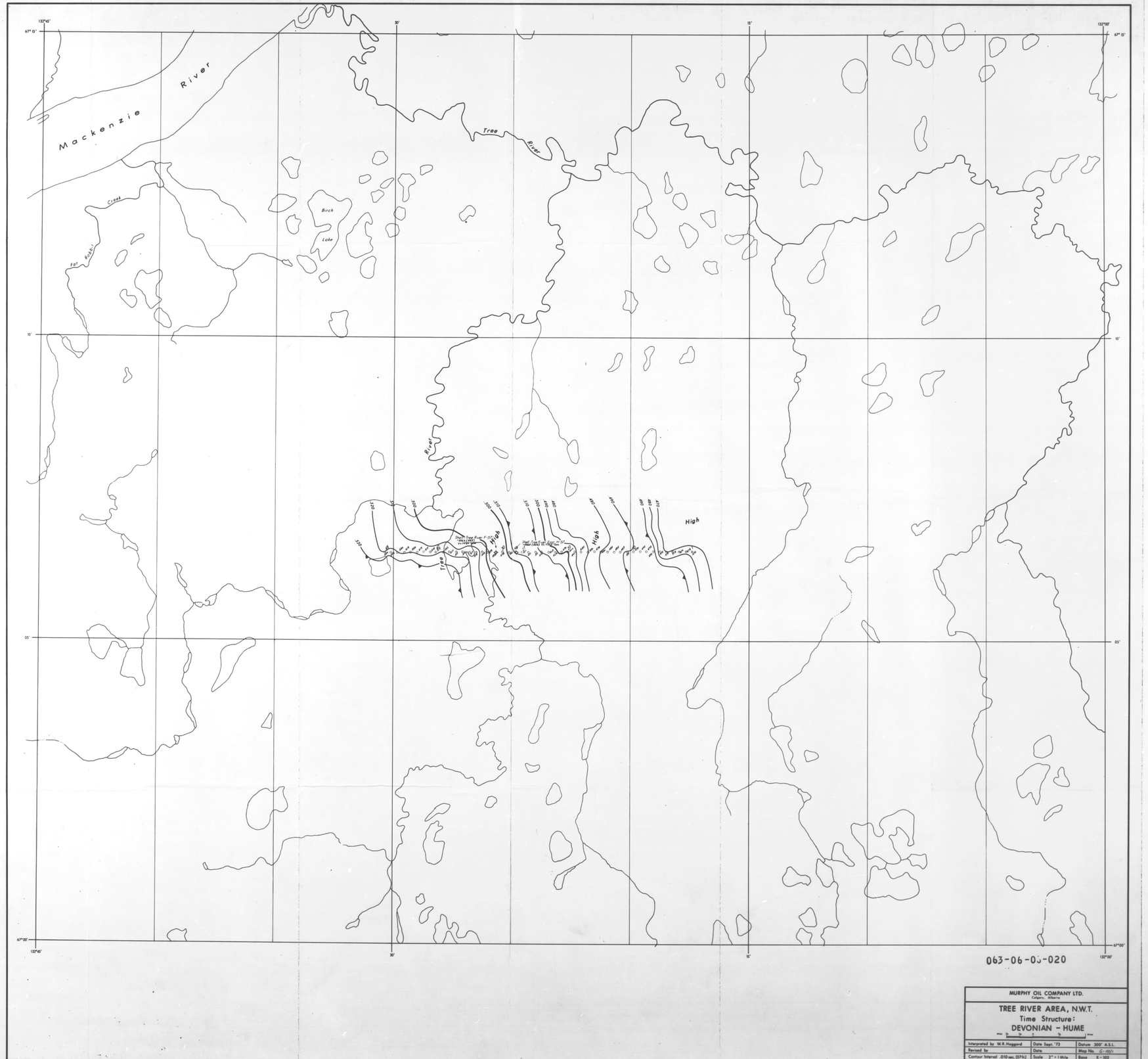
SPREAD LENGTH	3960-165-165-3960
GR INTERVAL	165'
S.P. INTERVAL	660'
RECORD LENGTH	4500'
SAMPLE INT	4 ms
FOLD	600%

RECORDING INSTRUMENTS	DIGITAL	ANALOG
TAPE	9 TRACK / 21 TRACK / FORMAT	TECHNO / SIE — AM / SIE — FM
GAIN	PGC / AGC / BINARY	PGC / AGC / ST GAIN
FIELD FILTER ☒	HI 100	HI
SWEEP FREQ ☐	LOW OUT	LOW

DIGITAL PROCESSING

PROCESS	SEQ	TYPE	OPERATION LENGTH	WINDOW
VIBROSEIS CORRELATION				
RESAMPLE				
NMO	2			
DECONVOLUTION				
FILTER (CONV)				
FILTER (M.G.)	3, 10	B. P.	320 20-60 12-60	0-1500 2000-4500
DMPX & GAIN RECOVER	1			
STATIC	6	T.U.H.		
RESIDUAL NMO				
TRACE GATHER	7			
RE STATIC	8	± 24	12 trace	350-2350
PHASE ALIGNMENT				
CORRELATION ALIGNMENT				
STACK	9			
TRACE SCALE	12	T.V.		
EQUALIZE	4, 11		RM=2200	300-3000
DISPLAY PAPER	13			
DISPLAY FILM	14			
MUTE	5			

DATE MAY 16 / 73. DATUM 300' ASL. CORR. VELOCITY 10000'/sec.



MURPHY OIL COMPANY LTD.
Calgary, Alberta

TREE RIVER AREA, N.W.T.
Time Structure:
DEVONIAN - HUME

Interpreted by W.R. Haggard	Date Sept. '73	Datum 300' A.S.L.
Revised by	Date	Map No. (C-(5))
Contour Interval .010 sec. (57ft.)	Scale 2" = 1 Mile	Base X-100
Shot by Crake Universal Sciences		

063-06-06-020

MURPHY OIL COMPANY LTD.
Calgary, Alberta

TREE RIVER AREA, N.W.T.

Time Structure: Horizon within Dev. IMPERIAL

Interpreted by W. R. Haggard	Date Sept. '73	Datum 300' A.S.L.
Revised by	Date	Map No. G-133/2
Contour Interval 0.10 sec. (56')	Scale 2" = 1 Mile	Base X - 102
Shot by Globe Universal Sciences		

Mackenzie River

Trout River

Fat Rabbit Creek

Birch Lake

Trout River

High

High

063-06-06-020

MURPHY OIL COMPANY LTD.
Calgary, Alberta

TREE RIVER AREA, N.W.T.
Time Structure: DEVONIAN – DETRITAL

Interpreted by W.R. Haggard	Date Sept '73	Datum 300' A.S.L.
Revised by	Date	Map No. C-16
Contour Interval 0.10 sec. (67')	Scale 2" = 1 Mile	Base X-102
Shot by Globe Universal Sciences		

063-06-06-020

FINAL GEOPHYSICAL REPORT

TREE RIVER AREA

Type of Survey: CONVENTIONAL EXPLOSIVE SEISMIC SURVEY

Location: NTS 106N, 67°6'27"N. Lat.
132°25'40"W. Long.

Year Recorded: 1973

Operator: Murphy Oil Company Ltd.

Seismic Contractor:

Globe Universal Sciences Canada Ltd.
100 - 634 - 6th Avenue South West
Calgary, Alberta

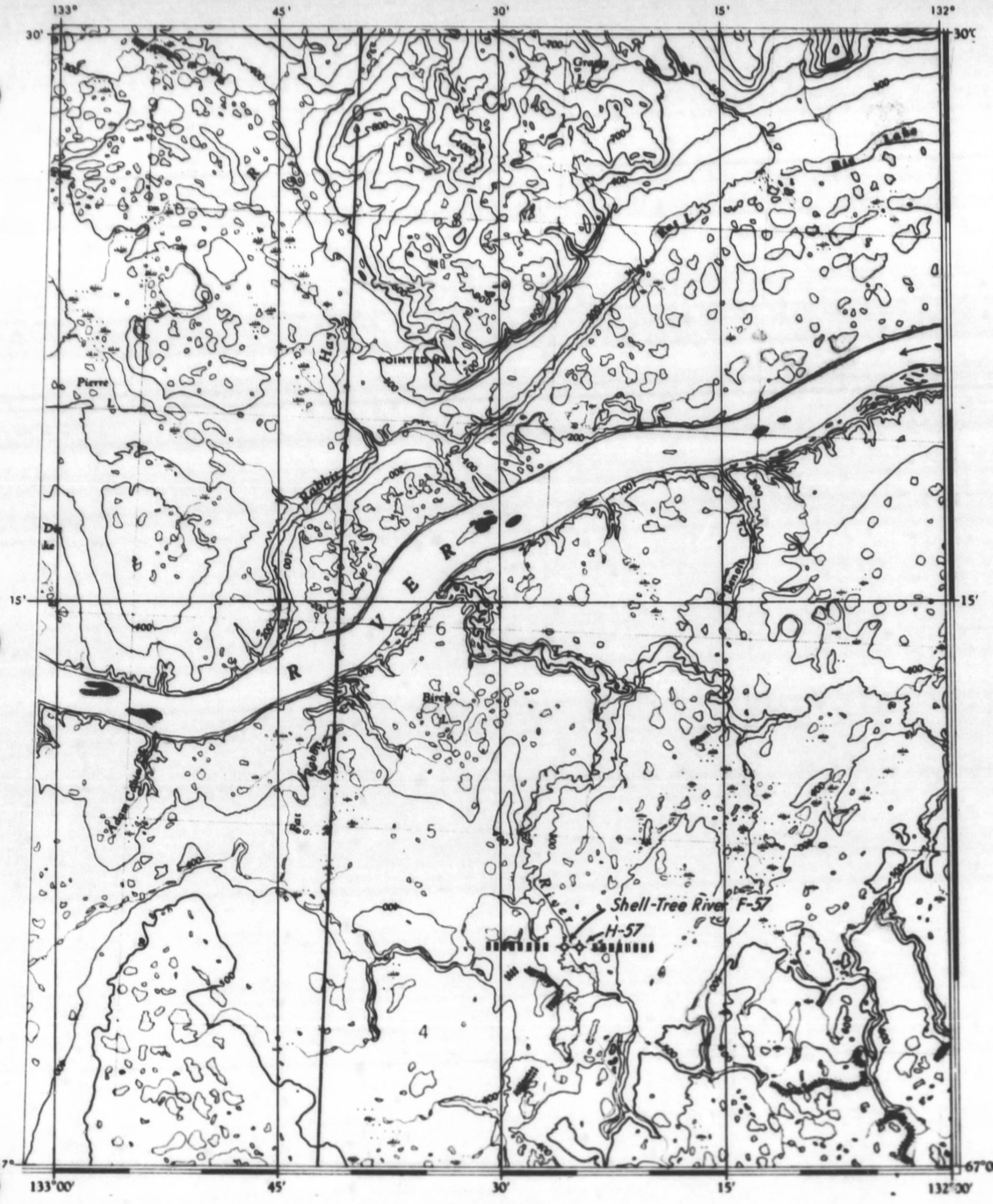
Exploratory Permits:

None

Report by: W. R. Haggard, Jr.

Report Date: September 1973

Project No.: 63-6-6-73-4



INDEX MAP

TREE RIVER PROJECT

Scale: 1: 250,000

▪▪▪▪▪▪▪ Seismic Control

ABSTRACT:

This report covers seismic operations conducted for Murphy Oil Company Ltd. by Globe Universal Sciences using conventional explosive method. One line was recorded for a total of 6.1 miles on April 17, 1973. Results indicate present day structure at the location of the Shell Tree River F-57 well. This well is anomalous because of a 450' zone of porosity in the basal gossage formation. Reflection character changes which were shown by sonigrams at the F-57 and H-57 wells were not observed on the seismic data.

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FINAL GEOPHYSICAL REPORT

PROJECT NAME: Tree River

MAP LOCATION: 67°06'N - 132°25'W

PROVINCE: North West Territories

I EXPLORATION SITUATION

Land is held mostly by Shell and Imperial Oil with both companies having drilled several dryholes in the surrounding area.

II PURPOSE OF SEISMIC PROGRAM

The program was initiated to determine if seismic could define a porosity zone encountered in the Shell Tree River F-57 well, 67°6'27.24" N.Lat. - 132°25'40.411"W. Long.

III GEOLOGY OF AREA

The project area is located twelve miles south of the MacKenzie River, forty miles southeast of Arctic Red River and one hundred twenty miles northwest of Fort Good Hope. Geologically it is located on the Interior Plains, ninety miles east of the Richardson Mountains. Regional dip is approximately fifty feet per mile toward the west southwest.

Primary geologic objective in the area is the Middle Devonian Carbonate, which in this area includes the Hume and Gossage. Reef buildups are found in the Gossage in the carbonate bank of the Peel Plateau located fifty miles southwest of the project area.

The Shell Tree River F-57 well encountered a highly porous zone four hundred fifty feet thick in the basal Gossage which was determined by core analysis to be an algal development. The Shell Tree River H-57 well, located three thousand feet east did not penetrate this porous zone. The IOE Tree River H-38 well, located twelve miles north did not encounter the porous zone, but had abundant shows within the stratigraphic interval of interest.

IV GEOPHYSICS:

A. Statistics

1. Geophysical Contractor and Party No.:
Globe Universal Sciences Canada Ltd.
100 - 634 - 6th Avenue South West, Calgary, Alta.
Party No. 4

2. Date Shot: April 17, 1973

3. No. Miles: 6.1

4. Cost Recording Ops.: 21,500 Cost per mile: 3,524.59

5. Cost Processing: 1,875.69 Cost per mile: 307.49

6. Total cost: 23,375.69 Cost per mile: 3,832.08

B. Field Operations:

1. General:

The basic recording crew consisted of 8 vehicles; 1-Nodwell Recorder, 2-Bombardier line units, 1-Bombardier Shooting unit, 2-Survey Bombardiers, 1-Supply Bombardier, 1-Party Manager Bombardier. All were equipped with 2 way radios.

Personnel for the basic crew consisted of 18 men. A Crown Caterers self propelled fold out camp was used for the most part, with a couple of additional sleepers. As such, there was accommodation for 44 men.

Two diesel light plants, workshop and storage units were part of the camp complex. Catering was by Crown staff. Unpon completion, the crew moved back to the Shell Tree River Staging area on the south bank of the Mackenzie for demobilization and stacking.

2. Dozer Operations:

Dozing was done with 3 D7E dozers supplied by Caribou Construction. They had their own self contained camp setup plus 3 fuel sloops. The dozers were used to cut line, haul fuel, move camp and tow vehicles. Line cleanup was done along with dozing by compaction of trees in mid line and walked down by dozers.

3. Drilling Conditions:

Drilling was done with 4 conventional air rigs and one top drive. Drilling in general was fair. Strata encountered included: 0-10 clay, rocks, and ice; 10-30 clay, rocks; 30-50 clay, gravel and shales.

4. Surveying:

(a) Maps available:

National Tepographic Series 106N - Scale 1:250,000

Murphy Geophysical Base Map X-102

(b) Procedure:

Field surveying was done with a Wilde T-16 Theodolite to carry both horizontal and vertical control. Shot point and spread distances were measured chainage and horizontal distances were checked with stadia. Vertical and horizontal distances were checked with stadia. Vertical and horizontal control was established from the two Shell Wells H-57, F-57 on line.

(c) Method of checking work: Double instrument turns.

5. Topography and Flora:

The terrain in the area is cut up by the watercourse of the Tree River which traverses the line in three instances. As such, the line of survey is quite rolling for the most part and moderately covered by spruce and other various deciduous trees.

6. Field Layout:

(a) Group interval: 165 Feet.

(b) Stack: 600%

(c) Geophone Array length: 160 feet

(d) No. Geophones per channel: 9 Type: Geospace 11D

(e) Source Array length: 0

(f) No. sweeps, pops, holes: single holes

(g) Type spread (split, long ender etc.):
Split 3960'-165'-0'-165'-3960'

(h) Offset from center of source to centre of first live group: 165 ft.

7. Recording Equipment:

(a) Recording Instruments: Globe 4000 Amplifiers, S1E ERC 10 Camera.

(b) No. Channels: 48

8. Line Clean-up:

(a) Government Requirements: Specified in Land Use Permit No. N72B283. Clean-up was approved August 3, 1973 by Mr. H.W. Gray, Dist. Superintendent, N.W. Lands & Forests Service, Inuvik, N.W.T.

9. Final Plans - Government Reports:

(a) Government Reports required: Final Plan submitted to Mr. D. J. Gee, Reg. Mgr. Water, Forest and Land Div., Dept. of Indian Affairs and Northern Development, P.O. Box 1500, Yellowknife, N.W.T. on May 22, 1973.
A final report to be submitted to Ottawa presently being prepared (August, 1973).

C. Near Surface Corrections:

1. Method of obtaining refraction data: Refraction corrections were not used since entire area is relatively high velocity permafrost.

2. Calculation Method: Normal Uphole corrections were employed.

3. Velocities used: Vc = 10,000 ft./sec.

4. Elevation Datum: 300 ft. ASL

5. Describe method of applying corrections to data: Shot and receiver corrections calculated and input to computer. Total corrections for each trace applied by computer.

D. Processing:

1. Processor: Sefel J. and Associates
710 - 7th Avenue South West
Calgary, Alberta

2. Processing Sequence (state operator lengths, windows, type decon., etc.):

(a) Demult. and gain recover
(b) NMO
(c) Filter 12-60 Hz.
(d) Equalize
(e) Mute
(f) Statics
(g) Trace Gather
(h) Autostatics
(i) Stack 600%
(j) Filter
(k) Equalize
(l) Trace scale
(m) Paper display
(n) Film display

Statics by: Sefel J. & Associates.

3. Velocity Control

(a) Function used for NMO corrections: Velocity control derived from analysis of data.

V INTERPRETATION

A. Maps:

1. Dev.-Imperial Time Structure
2. Dev.-Hume Time Structure
3. Dev.-Detrital Time Structure

All maps are considered very reliable.

B. Horizon Identification:

1. Method used, sonograms etc.: Horizon identification was made by data ties to the Shell Tree River F-57 and H-57 wells. Sonigrams were made for both of these wells.

C. Interpretation:

The porous F-57 well is located on a structural high at Imperial Hume and Detrital depths. Unfortunately, the basal gossage porosity zone in the Shell F-57 well did not appear to be associated with a character change as indicated by sonigrams. Since the Gossage is in general not porous in this area, it is believed that the structure mapped at the F-57 well can not be considered as diagnostic for porosity.

VI RECOMMENDATIONS

The seismic does not appear to define conditions associated with Gossage porosity, therefore further exploration activity in the area is not recommended.

W. R. Haggard, Jr.