Vibroseis and Conventional Seismic Surveys in FORT GOOD HOPE AREA Northwest Territories

REPORT GP 5.411G

Vibroseis and Conventional Seismic Surveys

in

FORT GOOD HOPE AREA

Northwest Territories

1969

Operator:	Triad Oil Co. Ltd.
Prime Contractor:	Ray Geophysical Limited of Mandrel Industries Ltd.
On Permits:	1270, 1271, 1272, 1273, 1275, 1276, 3288, 3289, 3290, 3668, 3860, 3863.
Date of Report:	August 15, 1969.
Project No.:	39-6-6-69-3
Author:	J. C. Fife, Party Chief H. McGregor, Party Chief H. Anton, Interpretor, of Ray Geophysical Limited

D. J. Walker, P. Eng.
Chief Geophysicist
Triad Oil Co. Ltd.

August 18, 1969.

N.W.T. Permit	V-S & Conventional seismic miles shot
1270	6.48
1271	23.07
1272	28.72
1273	14.73
1275	0.64
1276	2.03
3288	37.50
3289	43.40
* 3290	52.70
** 3668	37.50
3860	6.30
3863	2.70
Total miles shot	255.87

* Includes 1.2 miles adjacent to 3290

** Includes 1.5 miles adjacent to 3668

N.B. Line 14 on Permit 3290 was shot twice, and is included in the amount, 52.70 miles, for that permit.

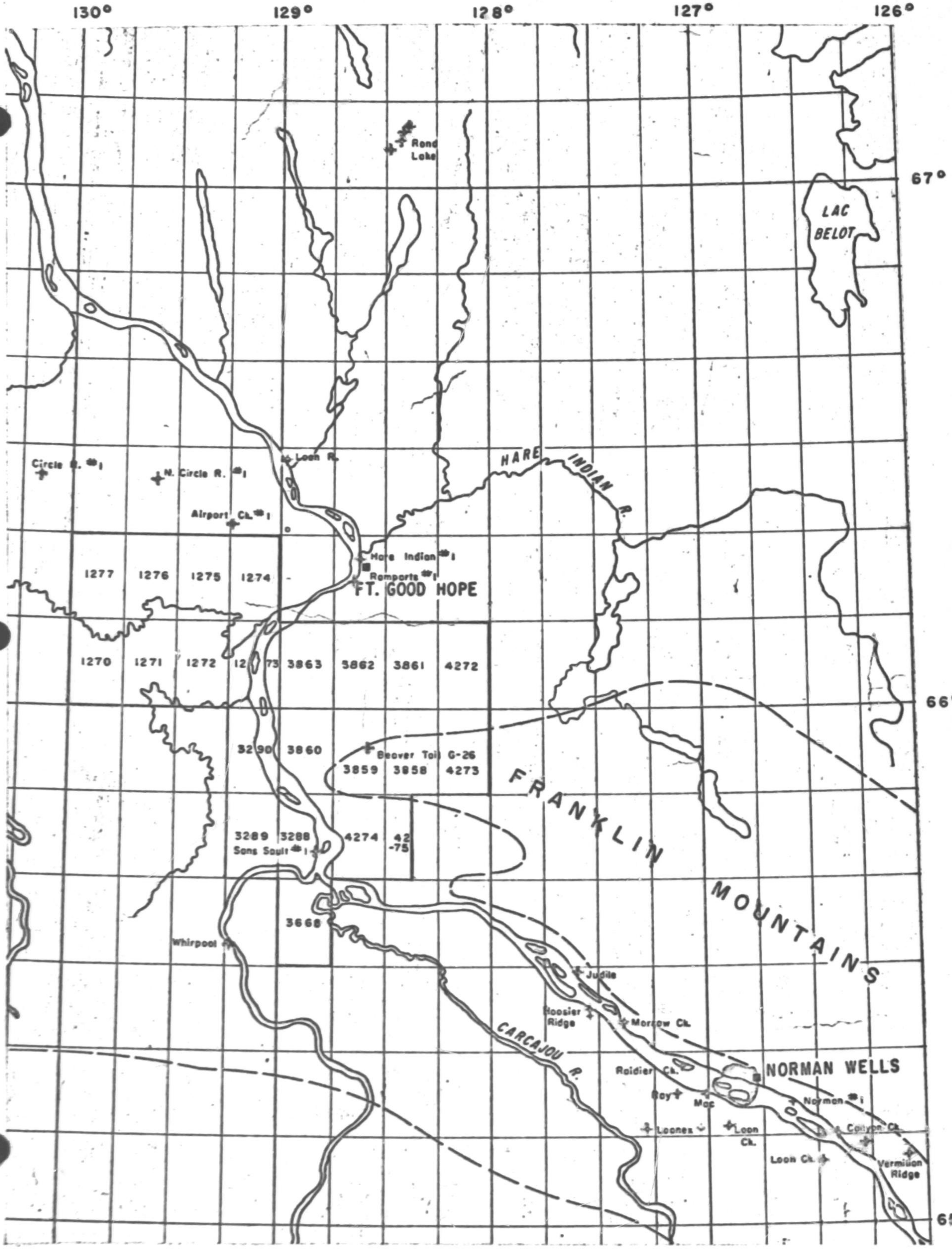

130°
129°
128°
127°
126°
67°
66°
65°
Rond Lake
LAC BELOT
Circle R. #1
N. Circle R. #1
Loon R.
Airport Ck. #1
HARE INDIAN R.
Hare Indian #1
Ramparts #1
FT. GOOD HOPE
1277
1276
1275
1274
1270
1271
1272
1273
3863
3862
3861
4272
3290
3860
Beaver Tail G-26
3859
3858
4273
FRANKLIN MOUNTAINS
3289
3288
4274
42-75
Sans Sault #1
3668
Whirpool
Hoosier Ridge
Morrow Ck.
CARCAJOU R.
Roidier Ck.
NORMAN WELLS
Roy
Mac
Norman #1
Loonex
Loon Ck.
Canyon Ck.
Loon Ck.
Vermilion Ridge

TABLE OF CONTENTS

FINAL FIELD REPORT

FORT GOOD HOPE AREA

Contractor:	Ray Geophysical Limited Party 851 (Vibroseis) Party 115 (Conventional Seismic)
N.W.T. Business License No.2504 & A-2616	
Duration of Survey:	Party 851 February 3 to May 1, 1969 Party 115 April 21 to May 2, 1969
Miles of Coverage:	Party 851 - 204.4 Party 115 - 52.4

OBJECT OF SURVEY

The purpose of the survey was to investigate the possibilities of Middle Devonian reef developement in the assigned program area.

RESULTS AND RECOMMENDATIONS

Record quality was fair to good in the Northern portion of the prospect, lying between the Ramparts and Hume rivers. The quality deteriorates southwards, particularly along the bank of the Mackenzie. The poorest records were obtained in the vicinity of the Mountain and Carcajou rivers.

Record quality could be improved by longer offsets, shorter overall spreads and more detectors per group, subject to considerations of economy and expediency.

No direct comparisons were made between the Vibroseis and conventional shooting. However, the lines surveyed by each method are intermixed and, in general, the conventional shooting appears inferior to the Vibroseis.

Near-surface weathering determinations were based on conventional refraction shots. Where these were lacking, an attempt was made to interpret early arrivals on the Vibroseis records, but this proved unsatisfactory. It must be emphasized that conventional refraction profiles appear essential to adequate weathering control.

MAPS SUBMITTED

The following maps were compiled from 100% uncorrected playbacks of the Vibroseis portion of the prospect, and from 300% stacked sections of the conventional shooting.

Reflection identifications are based on geologic markers in the Imperial Sans Sault Rapid No. 1 Well. No information was available for deeper events, however, energy return below the Hume horizon is meagre.

TOP OF HUME

The Hume reflection at approximately 0.5 seconds is the most readily identifiable reflection in the area and was used as flattener on the stacked cross-sections.

Evaluation of the Hume structure must remain tentative because of the inadequate weathering control discussed below. The most notable features are: 1) The closed "high" on line 23 between lines 25 and 26 which appears to lie on the "up" side of a small fault. 2) A possible closed "high" to the west on line 27 which may also be associated with faulting. 3) A well established "high" at the intersection of lines 6 and 22. 4) The fault zone north-east of line 3 with possible reef build-up. The data in this area is very poor. 5) A small closed "high" on line 8 between lines 6 and 11.

ISOCHRON-HUME TO RAMPARTS

The Ramparts reflection, while strong, is very shallow and often obscured by shot point noise. Toward the outside traces the reflection becomes lost in the "first arrivals".

Thickening of the Hume to Ramparts interval should be indicative of reef build-up. The most pronounced thickening occurs on 1) line 1 South and East of the Imperial Sans Sault Rapid well. 2) Line 2 about a mile and a half south of line 7. 3) Line 11 South of the intersection with line 9. Closure to the North-east is strictly conjectural.

DEPTH OF WEATHERING

Refraction shots for weathering control were taken every half-mile. All plots show two distinct velocity layers, a "drift" velocity of 7000 to 9000 feet per second and a high velocity of 11,000 + feet per second. It is not known if the higher velocity is from the top of the sediments or if it results from perma-frost. The first-arrivals are weak and of a high-frequency which is often characteristic of ice.

On several occasions during the prospect, mechanical breakdowns forced suspension of drilling and no refraction shots were taken. For these lines plots were made of the first distinguishable events on the Vibroseis records. However, these arrivals are inadequate for measuring the lower velocity and their relation to "time zero" is problematic. Depth determinations by this method have been omitted from the map.

SURFACE ELEVATION and SURVEY LOCATION maps are also included.

GENERAL INFORMATION

The prospect extends roughly North-south along the West bank of the Mackenzie River from Latitude 65° 30' North to 66° 10' North and between Longitude 128° 45' West and 129° 45' West. Principal tribruteries of the Mackenzie in this area are the Ramparts, Hume, Mountain and Carcajou rivers. Elevations range from 100 feet to 425 feet above sea level.

Camp and equipment were moved to the area over a winter read from Norman Wells, a distance of about seventy miles. Interim supplies were transported by ski-equipped Otter and Beaver aircraft operated by Northward Aviation of Norman Wells. Voice communications through Norman Wells to Calgary were by commercial two-way radio-telephone.

A gravity meter survey was run concurrently with the Vibroseis survey. The results of the gravity observations are being submitted in a separate report.

SURVEY

A TIA Theodolite was used to maintain vertical and horizontal control. Initial elevation and location were obtained from the Imperial Sans Sault Rapid No. 1 Well at 65° 43' North Latitude and 128° 49' West Longitude. Line bearings were established by Polaris observations repeated at intervals throughout the prospect. To ensure accuracy all lines were tied in loops with double runs on hanging lines.

FIELD PROCEDURE - PARTY 851

A Mandrel Industries Sum-It digital recording system capable of summing 32 sweeps was used for field recording. The source of seismic energy was three Failing Y-600 hydraulic vibrators mounted on International trucks. A fourth vibrator unit was held on standby.

The vibrators were placed fifty feet apart and activated by a sweep frequency of 20-56 Hertz transmitted by the Sum-It recorder. Each seven second sweep had a recording recovery time of thirteen seconds. Thirty-two sweeps were made along a 220 foot in line sweep interval at each sweep location. All sweeps were recorded without A.G.C. or filtering, summed and permanently recorded on 9-track digital tape.

The common-depth-point horizontal stacking technique was used to obtain optimum data. Sweep point intervals of 660 feet and receptor intervals of 220 feet were used for 400% continuous coverage. In the portion of the prospect North of line 7, the configuration was changed to: Sweep point interval 300 feet, receptor interval 150 feet and coverage 600%. To minimize the horizontal noise waves associated with surface energy sources the nearest receptor was offset 440 feet. The spread layout was 24 trace bilateral with total spread distances of 2850 and 2100 feet as shown on the enclosed diagrams. Eighteen Electrotech EVS-20, 28 cycle geophones were planted at each recording station in an in-line pattern with a total length of 204 feet.

<u>FIELD PROCEDURE - PARTY 115</u>

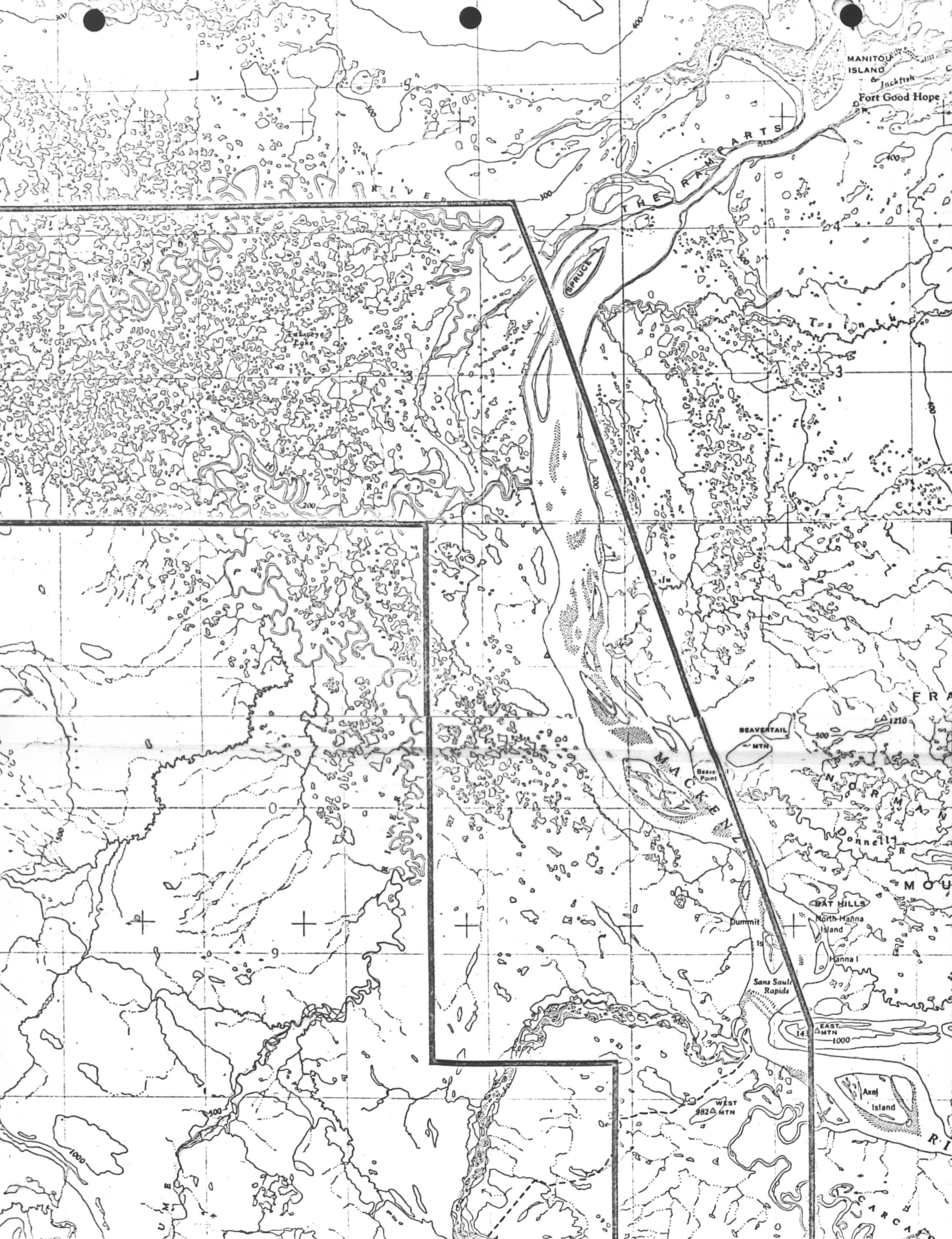
Field recording was by means of a Texas Instruments Series 10,000 digital recording system with TI 1008 21-track tape transport. All shots were recorded through a 21-120 Hertz filter.

Shot holes were drilled to 45 feet and preloaded with 5 pound charges. The shot point interval was 600 feet and receptor station interval 150 feet for 300% continuous coverage. Nine EVS-2, 14 cycle geophones were arrayed in line over a 120 foot interval at each station.

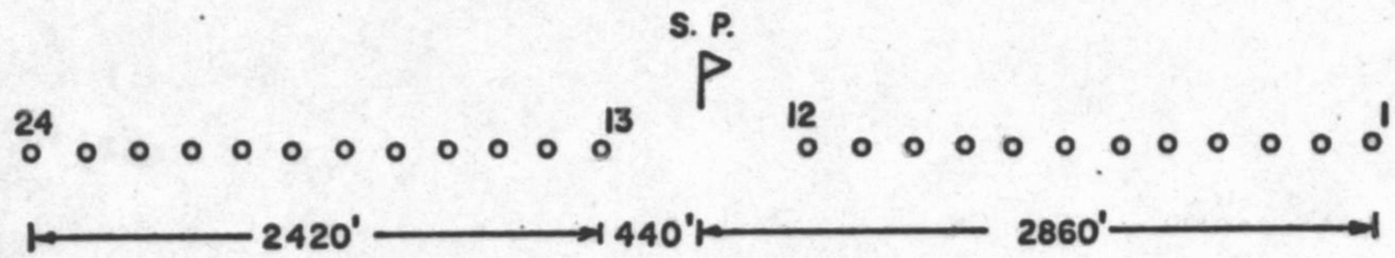
DATA PROCESSING

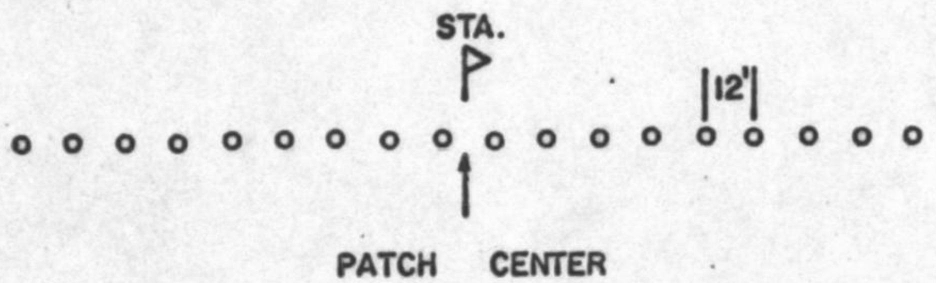
The digital field reels were returned to Calgary for processing by CDP Computer Data Processors Ltd.

All seismic records were combined by line into continuous cross-sections by the following sequence of operations; demultiplex of recorded data, Vibroseis cross-correlation,normal-move-out correction, static corrections,trace gather, horizontal stack, band-pass filter,film display. The static corrections were picked manually by flattening the Hume reflection. Normal-move-out corrections were obtained empirically from uncorrected play-backs and adjusted throughout the prospect.

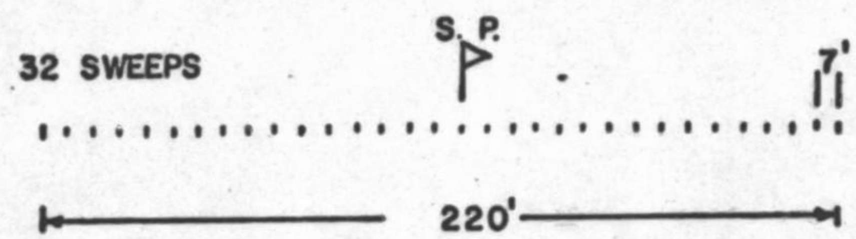

MANITOU ISLAND
Jackfish
Fort Good Hope
THE RAMPARTS
RIVER
SPRUCE
BEAVERTAIL MTN
Beaver Point
MACKENZ
NORMAN
FRA
Donnell R
MOU
BAT HILLS
North Hanna Island
Hanna I
Dummit Is
Sans Sault Rapids
EAST MTN
WEST MTN
982
Axel Island
RIVER
CARCA

SPREAD LAYOUT





GEOPHONE PATTERN

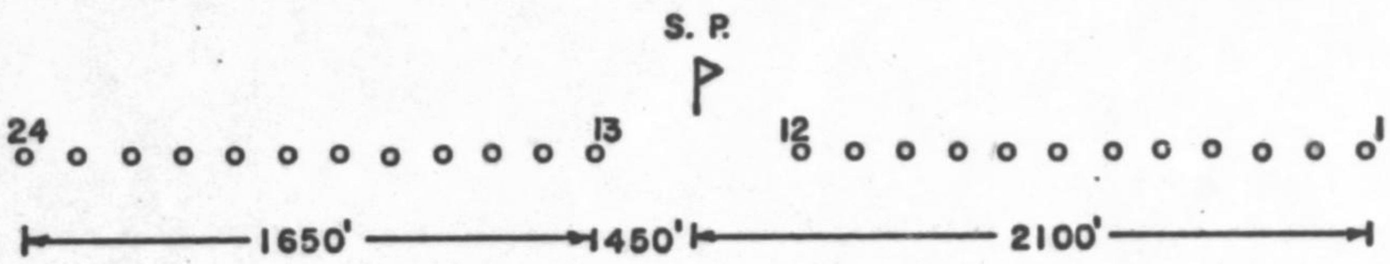


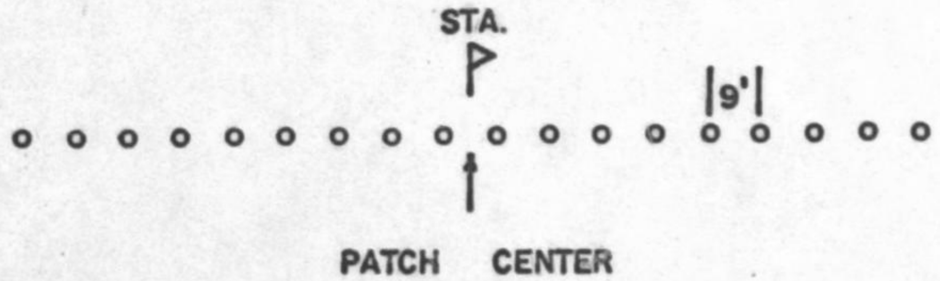
SWEEP PATTERN

PARTY - 851

(South of Line - 7)

SPREAD LAYOUT





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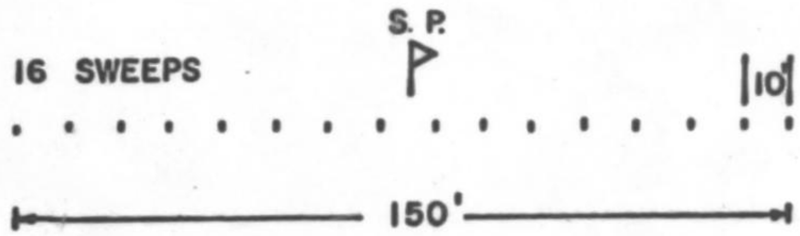
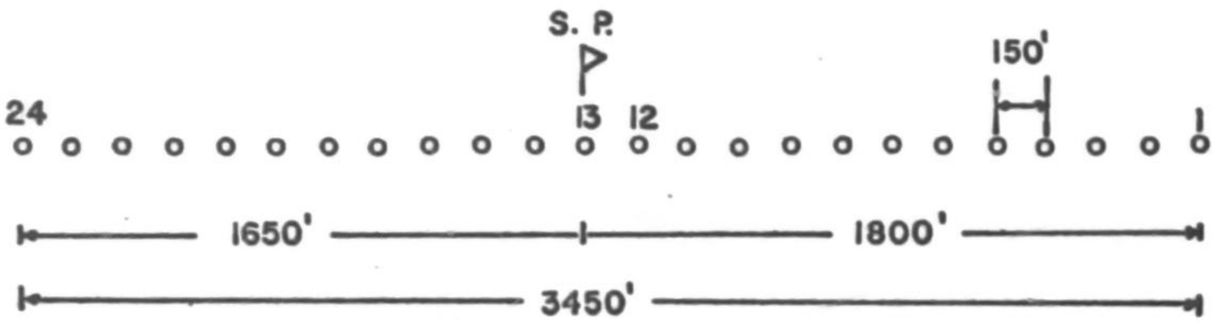


SWEEP PATTERN

PARTY - 851

(North of Line - 7)

SPREAD LAYOUT



GEOPHONE PATTERN

PARTY - 115

STATISTICAL DATA

PARTY 851

Recording Days	75
Experimental Days	1
Move Days	5
Down Days	7
Driving Time (Hours)	249.0
Experimental Time	9.0
Recording Time	752.0
Total Time	1010.0
Total Profiles	2267
Average Profiles Per Day	30
Total Miles of Profile	204.4
Average Miles Per Day	2.7
Total Sweeps	3 x 72544
Average Sweeps	3 x 967
L.V.L. Holes Drilled	242
Total Footage	7282
Total Powder	2275
Total Caps	258

LIST OF PERSONNEL

PARTY 851

H. McGregor	Party Chief *
C. Lewis	Geophysicist *
F. Lebrechthausen	Gravity Computer *
H. Hoek	Computer
K. Schwabl	Computer *
C. Nordquist	Party Manager *
A. Brennand	Party Manager *
B. Block	Observer *
R. Graves	Junior Observer *
W. Olmsted	Vib. Driver & Vib. Technician *
P. Lloyd	Vib. Driver *
R. Whincup	Vib. Driver *
G. Scott	Vib. Driver *
D. Downes	Line Truck *
A. Lafferty	Line Truck *
B. Boniface	Recorder's Helper *
C. Baucan	Recorder's Helper *
T.E. Louison	Recorder's Helper *
E. Manual	Recorder's Helper *
A. Orlias	Recorder's Helper *
C. Tobac	Recorder's Helper *
A. Shae	Recorder's Helper
R. MacIntosh	Driller *
F. Robichaud	Driller *

G. Nichols	Driller & Helper *
R. Meier	Gravity Survey *
S. Strom	Gravity Survey
G. Pete	Correlator Operator *
J. Thompson	Surveyor
W. Weinkauf	Surveyor *
D. Jaques	Surveyor *
E. Fimrite	Rodman*
J. Touro	Rodman *
A. Thompson	Supplyman
N. Ingram	Mechanic
H. MacKeenan	Mechanic

AMERICAN PERSONNEL ATTACHED TO THE CREW

J. Gaskins	Observer
H. Sorrey	Vib. Technician
H. Primm	Correlator Technician
E. Davis	Sum-It Technician
C. Gilmer	Vib. Driver
B. Russell	Vib. Driver
C. Ayers	J.O. & Correlator Opr.

* Denotes basic personnel covered in contract

LIST OF EQUIPMENT

PARTY 851

RAY GEOPHYSICAL LIMITED

1	Recording Unit	International R192, 4 x 4
4	Vibrator Units	Ford 850, 4 x 6
2	Cable Units	Dodge 300, 4 x 4
1	Personnel Carrier	International 4 x 4
1	Utility & Cable Unit	Dodge 300, 4 x 4
1	Survey Unit	Dodge 100, 4 x 4
1	Party Manager's Unit	Dodge 100, 2 x 4
1	Maintenance Unit	International B160, 2 x 4
1	Drill Unit	Dodge 700, 2 x 4
1	Sewel Auger	
4	Vibrators	Y600B
1	Digital Sum-It System No. 7	
1	Fortune Recorder Analog	
1	S.D.W. - 100 Dry-Write Camera	
5	Motrac Radios for field communication	
4	Motrac Radios for field communication	
100	Strings Geophones EVS20B, 28 cycle, 18 per string	
13	880', CDP Cables with 110' and 220' take-outs	
1	Vibroseis Marine Correlator	
2	TIA Theodolites	
1	Norden Gravity Meter	

FORTIER & ASSOCIATES

6	Camp Trailers, Sleight mounted
1	Fuel sloop, sleight mounted
2	Light Plants

BOREK CONSTRUCTION LTD

1 D6C Bulldozers, Units #90, 130 & 150

2 D7E Bulldozers

2 Pickup Units

1 Fuel sloop and camp

CORLISS CONSTRUCTION

2 D6C Bulldozers

1 Pickup Unit

1 Fuel sloop and camp unit

WORTHING TRANSPORT

1 Fuel & Cargo Unit

KENASTON TRANSPORT

1 Fuel & Cargo Unit

STATISTICAL DATA

PARTY 115

Miles Shot	52.37
Number of Shots	466
Number of Profiles	453
Recording Days Worked	10
Total Hours Charged	178
Average Production In Miles Per Day	5.24
Move Days	3
Down Days	Nil
Holes Drilled	465
Footage Drilled	20,089
Total Powder	2,825#
Total Caps	492

PARTY 115 EQUIPMENT

Recording Unit	1964 Fargo W300 4 x 4	Ray Geophysical
Shooting Unit	1966 Fargo W300 4 x 4	" "
Reel Unit	1968 Dodge W300 4 x 4	" "
Reel Unit	1966 Dodge W200 4 x 4	" "
Survey Unit	1968 Dodge W100 4 x 4	" "
Survey Unit	1968 Dodge W100 4 x 4	" "
Drill: CFD-1 A/W	1967 Dodge	Kenaston Drilling
Drill: CFD-1 A/W	1967 Dodge	Bronco Drilling
Drill: Mayhew 1000	1968 Ford T850	" "
Drill: Norhill Auger	1968 Ford 600	Kenaston "
Drill: G-D Top Drive	1967 GMC 960	Bronco "
Water Unit-Supply	1966 IHC 1800	Kenaston "

Water Unit	1964 Ford 750	Kenaston Drilling
Water Unit	1964 GMC 960	Bronco Drilling
Water Unit	1967 GMC 960	" "
Drill Support	1967 Ford 250 4 x 4	" "
Drill Support	1966 IHC 1200 4 x 4	" "
Drill Support	1967 Ford 250 4 x 4	Kenaston "
4 D6C Dozers		MacMillan Constr.
2 Dozer Support Vehicles		" "
2 Fuel sloops		" "
1 Line Drag		" "
3 Camp Units		" "
1 Single Axle Hi-Boy Trailer		Chevron Standard
1 1969 GMC Tanker-Supply Unit		Worthing Transport
10 Camp Trailers - 52 Man Accomodation		Nodwell Brothers
2 Power Plants		" "
1 Set TI 10,000 Digital Recording System		Ray Geophysical
1 Mandrel RMTU-RDTU Remote Firing System		" "
1 Mandrel SDW-100 Dry-Write Camera		" "
4 Motorola FM Radios for field communications		" "
2 TIA Theodolites, Rods and Flagging		" "
12 975' CDP Cables, 52 Conductor, 150' Interval		" "
60 EVS-2, 14 cycle, 9 seismometers @ 15' geophone strings		Mandrel Industries

PERSONNEL - PARTY 115

J.C. Fife	Party Chief
J. Gair	Seismologist
R. Nagai	Computer
H. Gude, R. Long	Field Office Clerk
R. Irving	Party Manager
M. Caron	Mechanic
A. Pratt	Mechanic
S. Dove	Observer
M. Funk	Junior Observer
H. Schimanski	Shooter
D. Solonenko	Surveyor
G. Saunter	Surveyor
E. Rosser	Surveyor
H. Schimanski	Lineman
T. Stephans	Lineman
D. Wolanski	Rodman
J. Shae	Helper
G. Kelly	Helper
J. Cotchilly	Helper
J. Grandyambe	Helper
G. Touro	Helper
E. Smith	Helper
G. Barnaby	Helper
B. Christianson	Helper


MACKENZIE
RIVER


MACKENZIE
RIVER
2 of


MACKENZIE
RIVER
TRIAD OIL CO. LTD.
FORT GOOD HOPE AREA N.W.T.
TOP OF HUME
Scale 1" = 1 mile
Shot by RAY GEOPHYSICAL LTD.
3

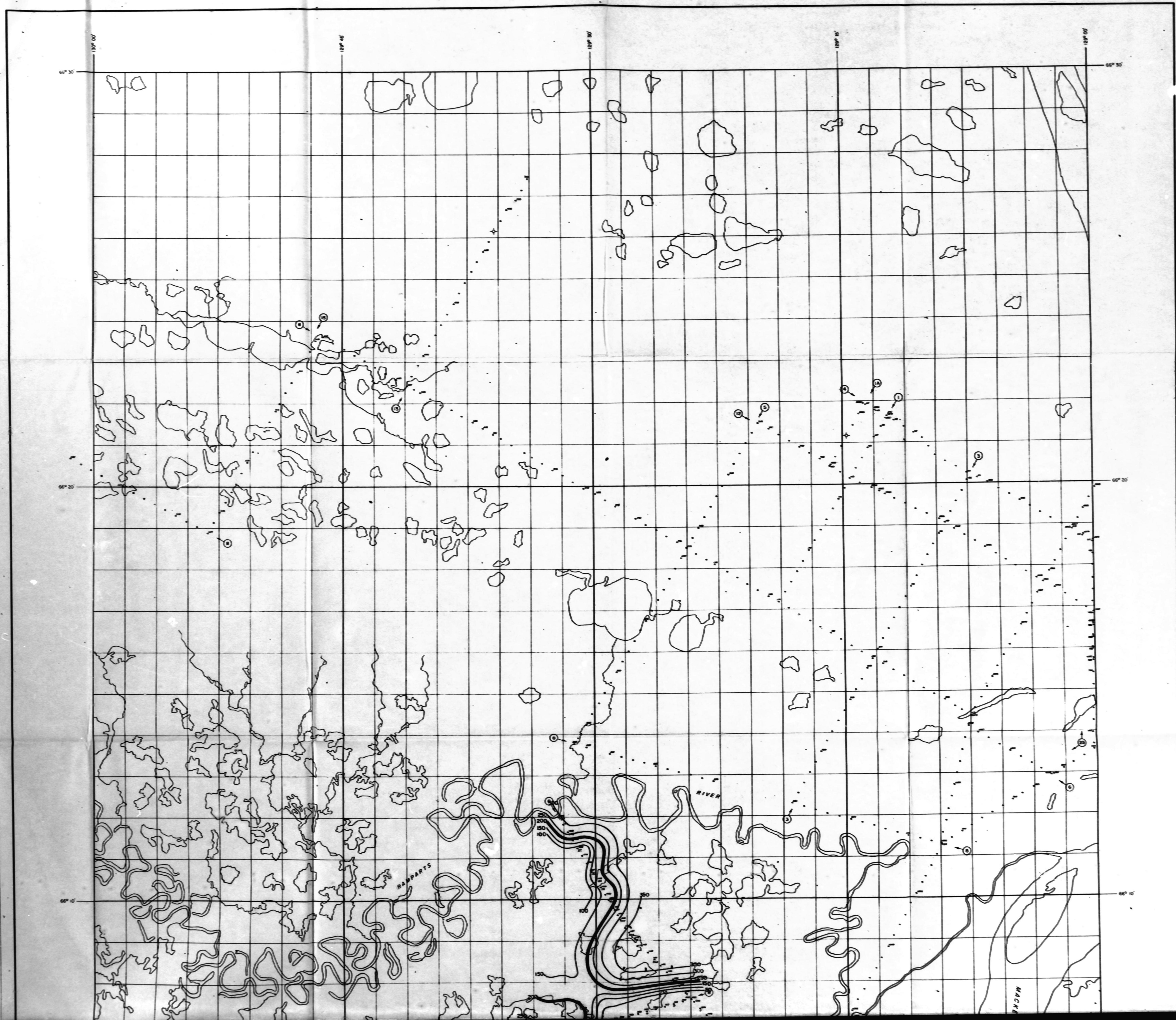
4 of 4

TRIAD OIL CO. LTD.

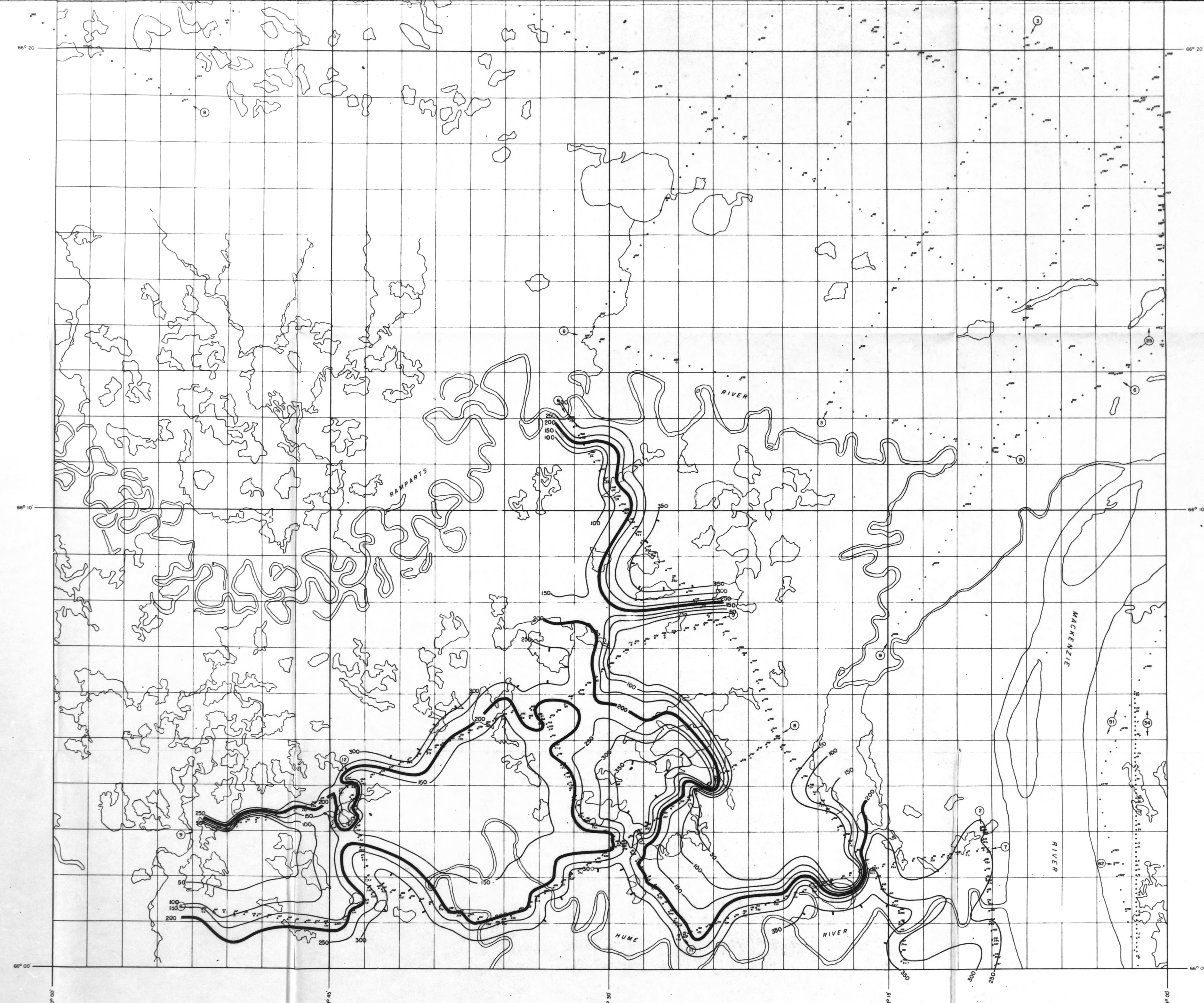
FORT GOOD HOPE AREA N.W.T.

TOP OF HUME

Interpreted by N. ANTON	Date MAY 29, 1969	Remarks
Contour interval .010 sec.	Datum 300'	Data obtained from single
Scale 1" = 1 mile	Party 851	(100%) sections
Shot by RAY GEOPHYSICAL LTD.		



130° 00'
129° 45'
129° 30'
129° 15'
129° 00'
66° 30'
66° 20'
66° 10'
RIVER
RAMPARTS
MACKE



FORT GOOD HOPE

WEATHERING DEPTH

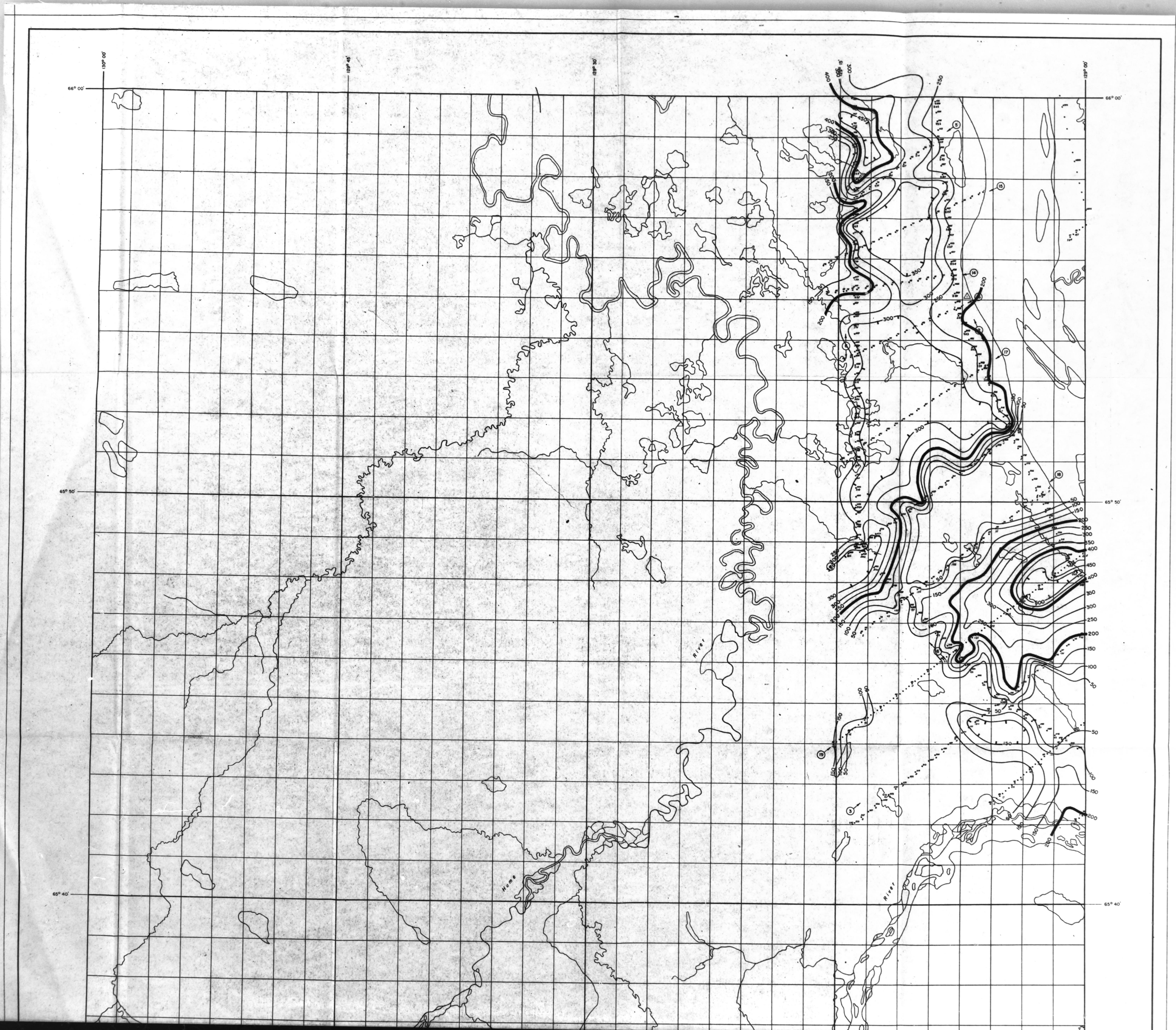
SCALE 1" = 1 MILE
DATE: JUNE 1969

C.I.: 50 FT
INTERPRETATION

by

RAY GEOPHYSICAL LTD

2 of 2



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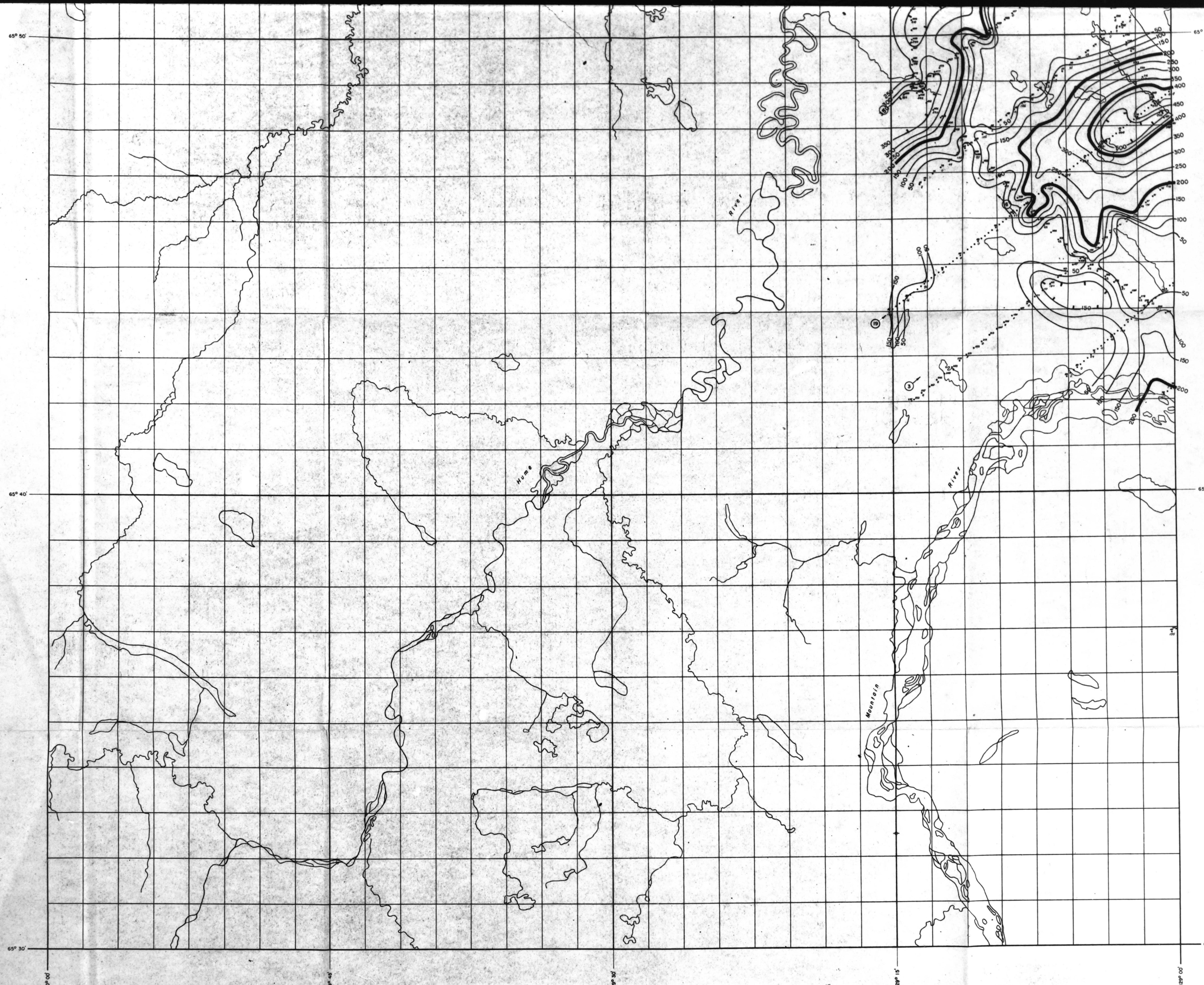


FORT GOOD HOPE

WEATHERING DEPTH

SCALE 1" = 1 MILE
DATE: JUNE 1969

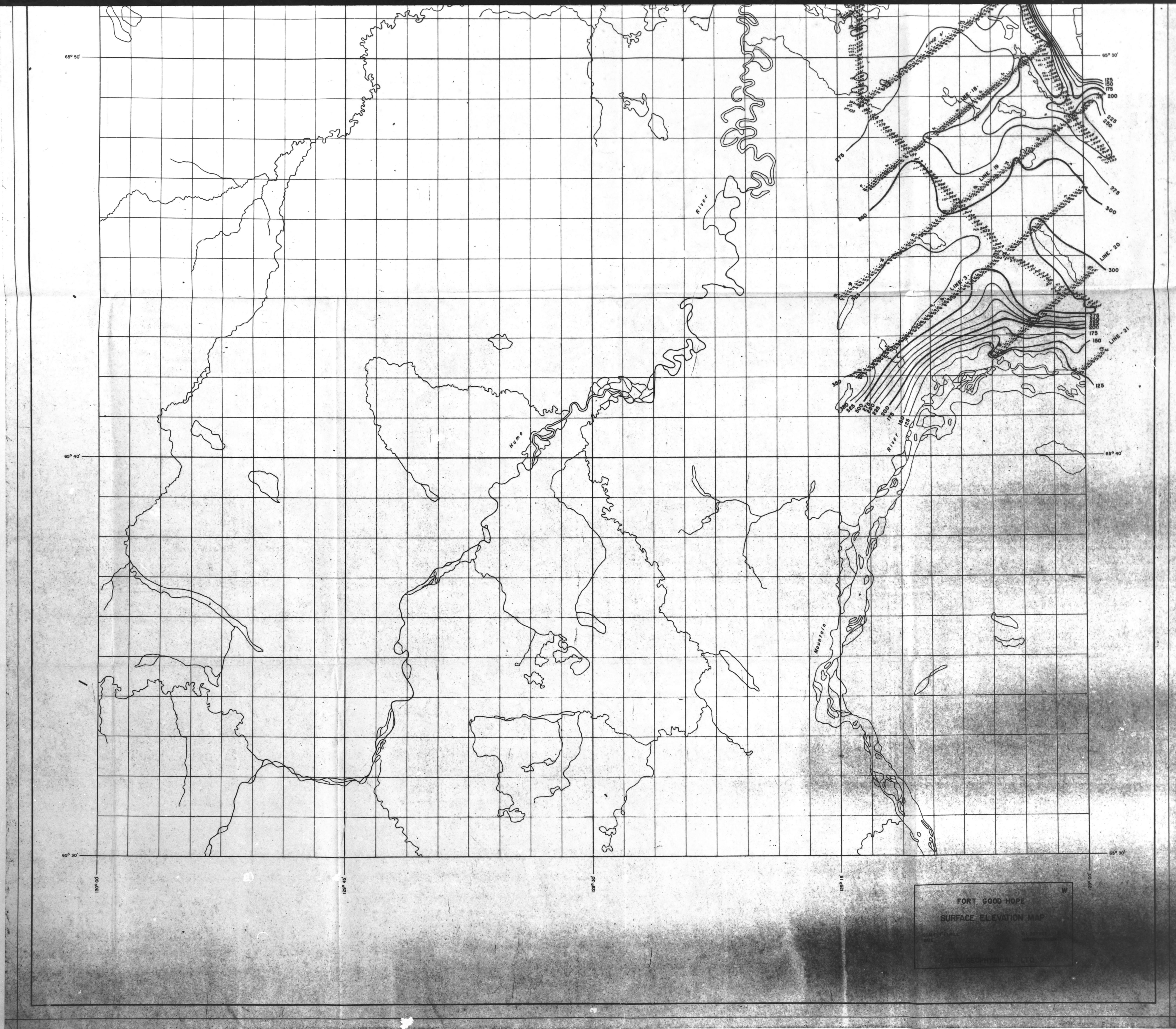
C.I.: 50 FT
INTERPRETATION

by

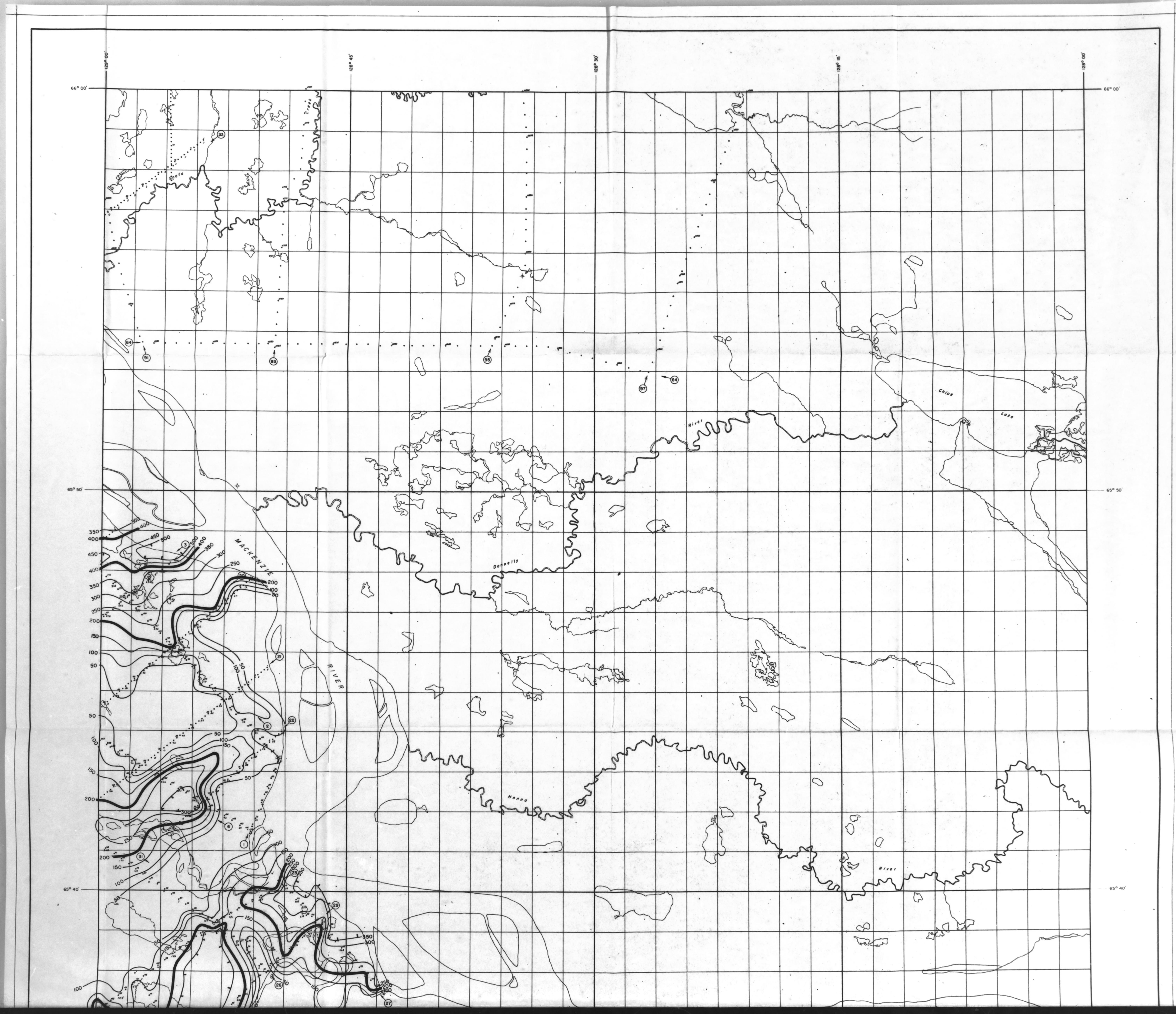
RAY GEOPHYSICAL LTD

2 of 2

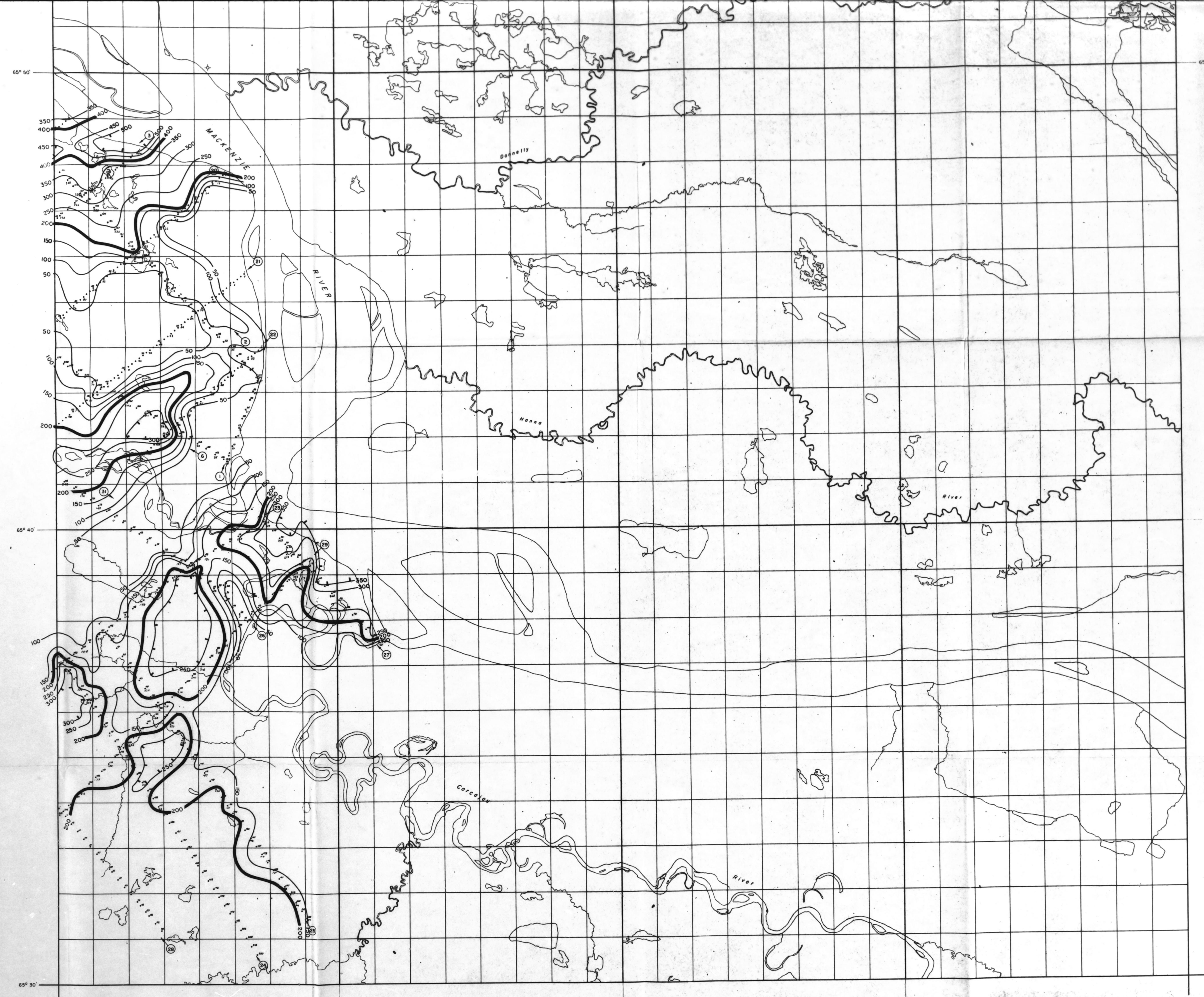

130° 00'
129° 45'
129° 30'
129° 15'
129° 00'
66° 00'
65° 50'
65° 40'
LINE 15
LINE 14
LINE 16
LINE 17
LINE 18
LINE 19
LINE 20
LINE 21
LINE 3
LINE 4
LINE 2
River
Hume
River
125
150
175
200
225
250
275
300
1 OF 2


65° 50'
65° 40'
65° 30'
130° 00'
129° 45'
129° 30'
129° 15'
129° 00'
LINE 18
LINE 19
LINE 20
LINE 21
Hume
River
Mountain
W
FORT GOOD HOPE
SURFACE ELEVATION MAP

2 of 2


66° 00'
65° 50'
65° 40'
MACKENZIE
RIVER
Donnelly
River
Chick
Lake
River

1 OF 2



FORT GOOD HOPE

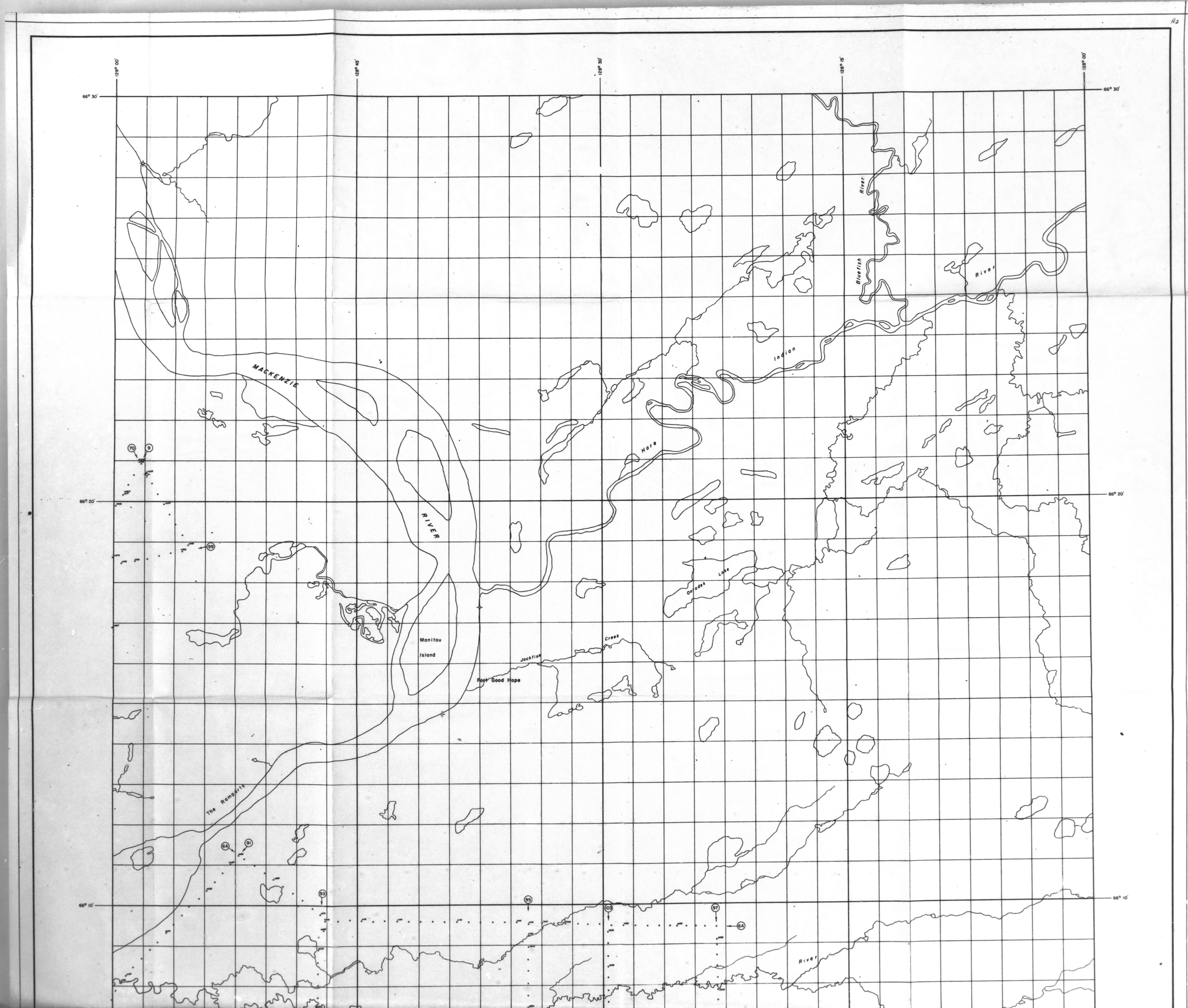
WEATHERING DEPTH

SCALE 1" = 1 MILE
DATE: JUNE 1969

C.I.: 50 FT
INTERPRETATION

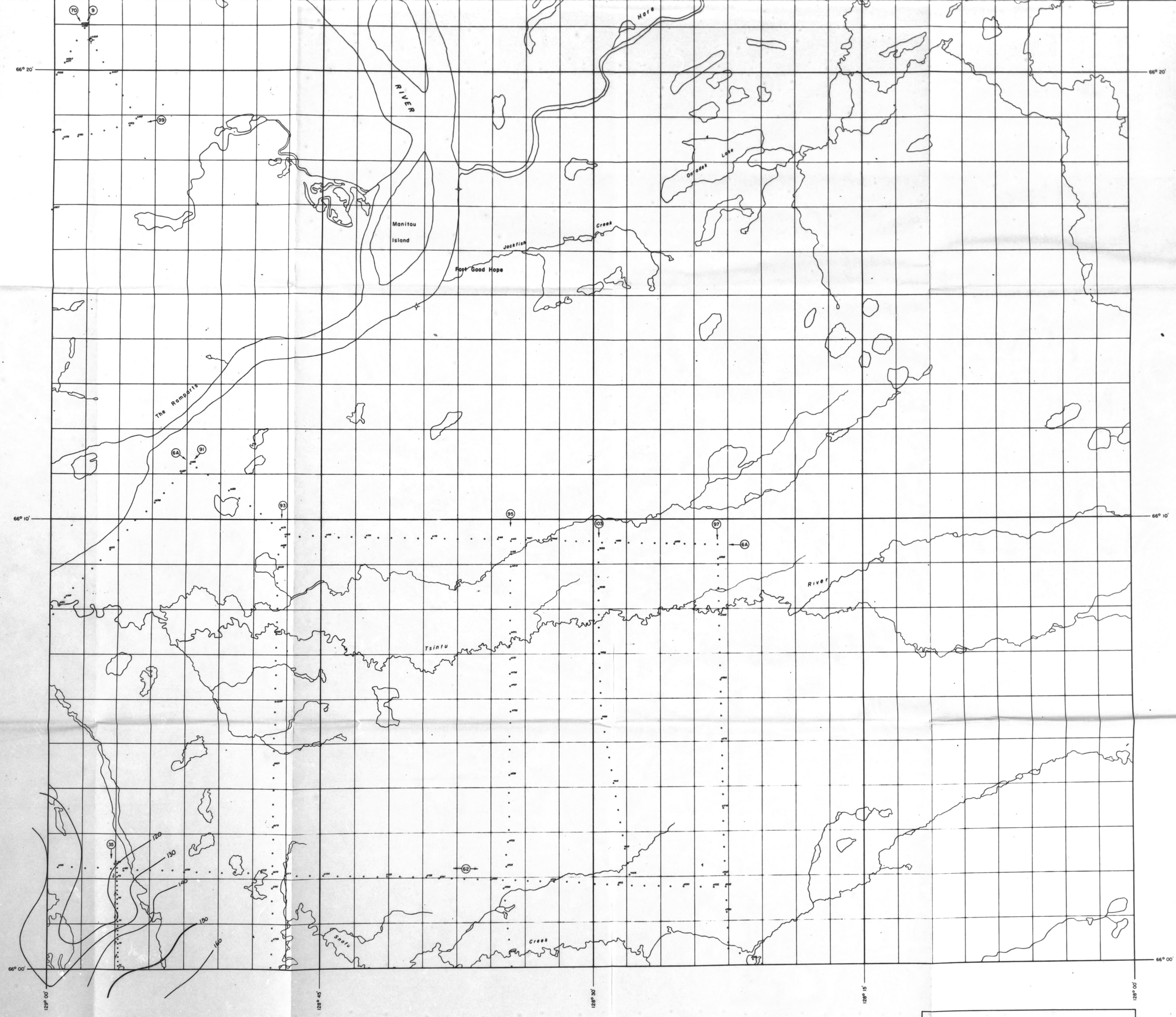
by

RAY GEOPHYSICAL LTD



129° 00'
128° 45'
128° 30'
128° 15'
128° 00'
66° 30'
66° 20'
66° 10'
MACKENZIE
RIVER
Manitou
Island
Fort Good Hope
Jackfish
Creek
Hare
Indian
River
Bluefish
River
Ontadek Lake
The Ramparts
70
9
99
6A
91
93
95
103
97
6A

1 of 2



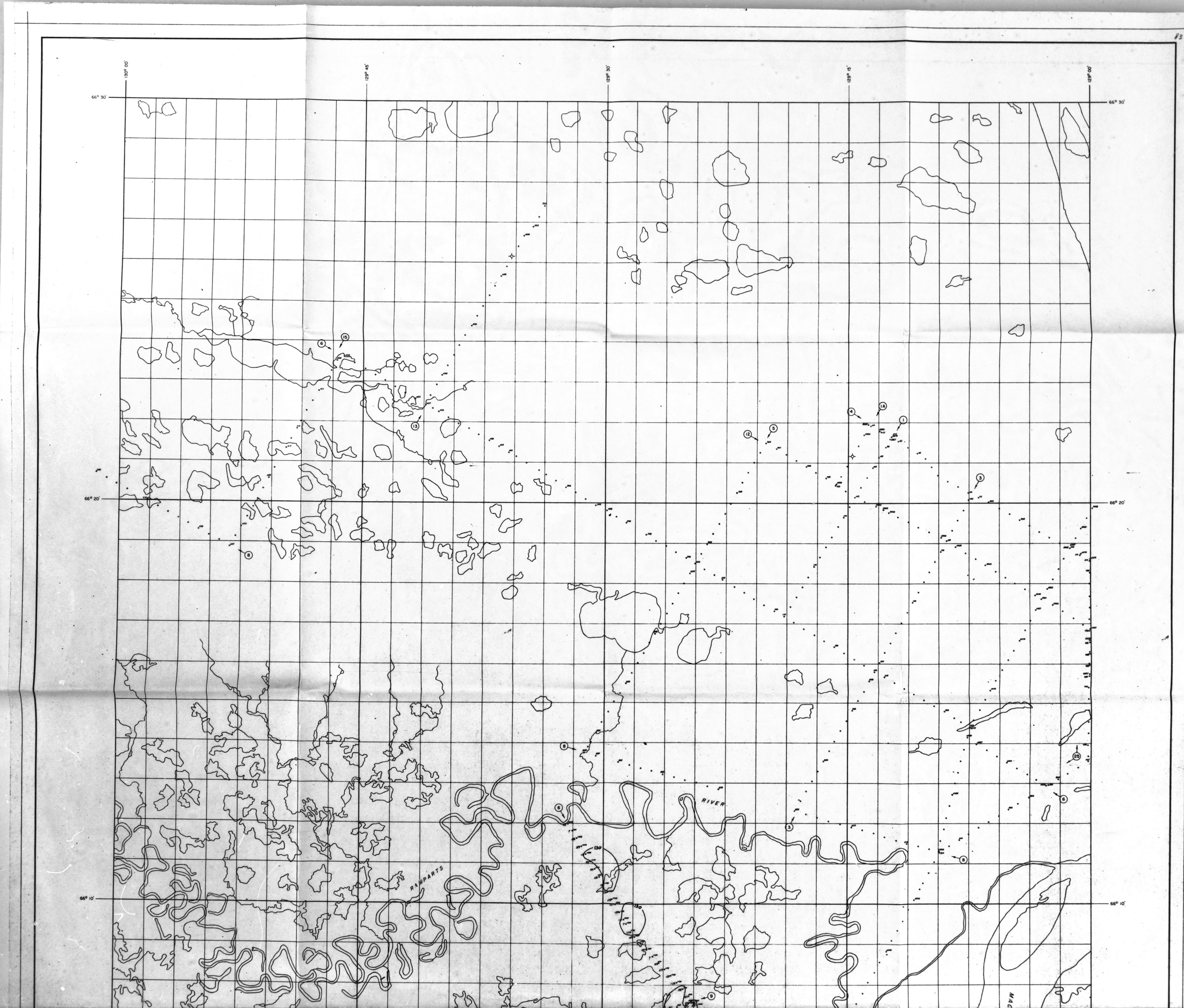
TRIAD OIL CO. LTD.

FORT GOOD HOPE AREA N.W.T.

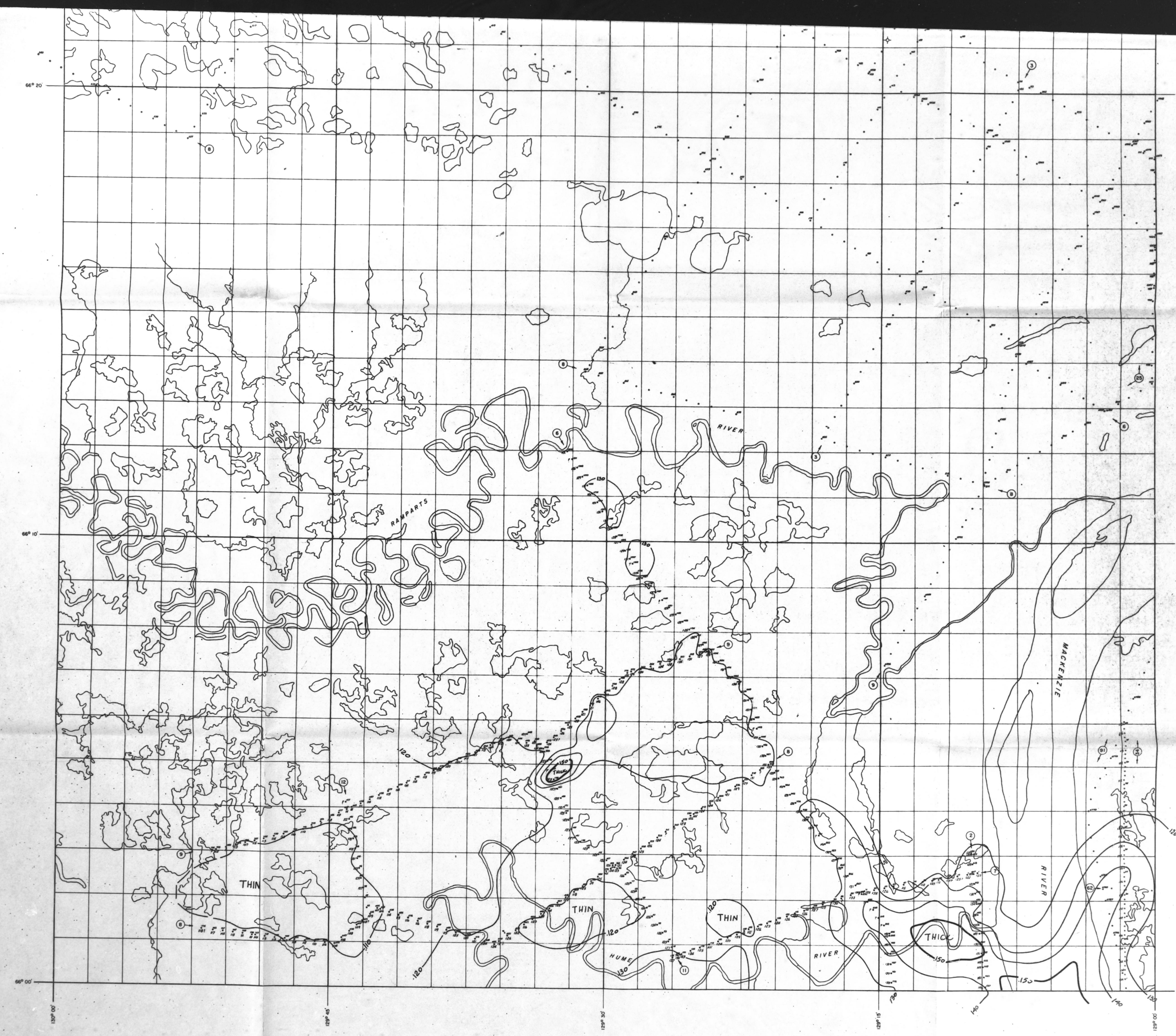
ISOCHRON - HUME TO RAMPART

Interpreted by: H. ANTON	Date: MAY 15, 1969	Remarks:
Contour Interval: .010 sec.	Datum: 300'	Data obtained from
Scale 1" = 1 Mile	Party No 851	single (100%) sections
Shot by: RAY GEOPHYSICAL LTD.		

2 of 2


130° 00'
129° 45'
129° 30'
129° 15'
129° 00'
66° 30'
66° 20'
66° 10'
RAMPARTS
RIVER

1 OF 2



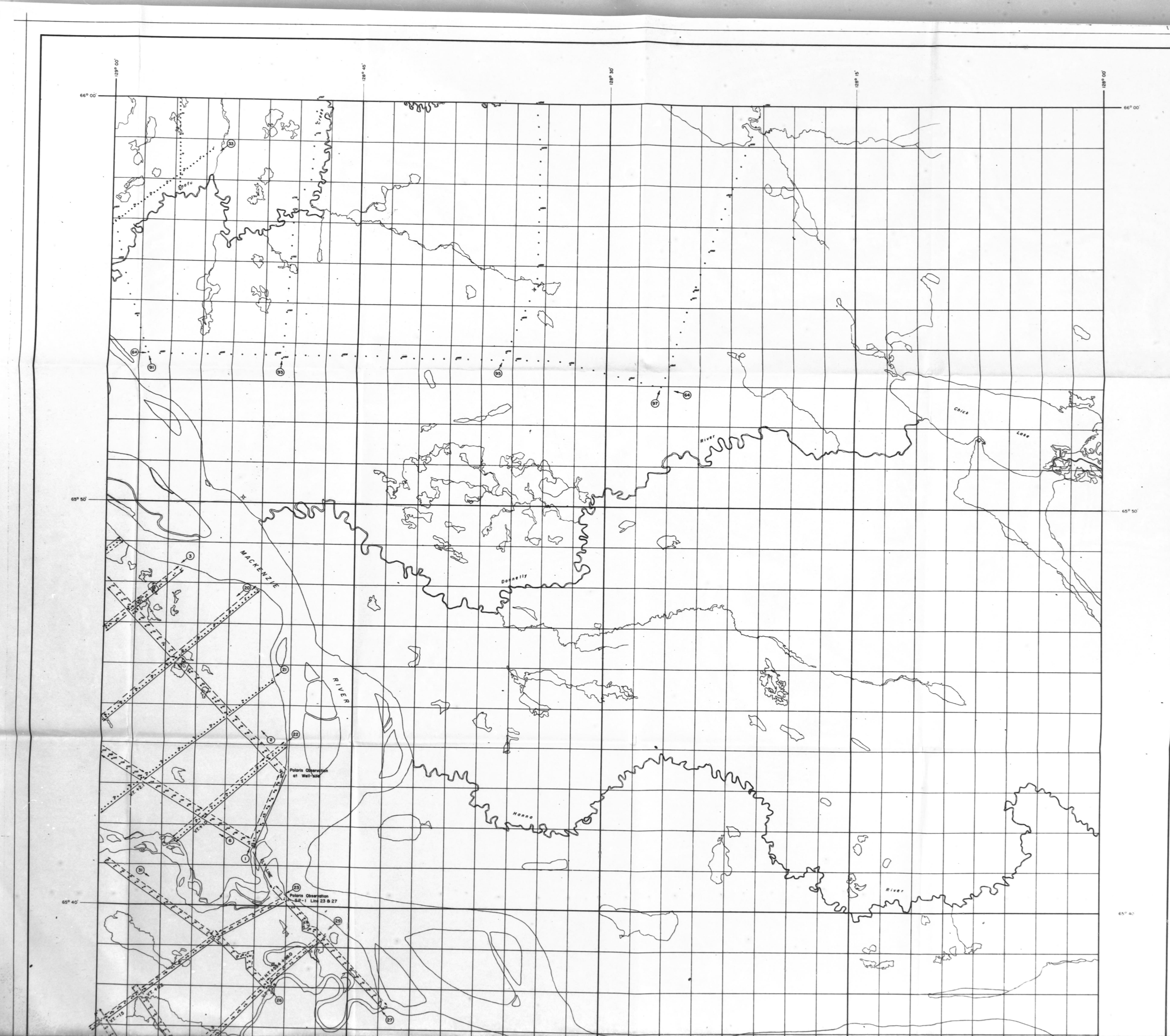
TRIAD OIL CO. LTD.

FORT GOOD HOPE AREA N.W.T

ISOCHRON - HUME TO RAMPART

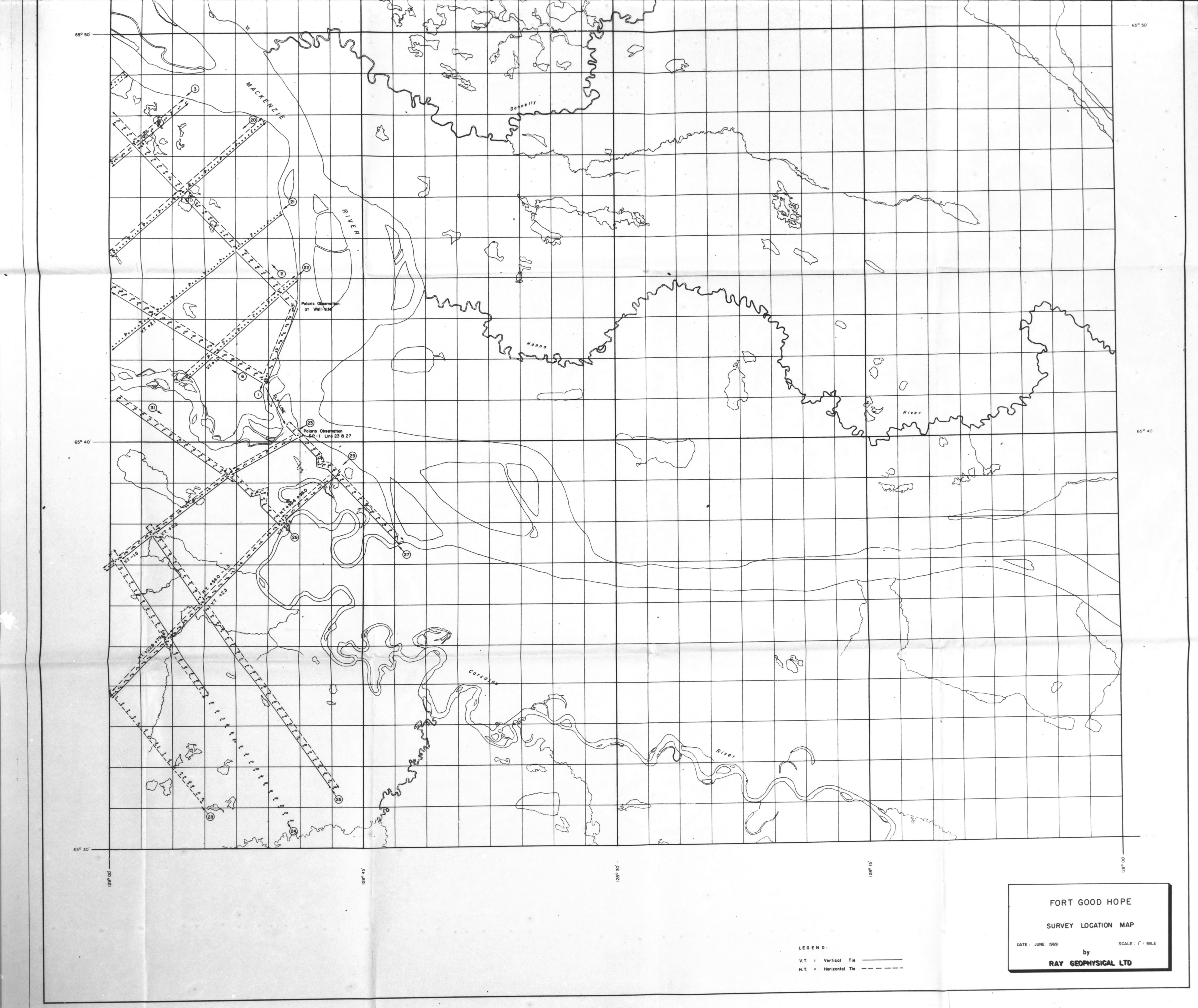
Interpreted by H. ANTON	Date MAY 15, 1969	Remarks
Contour interval .010 sec.	Datum 300'	Data obtained from
Scale 1" = 1 mile	Party N° 851	single (100%) sections
Shot by RAY GEOPHYSICAL LTD.		

2 of 2

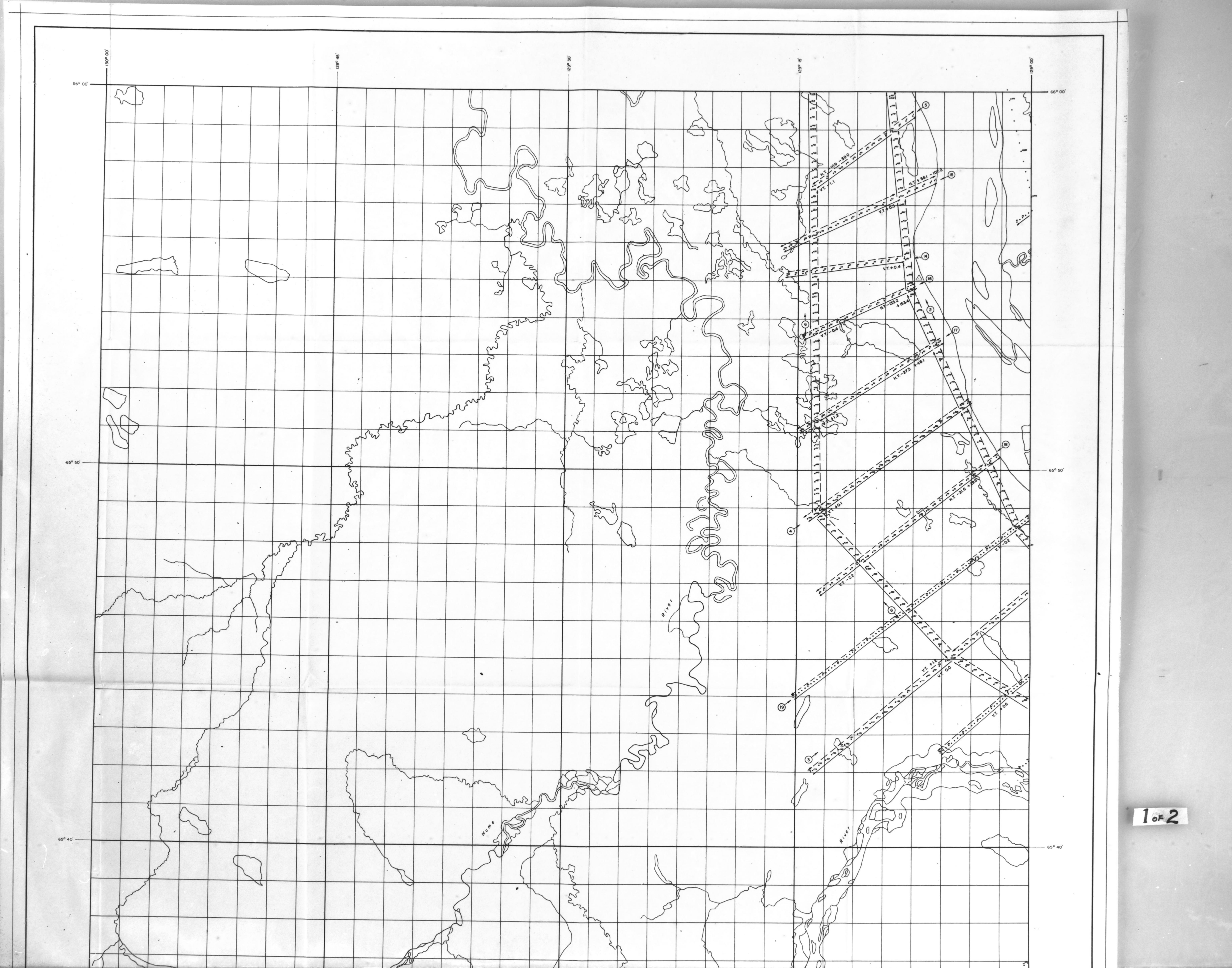


129° 00'
128° 45'
128° 30'
128° 15'
128° 00'
66° 00'
65° 50'
65° 40'
MACKENZIE
RIVER
Donnelly
River
Chick
Lake
Hanna
River
Polaris Observation
at Well-site
Polaris Observation
SP-1 Line 23 & 27
FLY LINE

1 OF 2

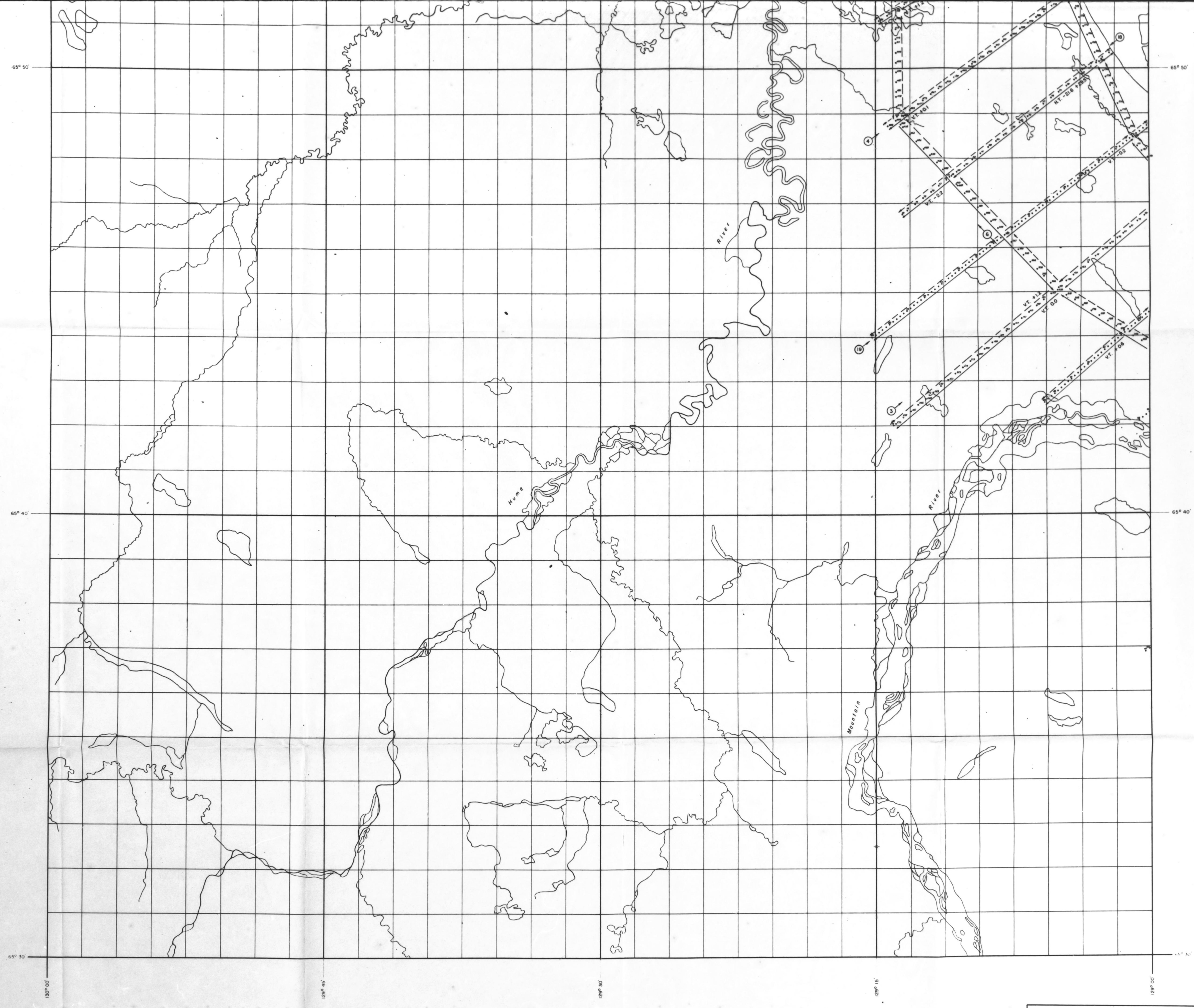

65° 50'
65° 40'
65° 30'
129° 00'
128° 45'
128° 30'
128° 15'
128° 00'
MACKENZIE
RIVER
Donnelly
Hume
River
Carcajou
River
Polaris Observation at Well-site
Polaris Observation
LEGEND:
V.T = Vertical Tie
H.T = Horizontal Tie
FORT GOOD HOPE
SURVEY LOCATION MAP
DATE: JUNE 1969
SCALE: 1" = MILE
by
RAY GEOPHYSICAL LTD

2 of 2



130° 00'
129° 45'
129° 30'
129° 15'
129° 00'
66° 00'
65° 50'
65° 40'
River
Hume
River

1 of 2



LEGEND:

V.T. = Vertical Tie

H.T. = Horizontal Tie

FORT GOOD HOPE

SURVEY LOCATION MAP

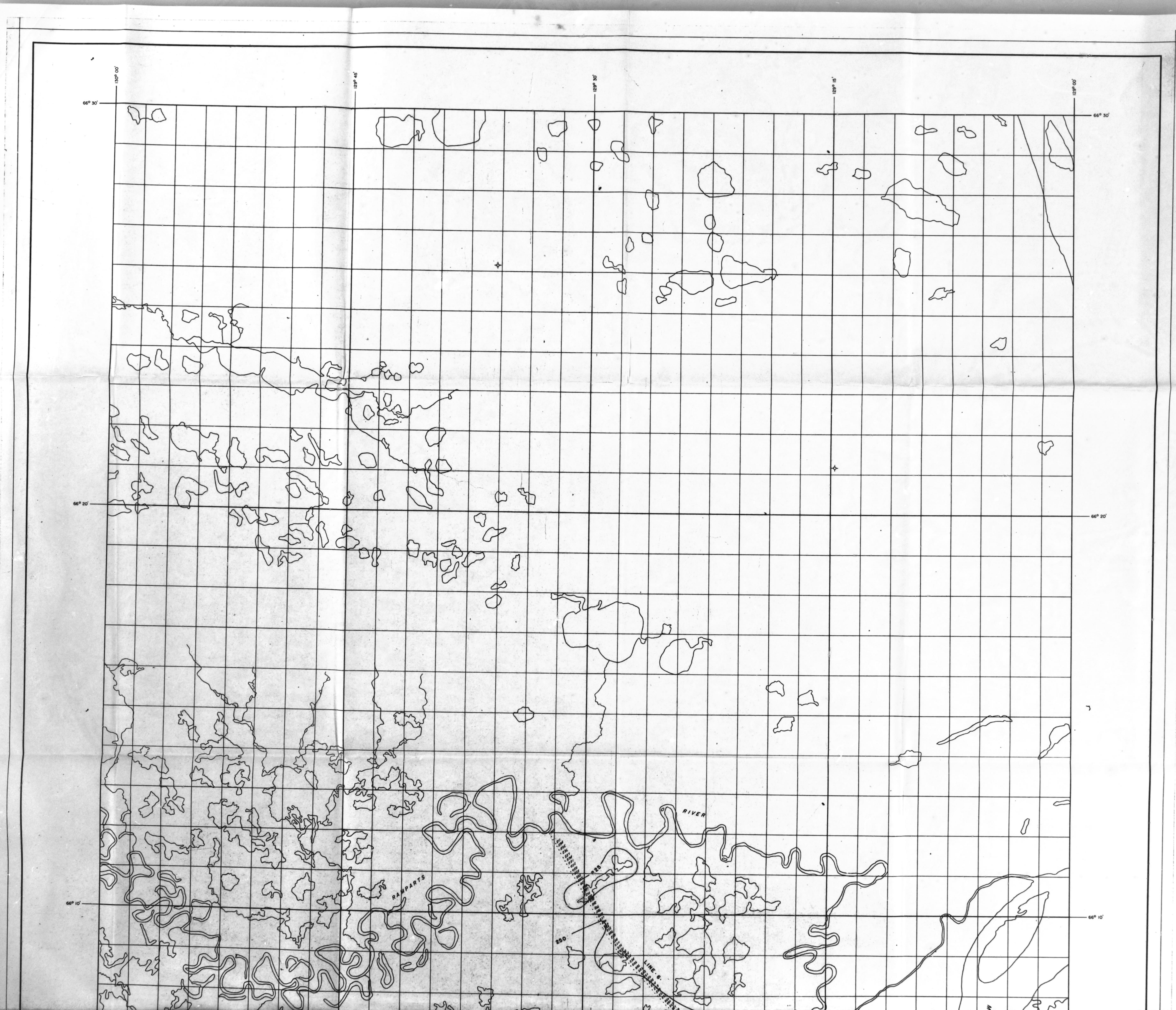
DATE: JUNE 1969

SCALE: 1" = MILE

by

RAY GEOPHYSICAL LTD

2 of 2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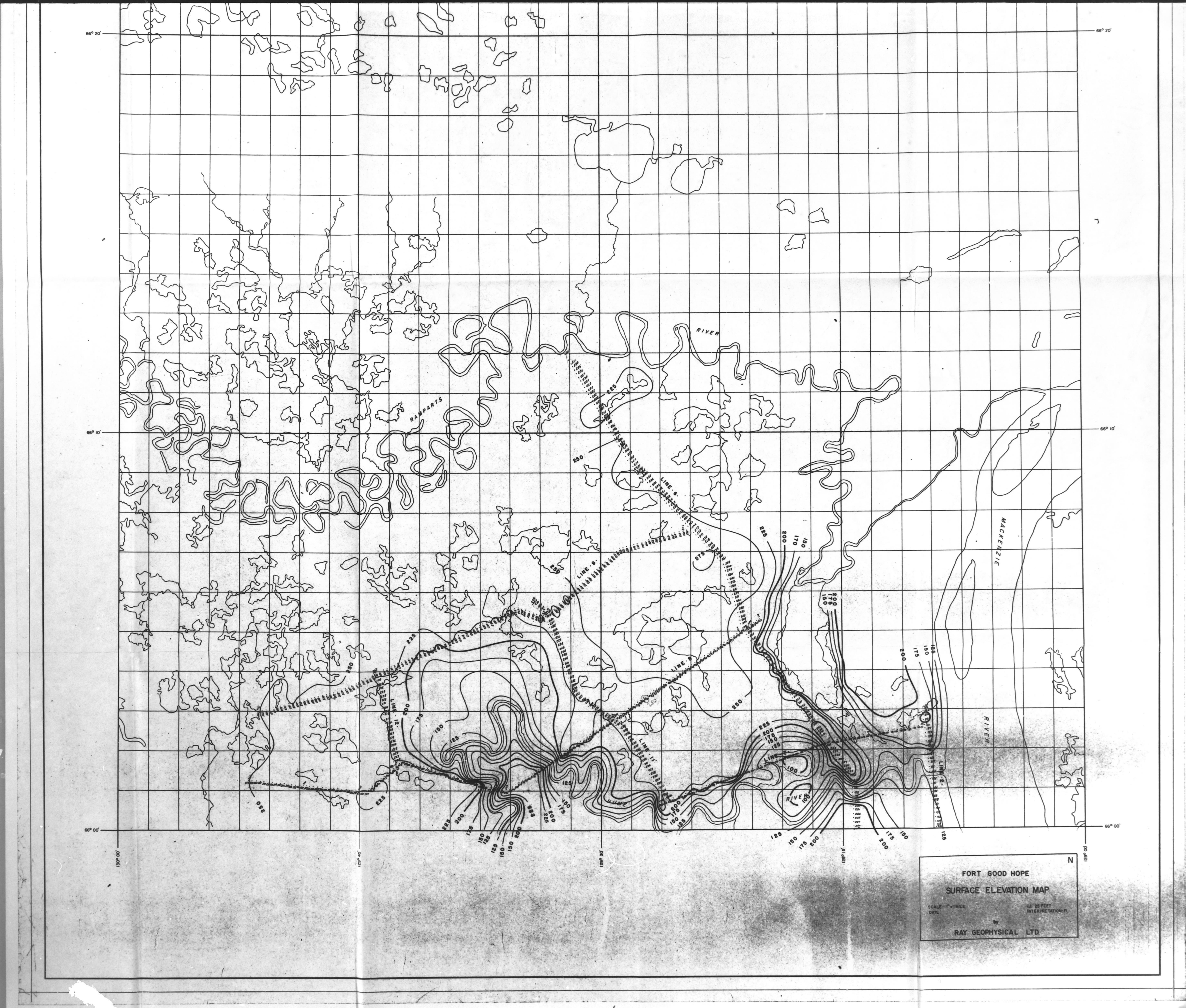
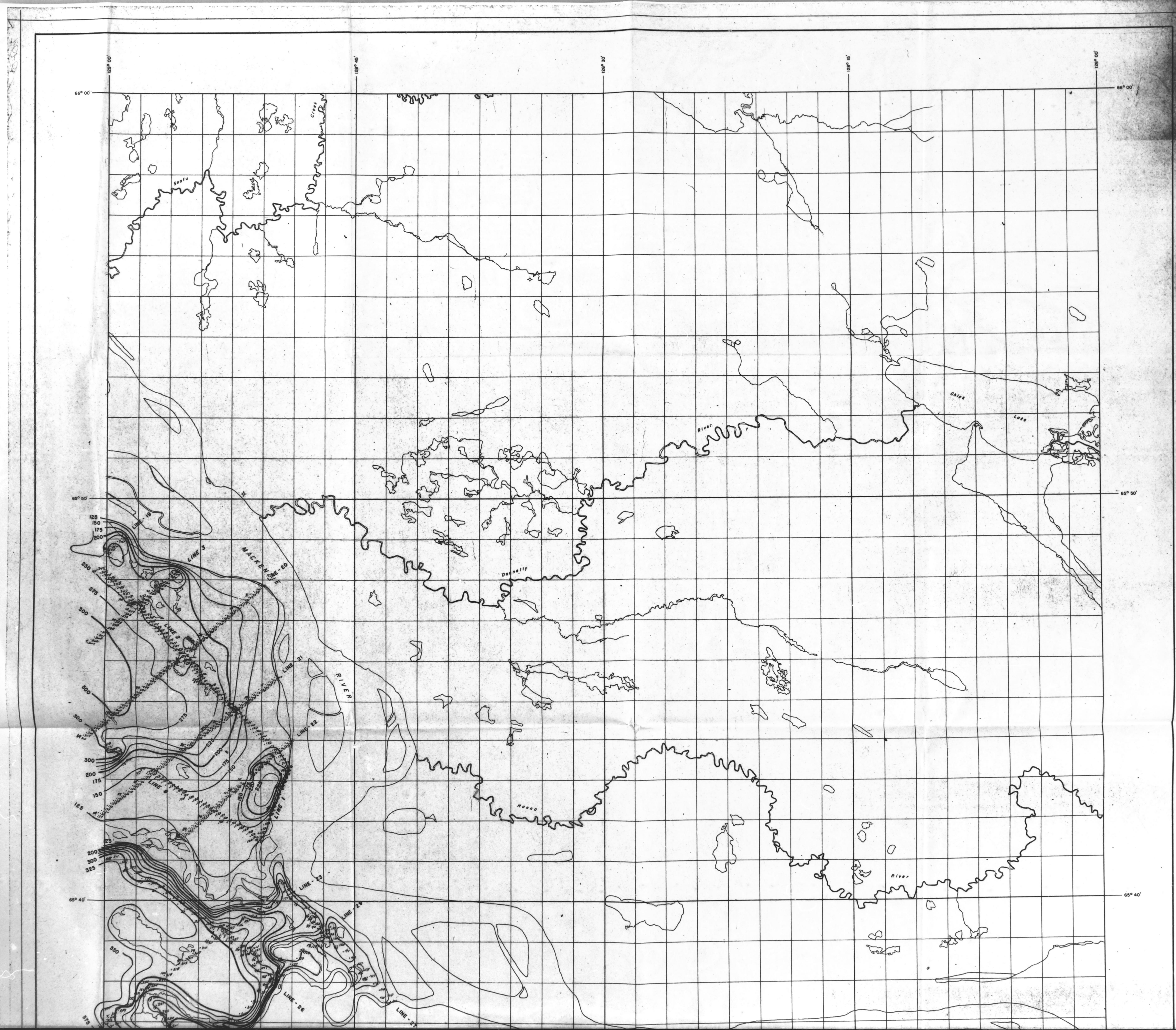
129° 45'
129° 30'
129° 15'
129° 00'
66° 30'
66° 30'
66° 20'
66° 20'
66° 10'
66° 10'
RIVER
RAMPARTS
225
250
LINE 6

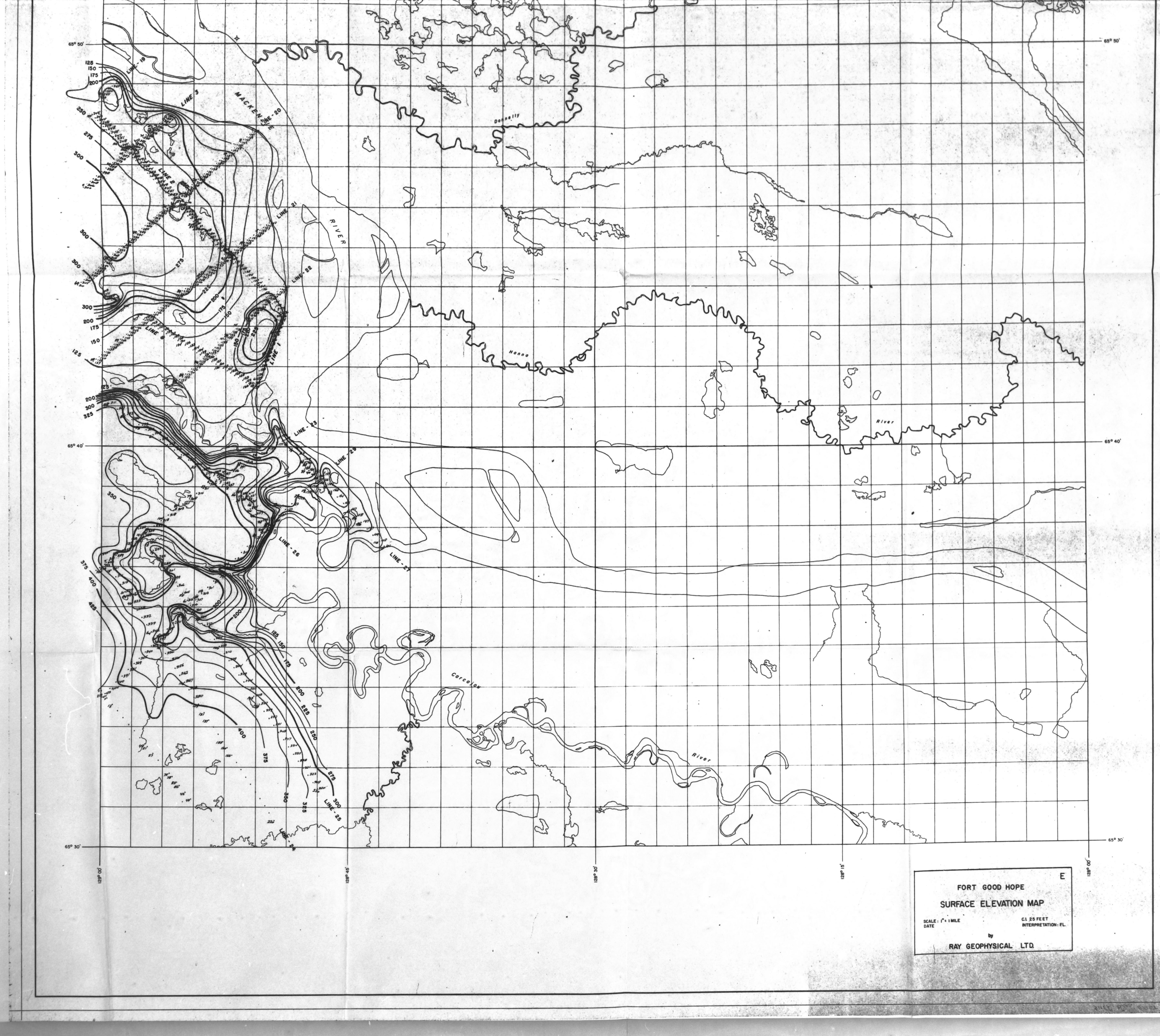

FORT GOOD HOPE
SURFACE ELEVATION MAP
SCALE: 1" = 1 MILE
DATE
C.I. 25 FEET
INTERPRETATION: FL
by
RAY GEOPHYSICAL LTD.
N
66° 20'
66° 10'
66° 00'
129° 00'
RIVER
RAMPARTS
MACKENZIE
RIVER
LINE 6
LINE 9
LINE 12
LINE 11

2 of 2

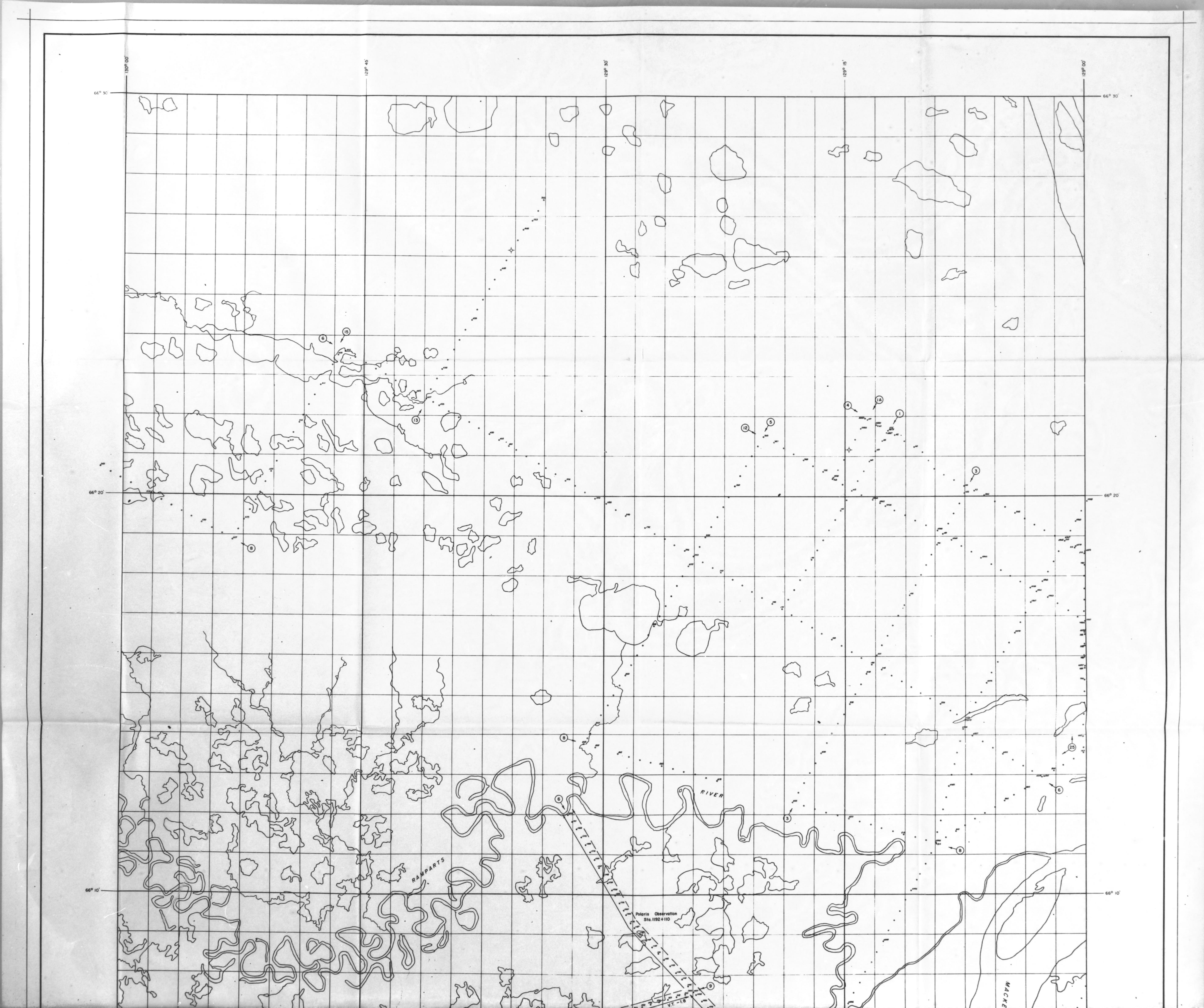


129° 00'
128° 45'
128° 30'
128° 15'
128° 00'
66° 00'
65° 50'
65° 40'
Snafu
Creek
River
Chick
Lake
Donnelly
MACKENZIE
RIVER
Hanna
River
LINE-3
LINE-20
LINE-21
LINE-22
LINE-23
LINE-26
LINE 1
LINE 6

1 OF 2

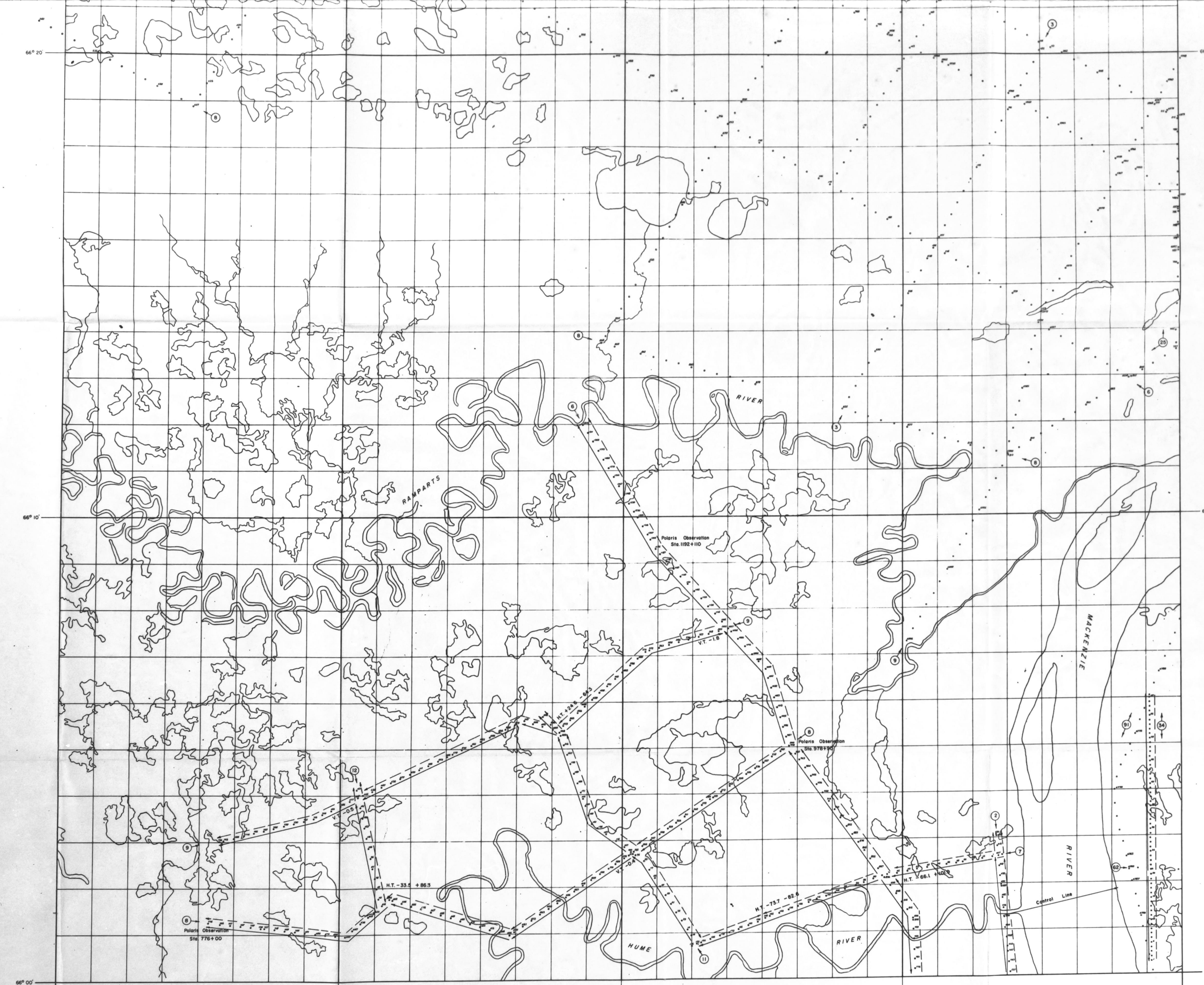

E
FORT GOOD HOPE
SURFACE ELEVATION MAP
SCALE : 1" = 1 MILE
DATE
C.I. 25 FEET
INTERPRETATION: F.L.
by
RAY GEOPHYSICAL LTD.
MACKENZIE
RIVER
Donnelly
Hanna
River
Carcajou
River
65° 50'
65° 40'
65° 30'
128° 00'

2 of 2



130° 00'
129° 45'
129° 30'
129° 15'
129° 00'
66° 30'
66° 20'
66° 10'
RIVER
RAMPARTS
Polaris Observation
Sta. 1192+110

1 OF 2



FORT GOOD HOPE

SURVEY LOCATION MAP

DATE: JUNE 1969 SCALE: 1" = MILE

by

RAY GEOPHYSICAL LTD

LEGEND:

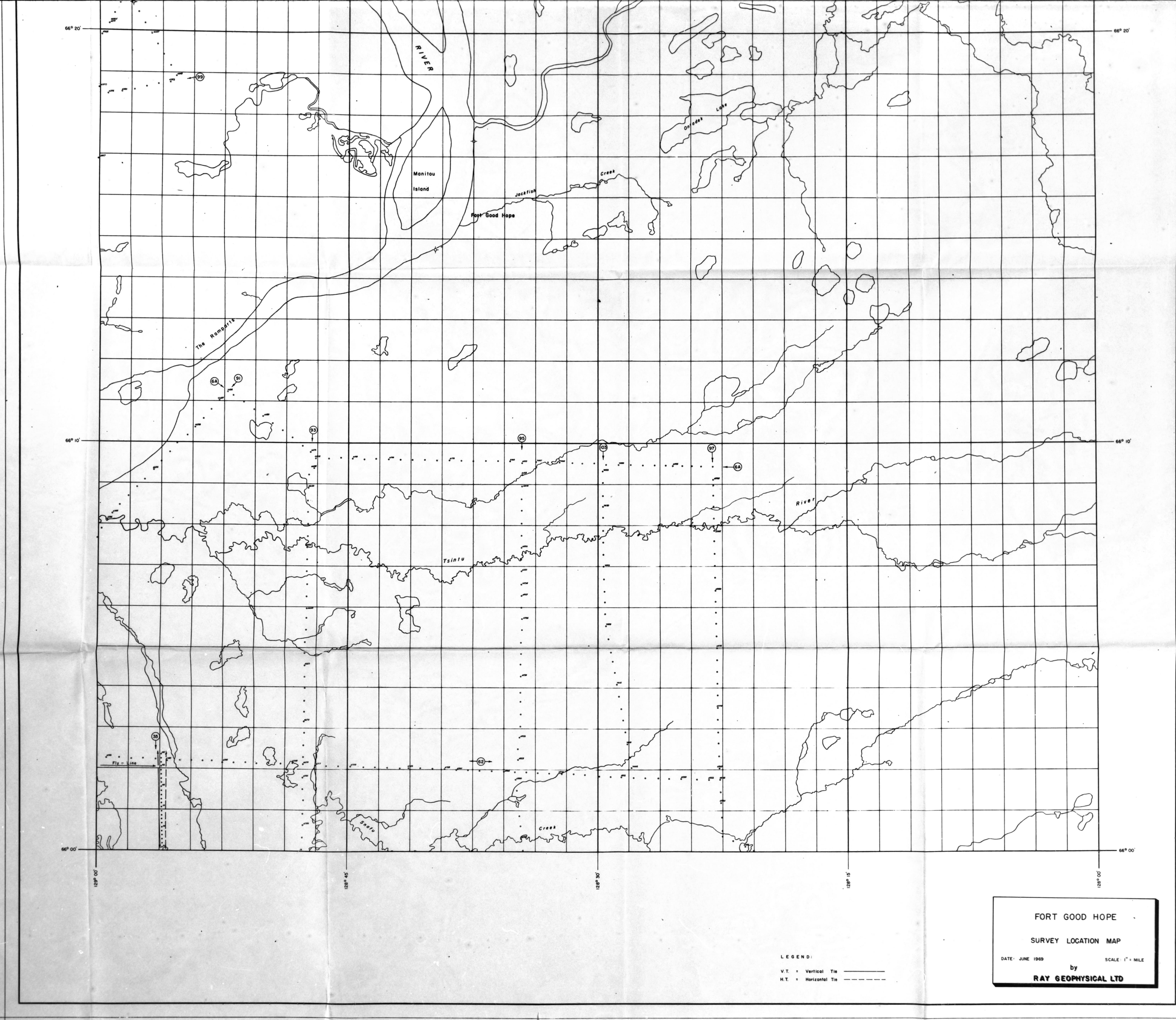
V.T. = Vertical Tie ————

H.T. = Horizontal Tie – – – – –

2 of 2

129° 00'
128° 45'
128° 30'
128° 15'
128° 00'
66° 30'
66° 20'
66° 10'
MACKENZIE
RIVER
Manitou
Island
Fort Good Hope
Jackfish
Creek
Hare
Indian
River
Bluefish
River
Ontadek
Lake
The Ramparts
River
Tsintu
70
9
99
6A
91
93
95
103
97
6A

1 OF 2


66° 20'
66° 10'
66° 00'
129° 00'
128° 45'
128° 30'
128° 15'
128° 00'
RIVER
Manitou
Island
Fort Good Hope
Jackfish
Creek
Lake
The Ramparts
Tsintu
River
Snafu
Creek
Fly – Line
99
91
93
95
03
97
35
62
FORT GOOD HOPE
SURVEY LOCATION MAP
DATE: JUNE 1969
SCALE: 1" = MILE
by
RAY GEOPHYSICAL LTD
LEGEND:
V.T. = Vertical Tie
H.T. = Horizontal Tie

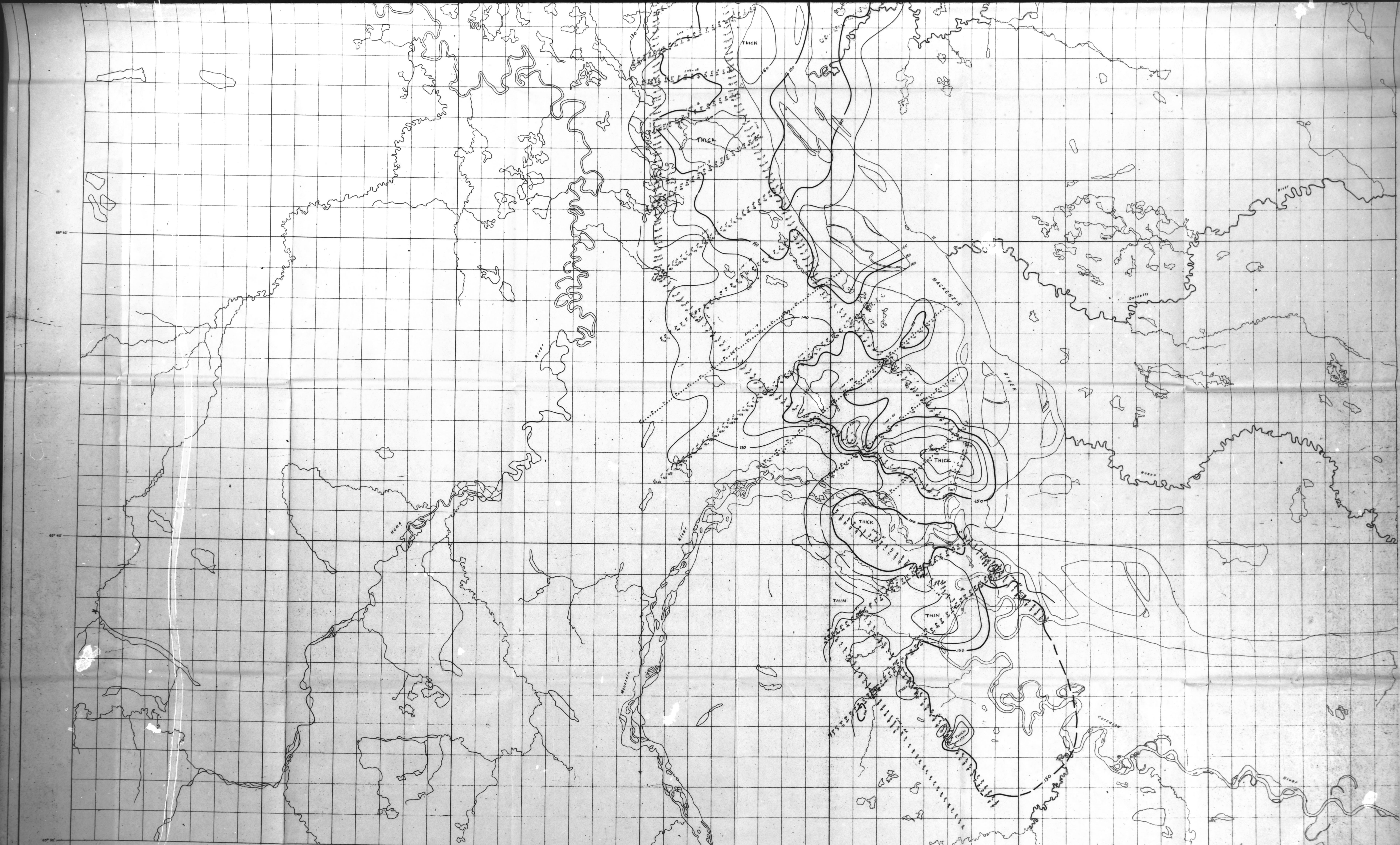

RAMPARTS
RIVER
RAMPARTS
RIVER
ARCTIC
RED
RIVER
1 of


RAMPARTS RIVER
HUME RIVER
MACKENZIE RIVER
MOUNTAIN RIVER
2


ARCTIC RED RIVER
RAMPARTS RIVER
HUME RIVER
MOBIL OIL CANADA, LTD
CALGARY ALBERTA
FORT GOOD HOPE AREA
SURVEY TRAVERSE MAP
Map Sheets 106-G-6, 106-G-7, 106-G-10, 106-G-11
MOBIL OIL CANADA, LTD
CALGARY ALBERTA
FORT GOOD HOPE AREA
SURVEY TRAVERSE MAP
Map Sheets 106-G-8, 106-G-9, 106-G-16
3


RAMPARTS
RIVER
HUME
RIVER
MOUNTAIN
RIVER
MOUNTAIN
RIVER
GAYNA
RIVER
RAMPARTS
HUME
4 of 4
Map Sheets 106-G-6, 106-G-7, 106-G-10, 106-G-11
MOBIL OIL CANADA, LTD.
CALGARY ALBERTA
FORT GOOD HOPE AREA
SURVEY TRAVERSE MAP
UTM ZONE 9
Map Sheets 106-G-8, 106-G-9, 106-G-16
MOBIL OIL CANADA, LTD.
CALGARY ALBERTA
FORT GOOD HOPE AREA
SURVEY TRAVERSE MAP
UTM ZONE 9
130°00'
Map Sheets 106-H-5, 106-H-6, 106-H-11
106-H-12, 106-H-13, 106-H-14
MOBIL OIL CANADA, LTD.
CALGARY ALBERTA
FORT GOOD HOPE AREA
SURVEY TRAVERSE MAP


THICK
THIN
MACKENZIE
RIVER
160
150
140
130
1 of 2



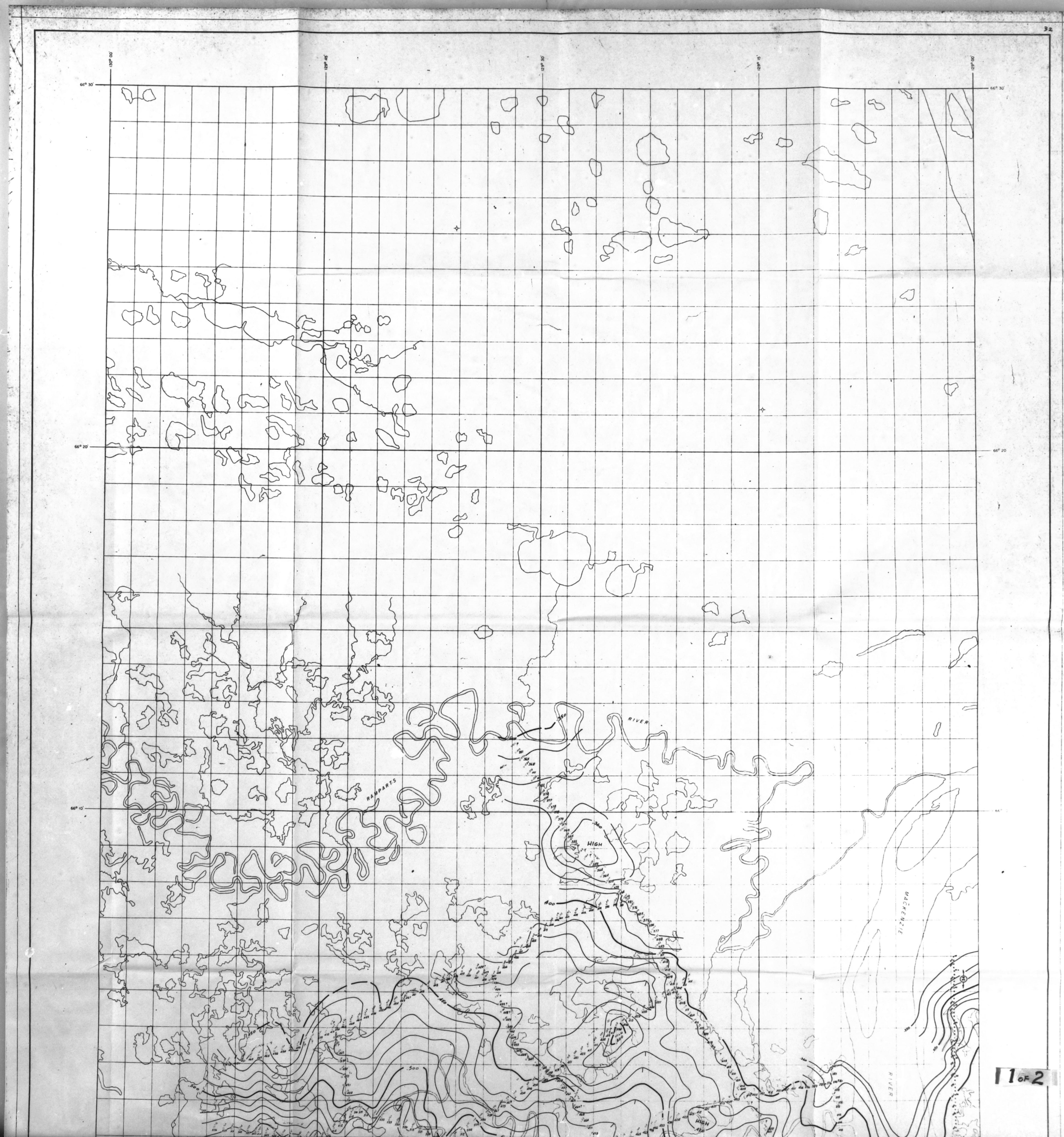
TRIAD OIL CO. LTD.

FORT GOOD HOPE AREA N.W.T.

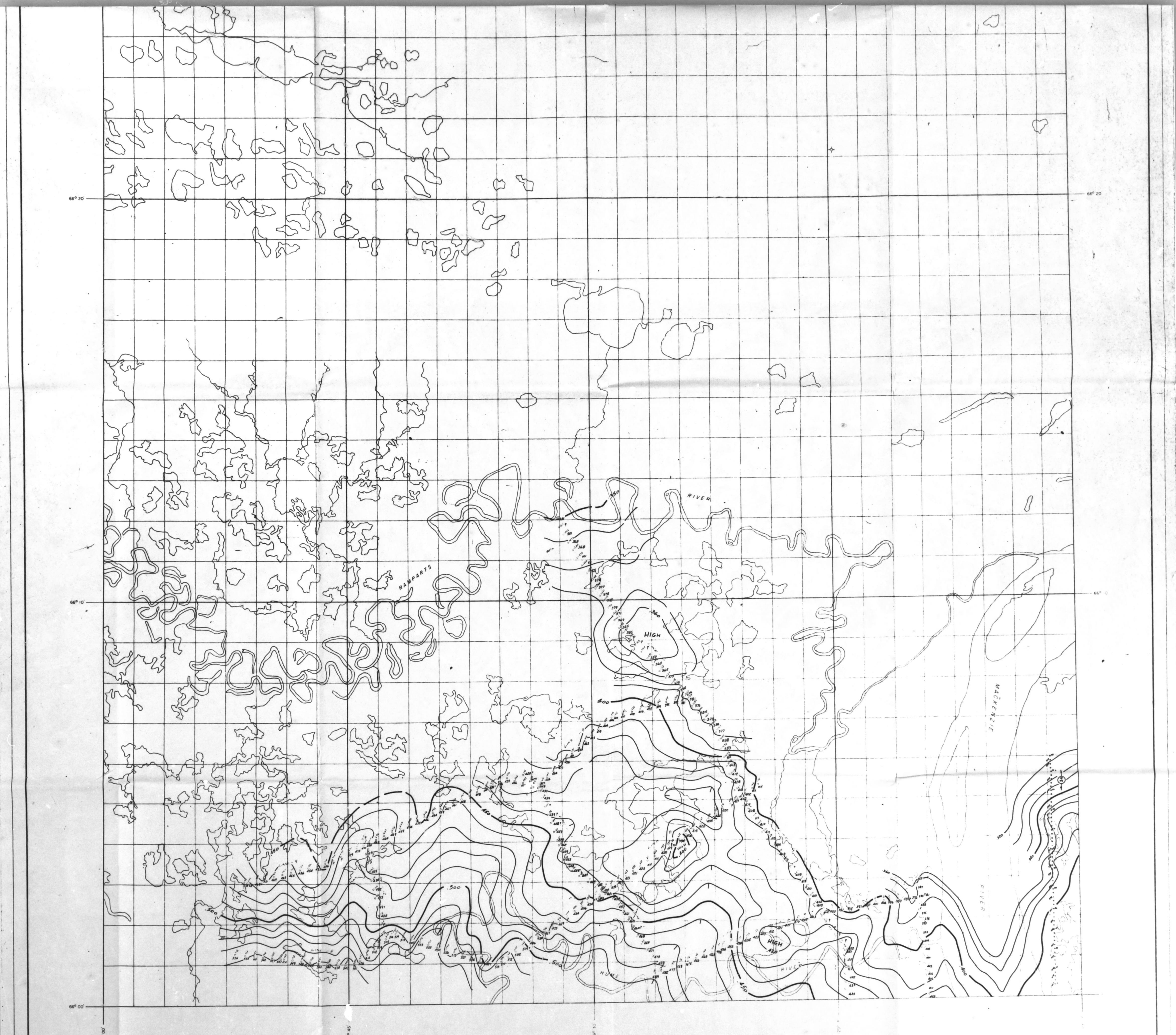
ISOCHRON - HUME TO RAMPART

Interpreted by H. ANTON	Date MAY 23, 1969	Remarks
Contour interval .010 sec.	Datum 300'	Data obtained from
Scale 1" = 1 mile	Party Nº 821	[illegible]
Shot by RAY GEOPHYSICAL - LTD.		

2 of 2



1 of 2

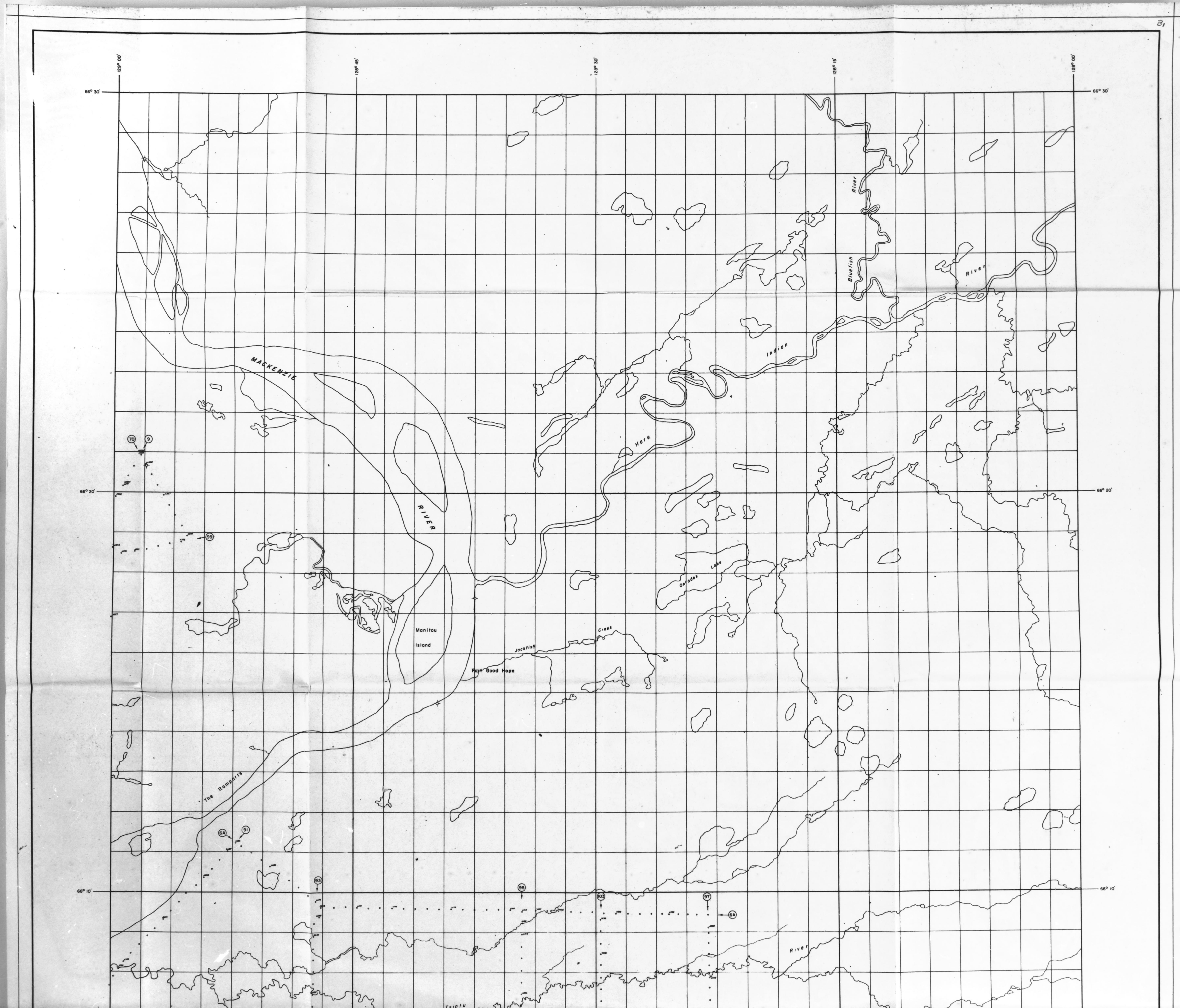


TRIAD OIL CO. LTD.

FORT GOOD HOPE AREA N.W.T.

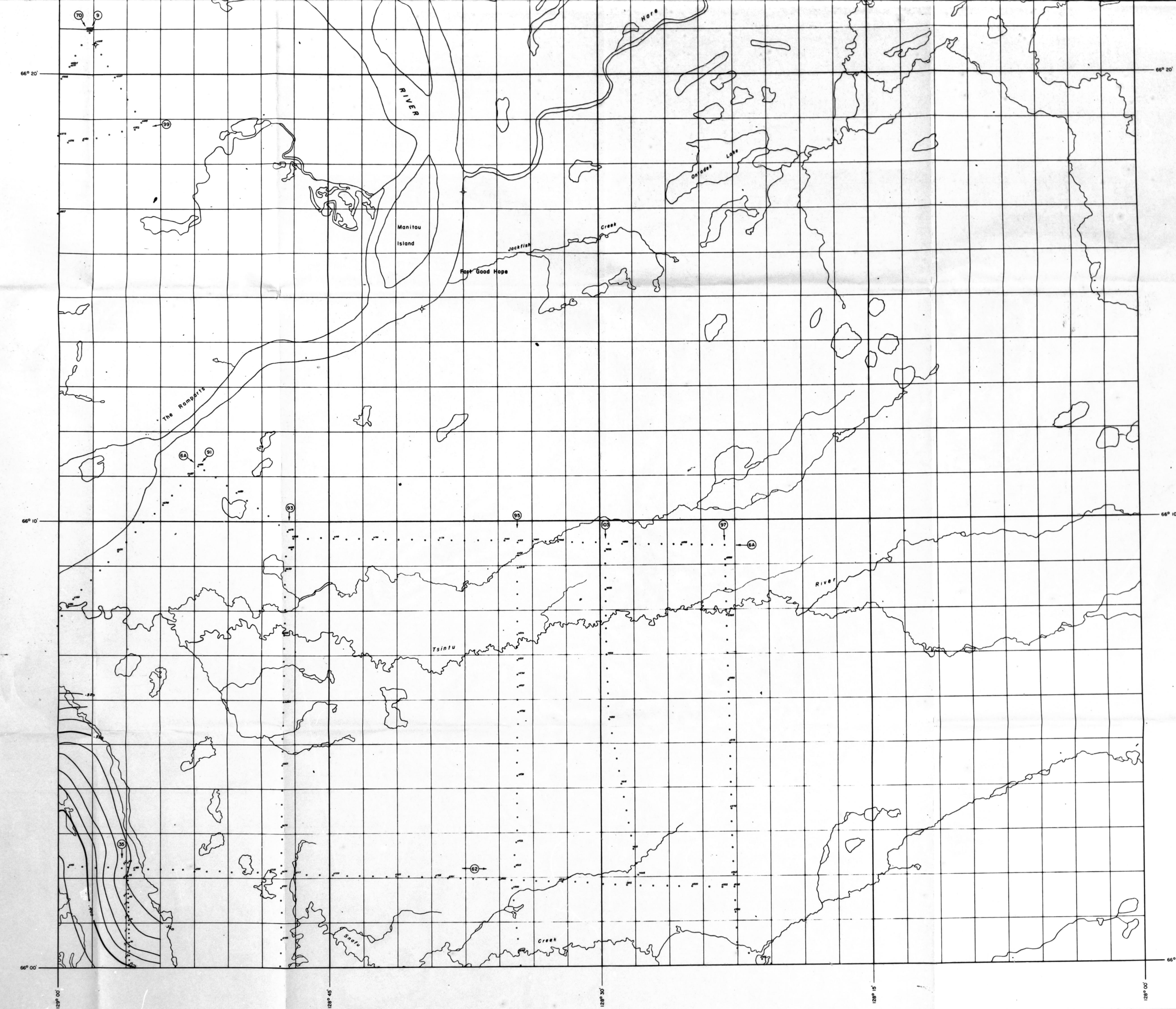
TOP OF HUME

Interpreted by H. ANTON	Date MAY 15, 1969	Remarks:
Contour interval .010 sec.	Datum 300'	Data obtained from single
Scale 1" = 1 mile	Party N° 851	(100%) sections
Shot by RAY GEOPHYSICAL LTD.		



129° 00'
128° 45'
128° 30'
128° 15'
128° 00'
66° 30'
66° 20'
66° 10'
MACKENZIE
RIVER
Manitou Island
Fort Good Hope
Jackfish Creek
Hare
Indian
River
Bluefish River
Lake
The Ramparts
River
70
9
99
6A
91
93
95
97
6A

1 OF 2



TRIAD OIL CO. LTD.

FORT GOOD HOPE AREA N.W.T.

TOP OF HUME

Interpreted by: H. ANTON	Date: MAY 15, 1969	Remarks:
Contour Interval: .010 sec.	Datum: 300'	Data obtained from single
Scale: 1" = 1 Mile	Party No. 851	(100%) sections.
Shot by: RAY GEOPHYSICAL LTD.		