

1-7-5-17

AEROMAGNETIC INVESTIGATION

FORT NORMAN AREA

NORTHWEST TERRITORIES

AMERADA PETROLEUM CORPORATION



**Abstracted for
Geo-Science Data Index**

Date _____

GEOPHYSICAL ASSOCIATES OF CANADA LTD

Calgary Alberta

October 1965

AEROMAGNETIC INVESTIGATION

FORT NORMAN AREA, NORTHWEST TERRITORIES

THIS INVESTIGATION WAS UNDERTAKEN ON BEHALF OF THE AMERADA PETROLEUM CORPORATION IN TWO STAGES. THE FIRST STAGE WAS THE EXAMINATION OF DATA FROM PART OF AN AEROMAGNETIC SURVEY CONDUCTED BY CANADIAN AERO SERVICE LTD FOR SHELL OIL COMPANY OF CANADA LIMITED. THE SECOND STAGE INCLUDED THE PLANNING AND EXECUTION OF ANOTHER AEROMAGNETIC SURVEY TO THE WEST AND THE SOUTH OF THE EXISTING SURVEY. THE NEW SURVEY INCLUDES THAT PORTION OF AMERADA'S LEASE NOT COVERED BY THE ORIGINAL SURVEY.

THE SHELL SURVEY (MAP SCALE: 1 IN/4000 FT)

GROUND ELEVATION CHANGES NECESSITATE A NUMBER OF FLIGHT LEVEL CHANGES IN THE SHELL SURVEY. UNFORTUNATELY THE AREA UNDER INVESTIGATION HAS THREE LEVEL CHANGES AS INDICATED IN FIGURE 1. THE FLIGHT LINE SPACING EMPLOYED BY SHELL IS 1.5 MI BETWEEN TRAVERSES AND SIX MILES BETWEEN TIE LINES. IN THE SOUTHEASTERN FLIGHT BLOCK (4250 FT ASL) SOME TRAVERSES ARE SKIPPED DUE TO OPERATIONAL PROBLEMS. THIS RESULTS IN A THREE MILE SPACING BETWEEN SOME TRAVERSES.

TRAVERSE FLIGHT DIRECTION IS EAST-WEST EXCEPT IN THE 3500 FT BLOCK NORTH OF 65°. HERE THE TRAVERSE DIRECTION IS NORTH-SOUTH BECAUSE THE OBSERVED FIELD IS EAST-WEST. TIE-LINES ARE FLOWN NORMAL TO TRAVERSE LINES.

THE OBSERVED FIELD IS DOMINATED BY LARGE INTRABASEMENT ANOMALIES. THESE HAVE NORTHERLY OR NORTHWESTERLY ORIENTATION AND RESULT FROM MINERALIZATION CHANGES WITHIN THE BASEMENT COMPLEX. ANOMALIES ARE SMALLER IN AREAL EXTENT IN THE EAST THAN THOSE IN THE WEST.

A SECOND TYPE OF ANOMALY IS NOTED IN THE TOTAL FIELD MAPS. THESE ARE THE SHARP DEVIATIONS AND SOMETIMES SMALL CLOSURES OF THE ISOMAGNETIC LINES SUCH AS OBSERVED EAST OF RUSTY LAKE. THESE SMALL AMPLITUDE HIGH FREQUENCY ANOMALIES ARE CAUSED BY MAGNETIC BODIES WITHIN THE SECTION. THEY ARE LOCATED AT OR NEAR THE SURFACE OF THE GROUND.

ALL ANOMALIES APPEAR TO BE THE RESULT OF NORMAL INDUCTION IN THE EARTH'S FIELD, THE PRINCIPAL FACTS OF WHICH ARE INCLINATION, 81°; DECLINATION, 40°E; AND TOTAL INTENSITY, 59,700 GAMMA.

THE AMERADA SURVEY (MAP SCALE: 1 IN/1 MI)

LOCKWOOD SURVEY CORPORATION LIMITED IS THE CONTRACTOR FOR THE NEW FLYING. ON THE BASIS OF INFORMATION GAINED FROM THE SHELL SURVEY, IT WAS DECIDED THAT THE NEW SURVEY SHOULD BE FLOWN IN TWO BLOCKS. THE NORTHERN BLOCK IS FLOWN WITH NORTH-SOUTH TRAVERSES IN ORDER TO INTERSECT THE OBSERVED FIELD AT RIGHT ANGLES. THE 3500 FT FLIGHT LEVEL IS EXTENDED FROM THE OLD SURVEY TO COVER THIS AREA. FLIGHT LINE SPACING IS 1.5 MILES BETWEEN TRAVERSE LINES AND SIX MILES BETWEEN TIE-LINES.

THE SOUTHERN BLOCK IS FLOWN AT 4500 FT BECAUSE OF THE CANYON RANGES THAT ARE LOCATED IN THE SOUTHWESTERN CORNER OF THE SURVEY AREA. THIS AREA IS FLOWN IN AN EAST-WEST DIRECTION WITH 1.5 MILES BETWEEN TRAVERSES AND SIX MILES BETWEEN TIE-LINES.

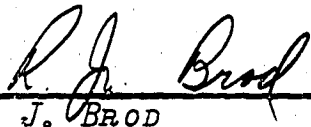
THE TRAVERSES THAT ARE MISSING FROM THE SOUTHEASTERN PART OF THE SHELL DATA ARE FILLED IN BY NEW FLIGHTS. THE NECESSARY CONTOUR CHANGES ARE MADE AND THE REVISED MAP IS PRESENTED AT A SCALE OF 1 IN/1 MI.

THE OBSERVED FIELD IS CONTOURED AT A TEN GAMMA INTERVAL ON THE BASIS OF MAGNETIC PROFILES WITH A 300 GAMMA FULL SCALE DEFLECTION AND A HORIZONTAL SCALE OF APPROXIMATELY 1 IN/0.75 MI.

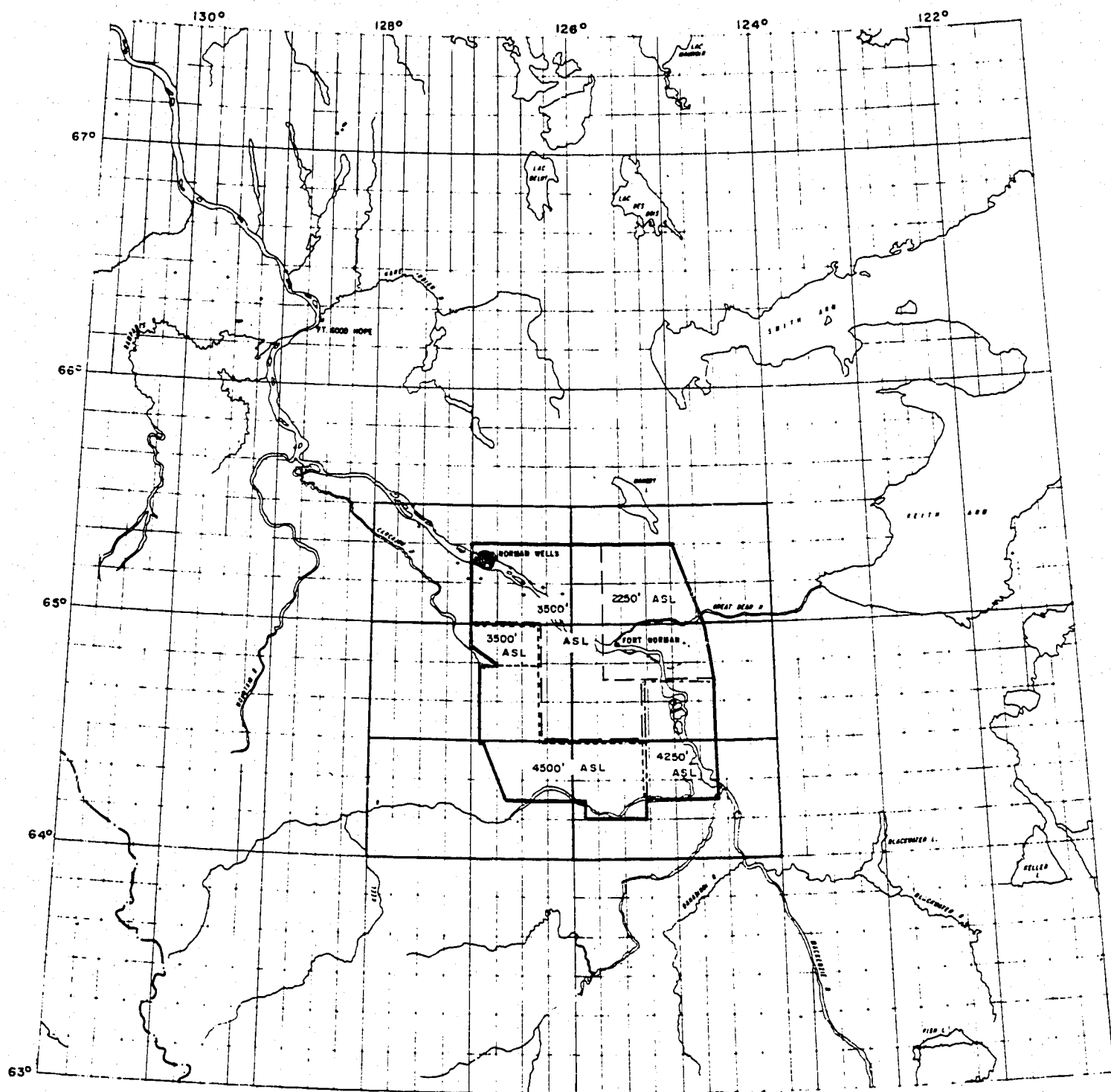
THE OBSERVED FIELD IS THE PREDICTED CONTINUATION FROM THE SHELL SURVEY WITH THE EXCEPTION OF SOME NARROW SHARP ANOMALIES WITH AMPLITUDES WHICH ARE LARGE FOR THIS AREA. THESE ARE LOCATED IN THE SOUTHERN PART OF THE AREA NEAR THE NORTHWARD BOW OF THE KEELE RIVER.

MAGNETIZATION AGAIN APPEARS TO BE THE RESULT OF INDUCTION IN THE EARTH'S FIELD. THE MAJORITY OF THE ANOMALIES ARE THE RESULT OF MINERALIZATION CHANGES IN THE BASEMENT.

GEOPHYSICAL ASSOCIATES OF CANADA LTD

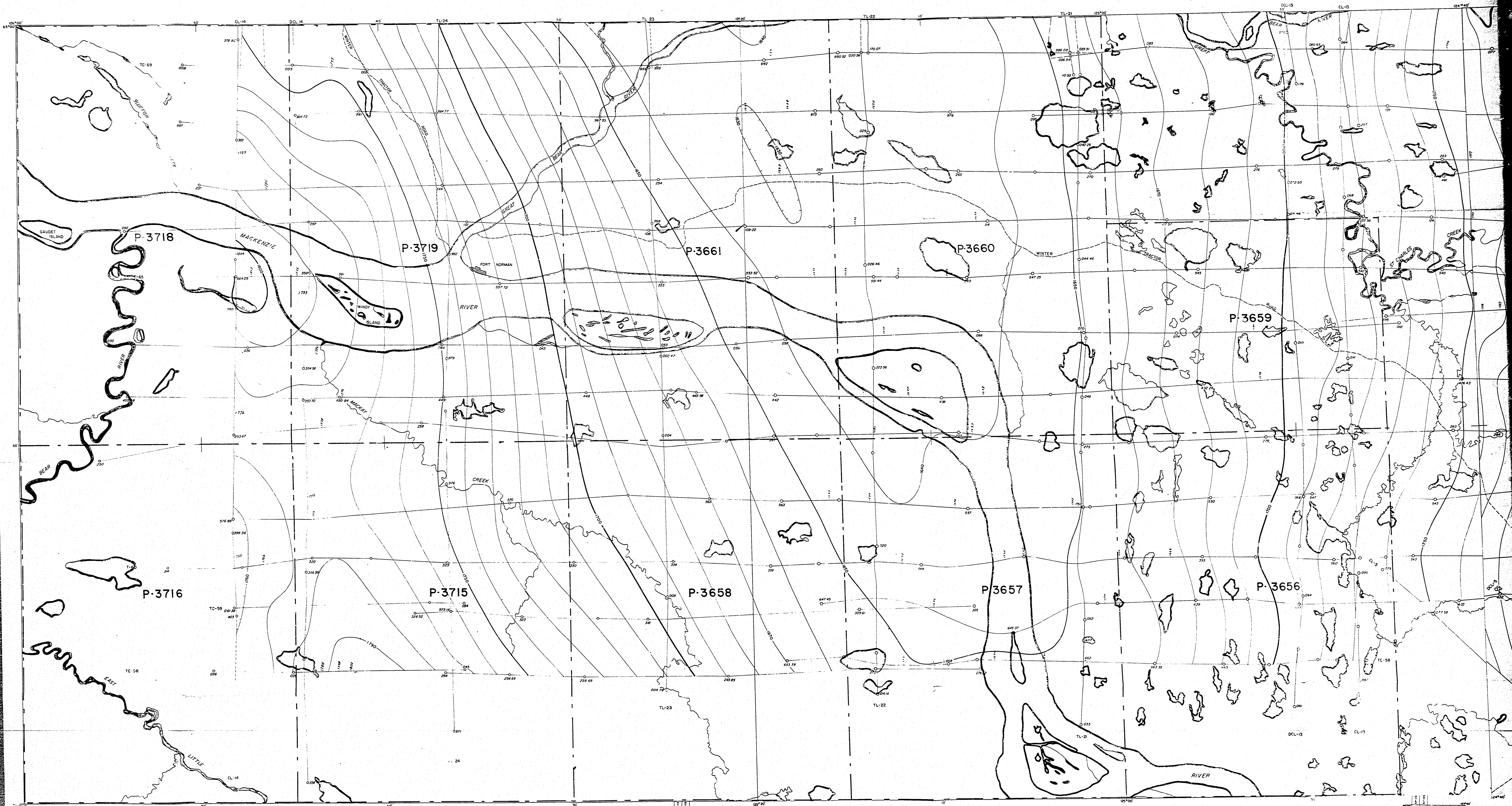


R. J. BROD

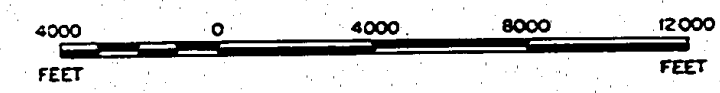


——— FLIGHT BLOCK BOUNDARY —
 CANADIAN AERO SERVICE LTD OTTAWA
 - - - - - FLIGHT BLOCK BOUNDARY —
 LOCKWOOD SURVEY CORP LTD TORONTO
 ——— FLIGHT BLOCK BOUNDARY —
 CANADIAN AERO SERVICE LTD OTTAWA
 WITH ADDITIONAL LINES BY
 LOCKWOOD SURVEY CORP LTD TORONTO

FIGURE 1
 SCALE: 1 IN / 40 MI
 GAC

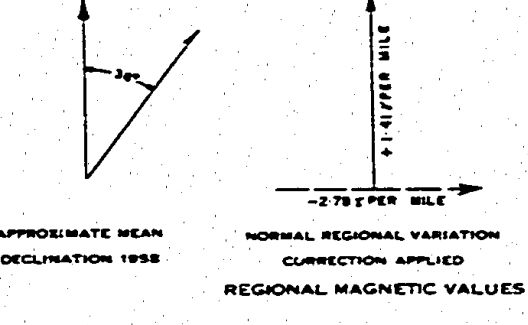


AIRBORNE MAGNETOMETER SURVEY
TOTAL MAGNETIC INTENSITY MAP
NORTHWEST TERRITORIES PLAINS
SHELL OIL COMPANY OF CANADA LIMITED

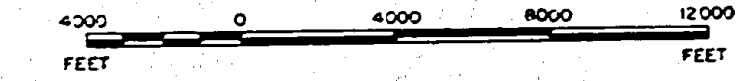


FLIGHT ALTITUDE 2250 FEET A.S.L.
TRAVERSE INTERVAL 1.5 MILES
CONTROL LINE INTERVAL 6 MILES
CONTOUR INTERVAL 100 GAUSS
BASE INTENSITY ARBITRARY

SHEET INDEX
CANADIAN AERO SERVICE LIMITED
OTTAWA, ONTARIO

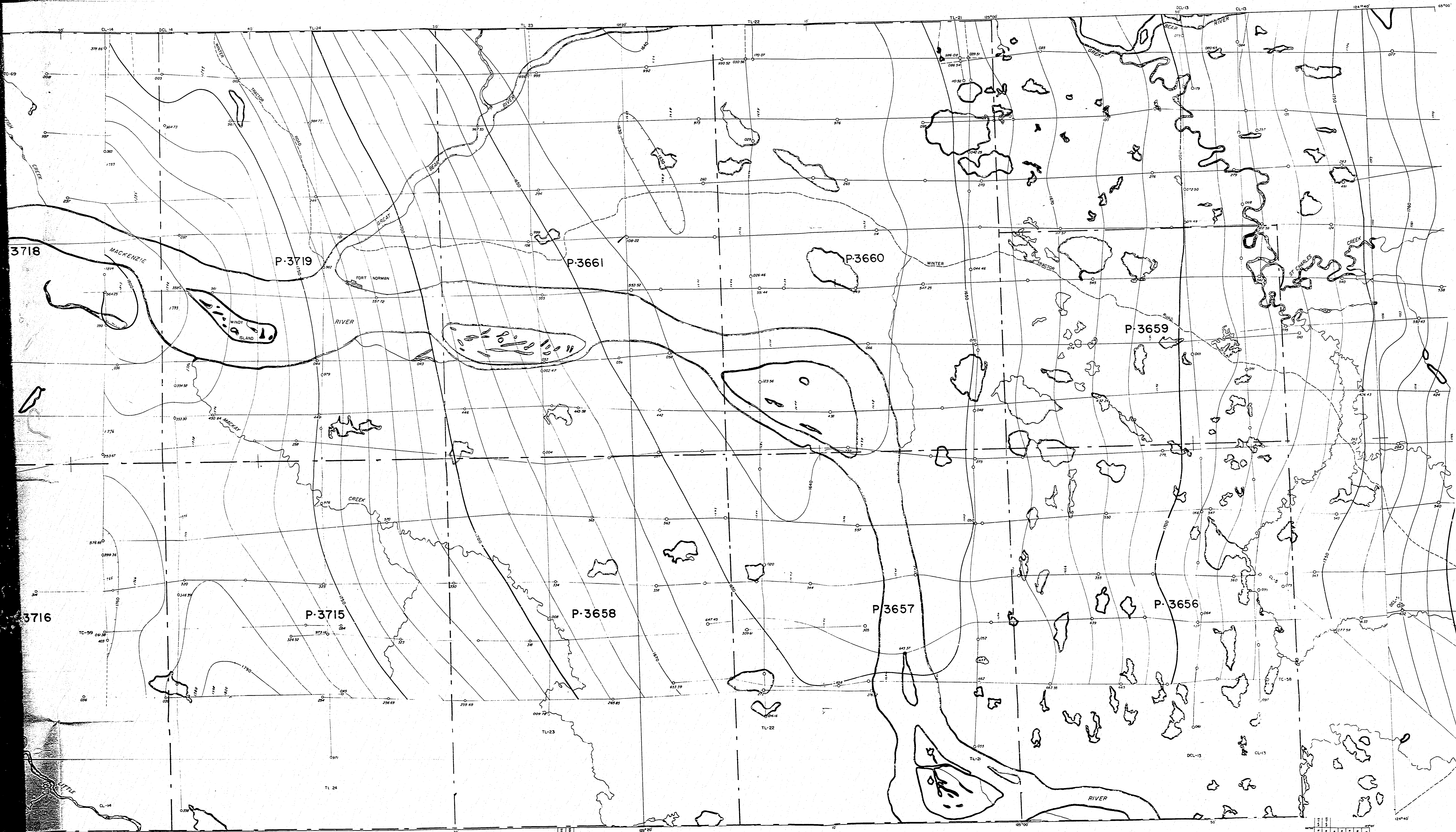


AIRBORNE MAGNETOMETER SURVEY
TOTAL MAGNETIC INTENSITY MAP
NORTHWEST TERRITORIES PLAINS
SHELL OIL COMPANY OF CANADA LIMITED



FLIGHT ALTITUDE 2250 FEET A.S.L.
TRAVERSE INTERVAL 1.5 MILES
CONTROL LINE INTERVAL 6 MILES
CONTOUR INTERVAL 100 GAUSS
BASE INTENSITY ARBITRARY

SHEET INDEX
CANADIAN AERO SERVICE LIMITED
OTTAWA, ONTARIO

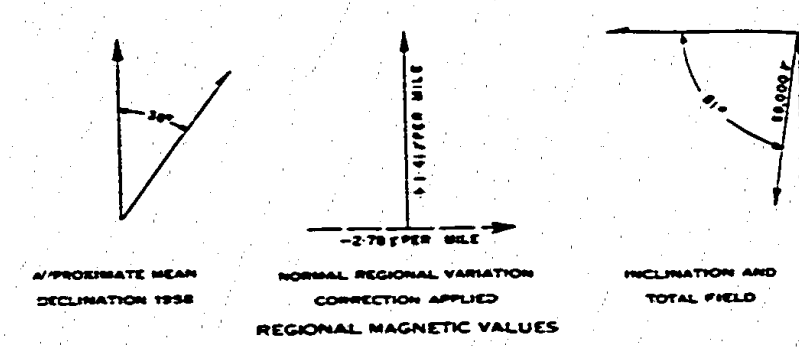


AIRBORNE MAGNETOMETER SURVEY
TOTAL MAGNETIC INTENSITY MAP
NORTHWEST TERRITORIES PLAINS
SHELL OIL COMPANY OF CANADA LIMITED

4000 0 4000 8000 12000
FEET

FLIGHT ALTITUDE 2250 FEET A.S.L.
TRAVERSE INTERVAL 1.5 MILES
CONTROL LINE INTERVAL 5 MILES
CONTOUR INTERVAL 50 GAMMAS
BASE INTENSITY ARBITRARY

SHEET INDEX
CANADIAN AERO SERVICE LIMITED
OTTAWA, ONTARIO

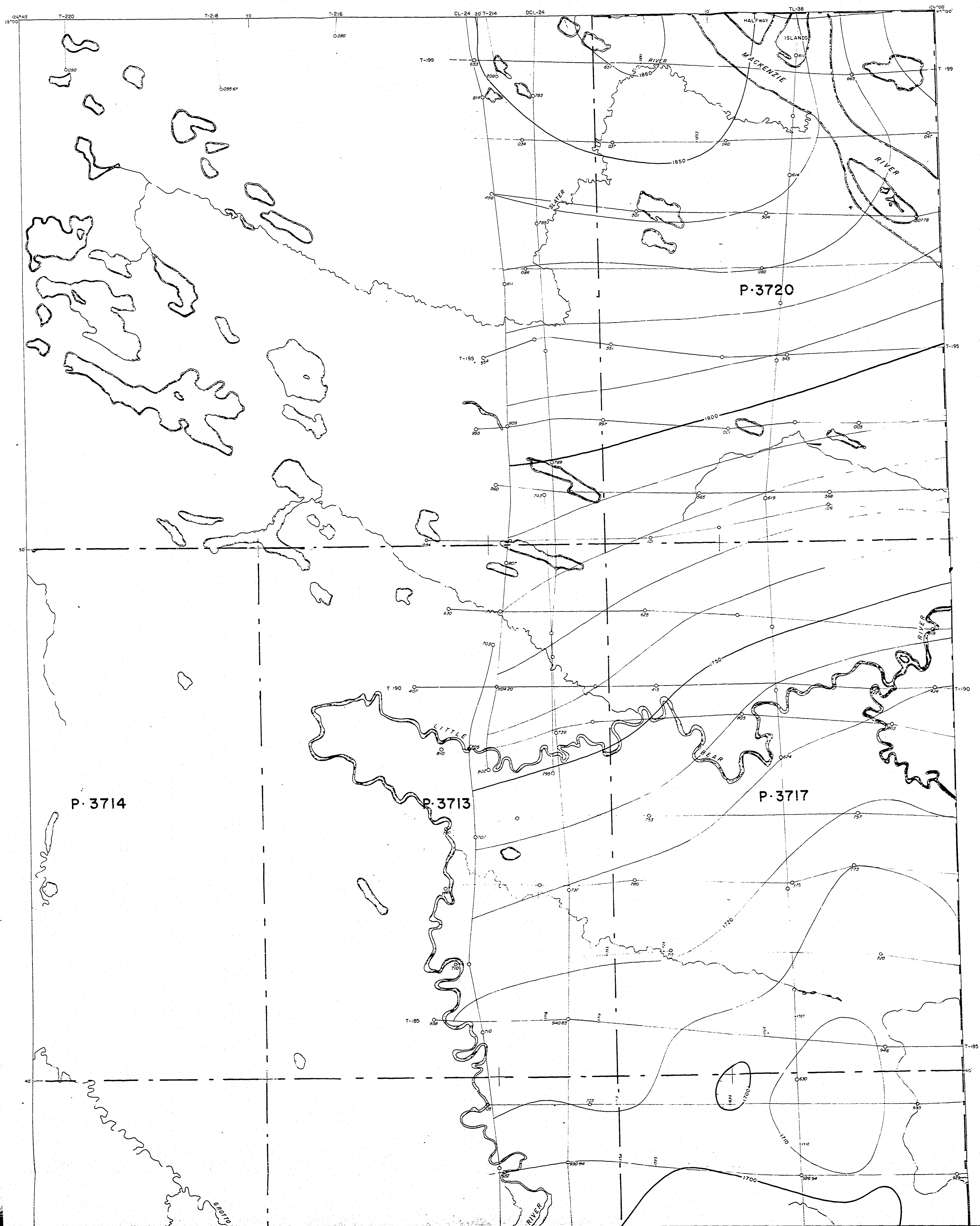


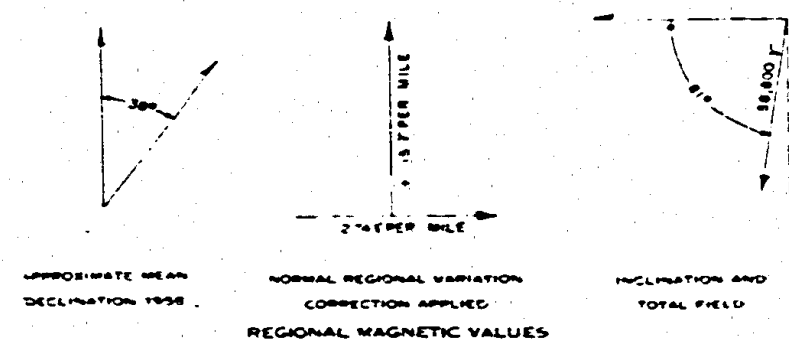
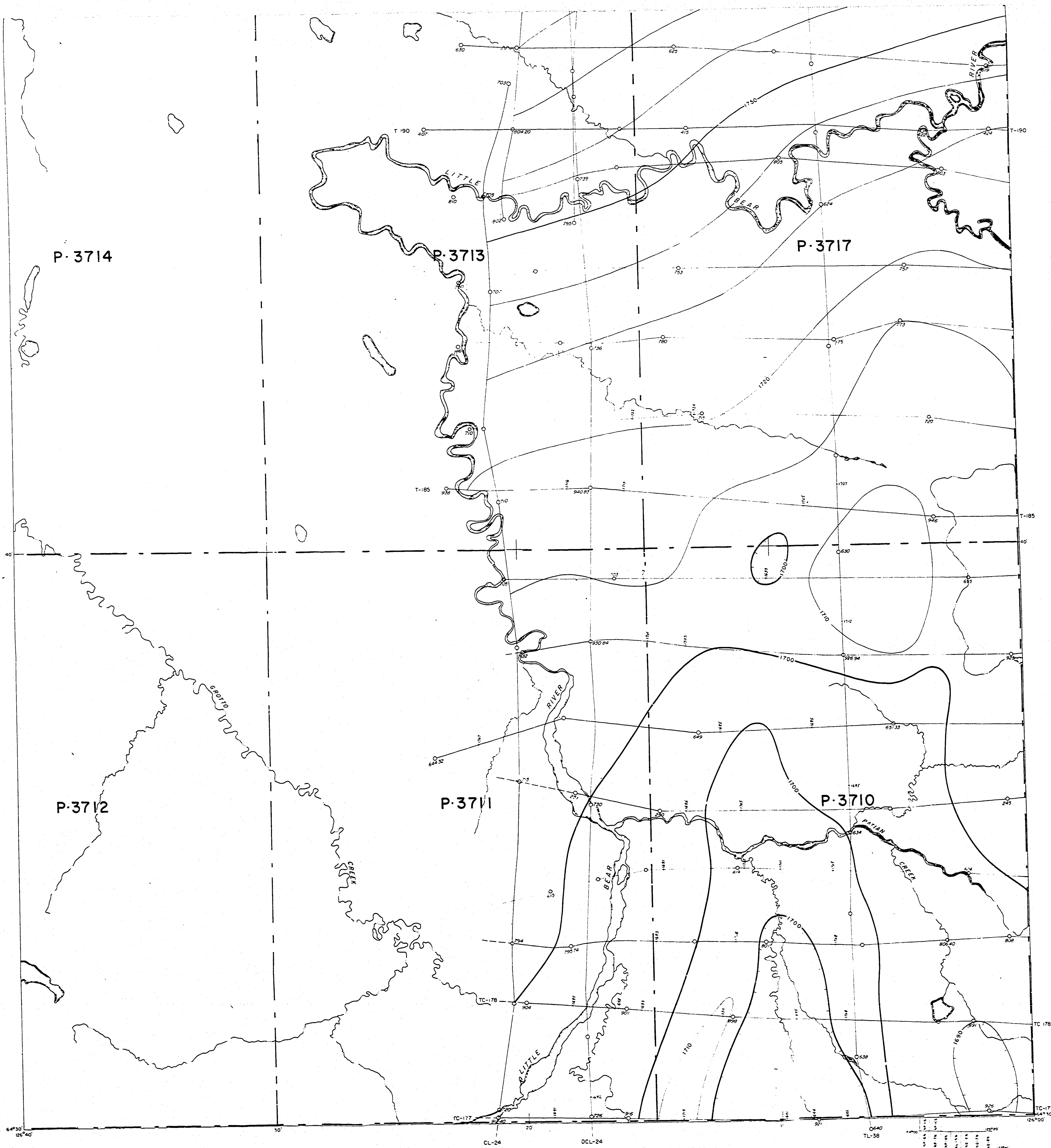
AIRBORNE MAGNETOMETER SURVEY
TOTAL MAGNETIC INTENSITY MAP
NORTHWEST TERRITORIES PLAINS
SHELL OIL COMPANY OF CANADA LIMITED

4000 0 4000 8000 12000
FEET

FLIGHT ALTITUDE 2250 FEET A.S.L.
TRAVERSE INTERVAL 1.5 MILES
CONTROL LINE INTERVAL 5 MILES
CONTOUR INTERVAL 50 GAMMAS
BASE INTENSITY ARBITRARY

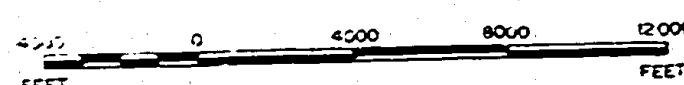
SHEET INDEX
CANADIAN AERO SERVICE LIMITED
OTTAWA, ONTARIO





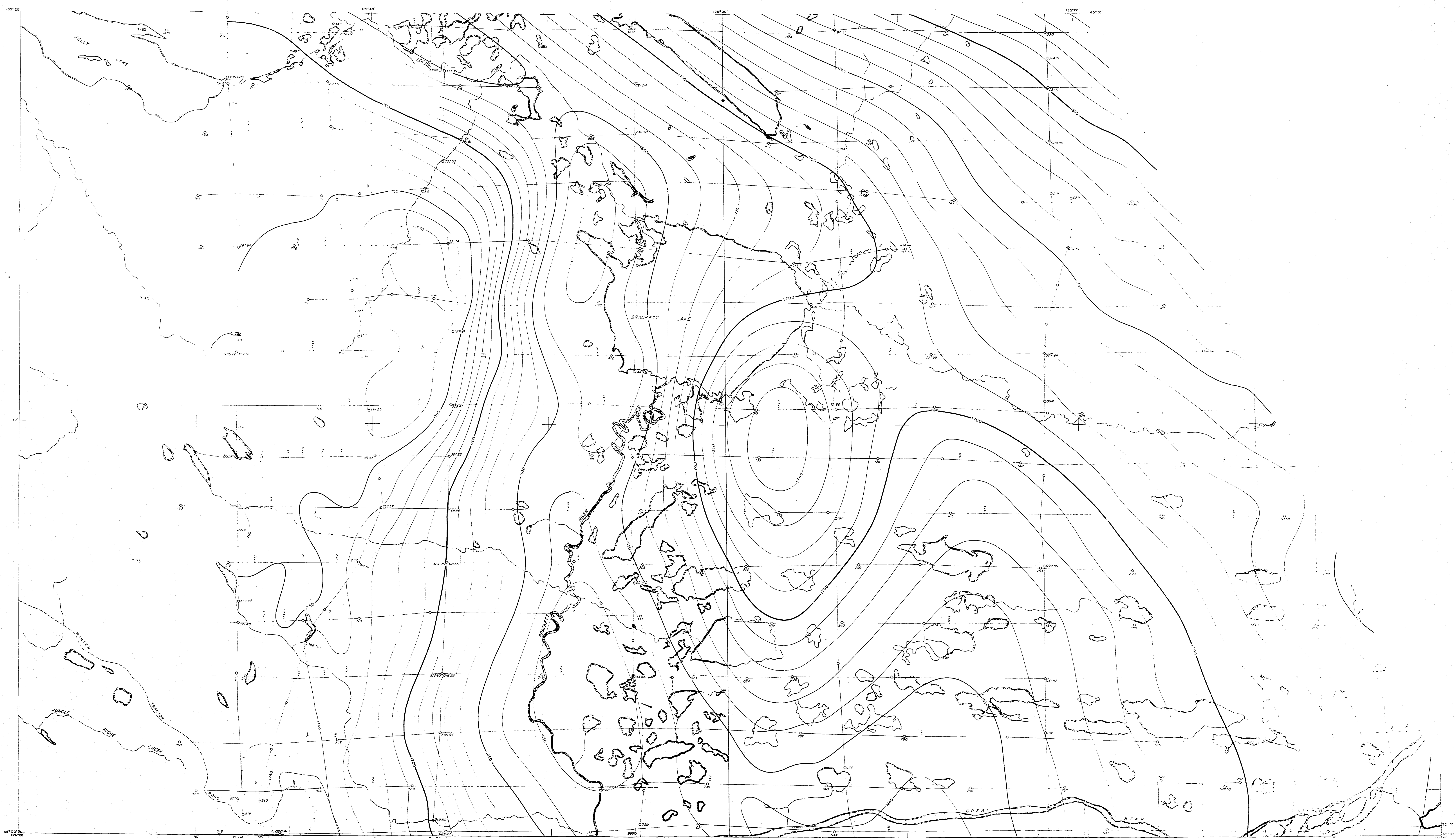
HORIZONTAL CONTROL BASED ON
PLANIMETRIC MAPS COMPILED BY CANADIAN
AERO SERVICE LIMITED. ALSO PRELIMINARY
TOPOGRAPHIC MAPS PUBLISHED BY THE DE
PARTMENT OF MINES AND TECHNICAL SURVEY
OTTAWA.

AIRBORNE MAGNETOMETER SURVEY
TOTAL MAGNETIC INTENSITY MAP
NORTHWEST TERRITORIES PLAINS
SHELL OIL COMPANY OF CANADA LIMITED



FLIGHT ALTITUDE 3500 FEET A.S.L.
TRAVERSE INTERVAL 1.5 MILES
CONTROL LINE INTERVAL 6 MILES
CONTOUR INTERVAL 10 GAMMAS
BASE INTENSITY ARBITRARY

1650	1655	1660	1665	1670	1675	1680	1685	1690	1695	1700	1705	1710	1715	1720	1725	1730	1735	1740	1745	1750
1650	1655	1660	1665	1670	1675	1680	1685	1690	1695	1700	1705	1710	1715	1720	1725	1730	1735	1740	1745	1750
1650	1655	1660	1665	1670	1675	1680	1685	1690	1695	1700	1705	1710	1715	1720	1725	1730	1735	1740	1745	1750
1650	1655	1660	1665	1670	1675	1680	1685	1690	1695	1700	1705	1710	1715	1720	1725	1730	1735	1740	1745	1750
1650	1655	1660	1665	1670	1675	1680	1685	1690	1695	1700	1705	1710	1715	1720	1725	1730	1735	1740	1745	1750



AIRBORNE MAGNETOMETER SURVEY
TOTAL MAGNETIC INTENSITY MAP
NORTHWEST TERRITORIES PLAINS
SHELL OIL COMPANY OF CANADA LIMITED

FLIGHT ALTITUDE
TRAILING INTERVAL
CONTROL LINE INTERVAL
BASE INTENSITY

2250 FEET A.S.L.
1.5 MILES
6 MILES
50 DAMPS
400/750

SHEET INDEX
CANADIAN AERO SERVICE LIMITED
OTTAWA, ONTARIO

APPROXIMATE MEAN
NORMAL REGIONAL VARIATION
REGIONAL MAGNETIC VALUES

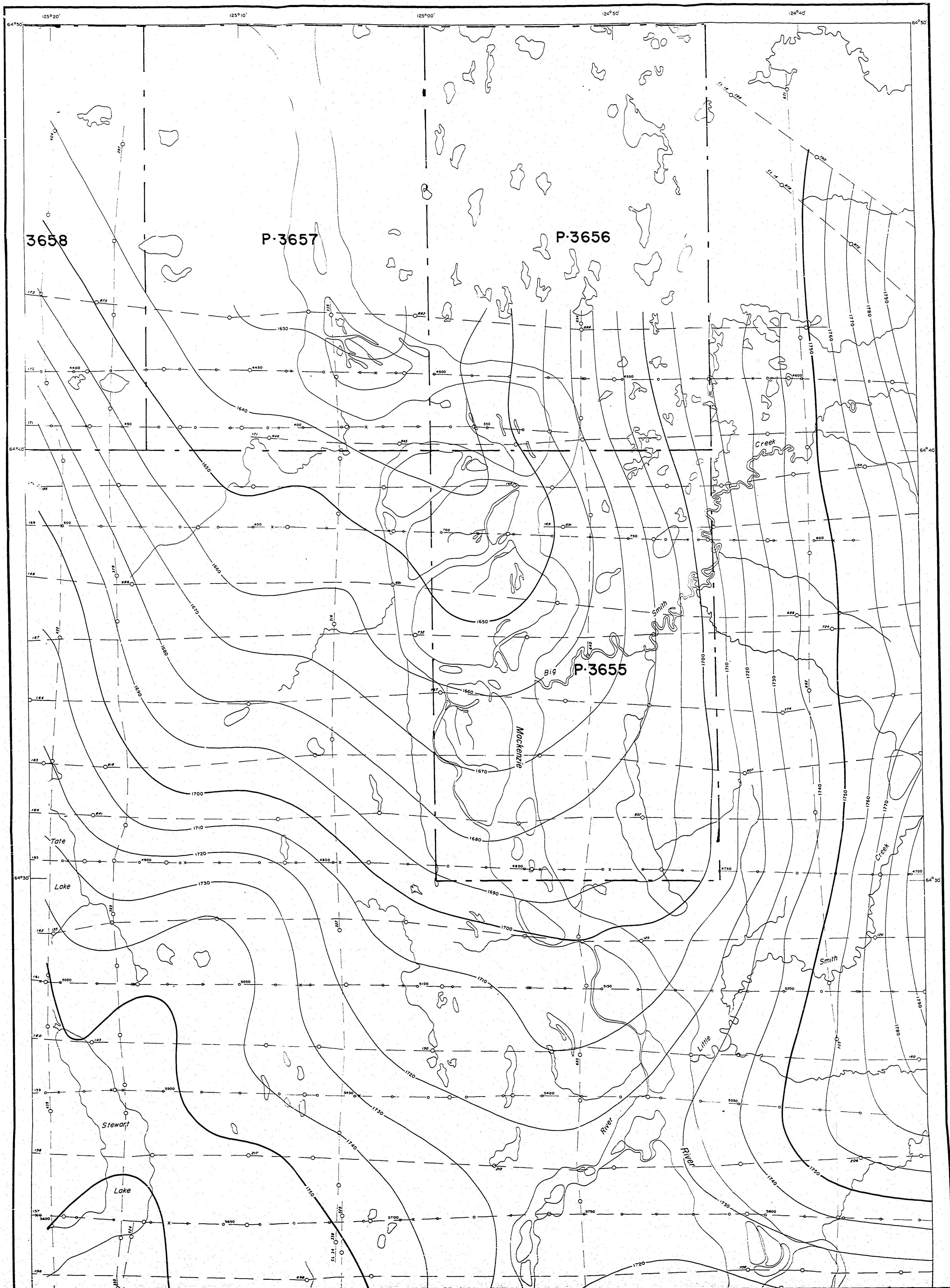
AIRBORNE MAGNETOMETER SURVEY
TOTAL MAGNETIC INTENSITY MAP
NORTHWEST TERRITORIES PLAINS
SHELL OIL COMPANY OF CANADA LIMITED

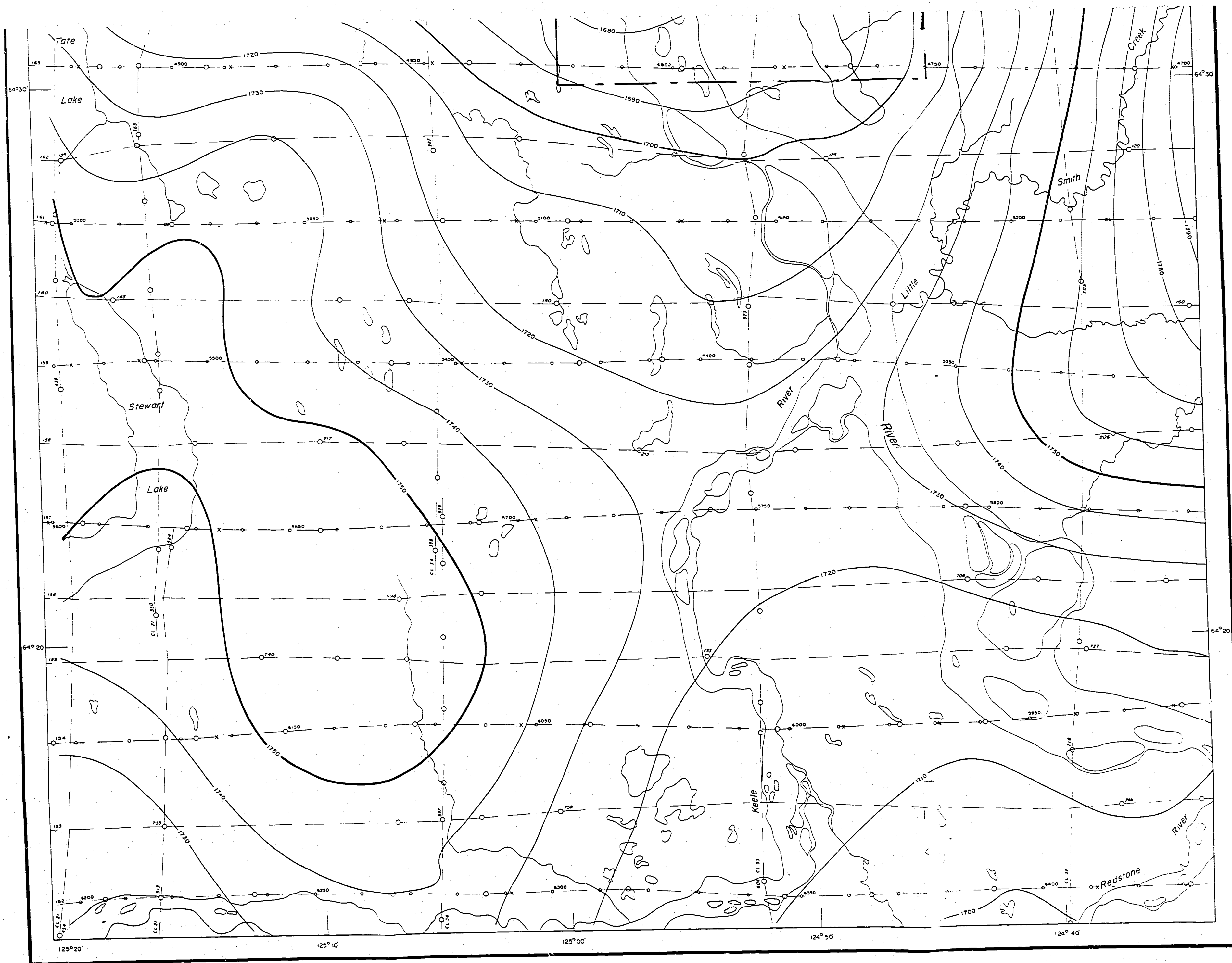
FLIGHT ALTITUDE
TRAILING INTERVAL
CONTROL LINE INTERVAL
BASE INTENSITY

2250 FEET A.S.L.
1.5 MILES
6 MILES
50 DAMPS
400/750

SHEET INDEX
CANADIAN AERO SERVICE LIMITED
OTTAWA, ONTARIO

AMERADA PETROLEUM CORPORATION
AIRBORNE GEOPHYSICAL SURVEY





CONTOUR INTERVAL 10 GAMMA
 MEAN FLIGHT LINE SPACING 2 MILES
 CONTROL LINE SPACING 6 MILES
 ALTITUDE ABOVE SEA LEVEL 4250 FEET
 250 GAMMA CONTOUR
 50 GAMMA CONTOUR
 10 GAMMA CONTOUR
 MAGNETIC LOW
 FIDUCIAL POINTS 3690

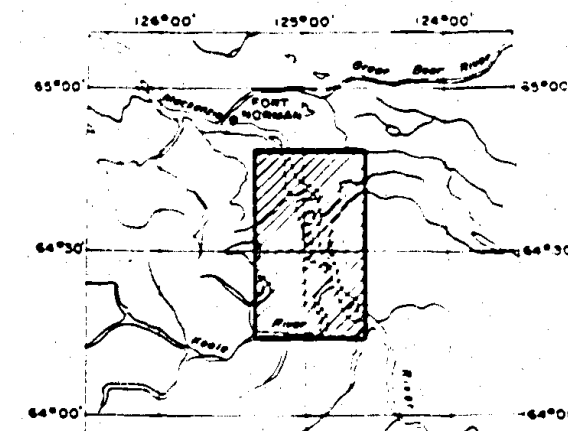
TN
 37°
 MN
 Mean Declination for center of area

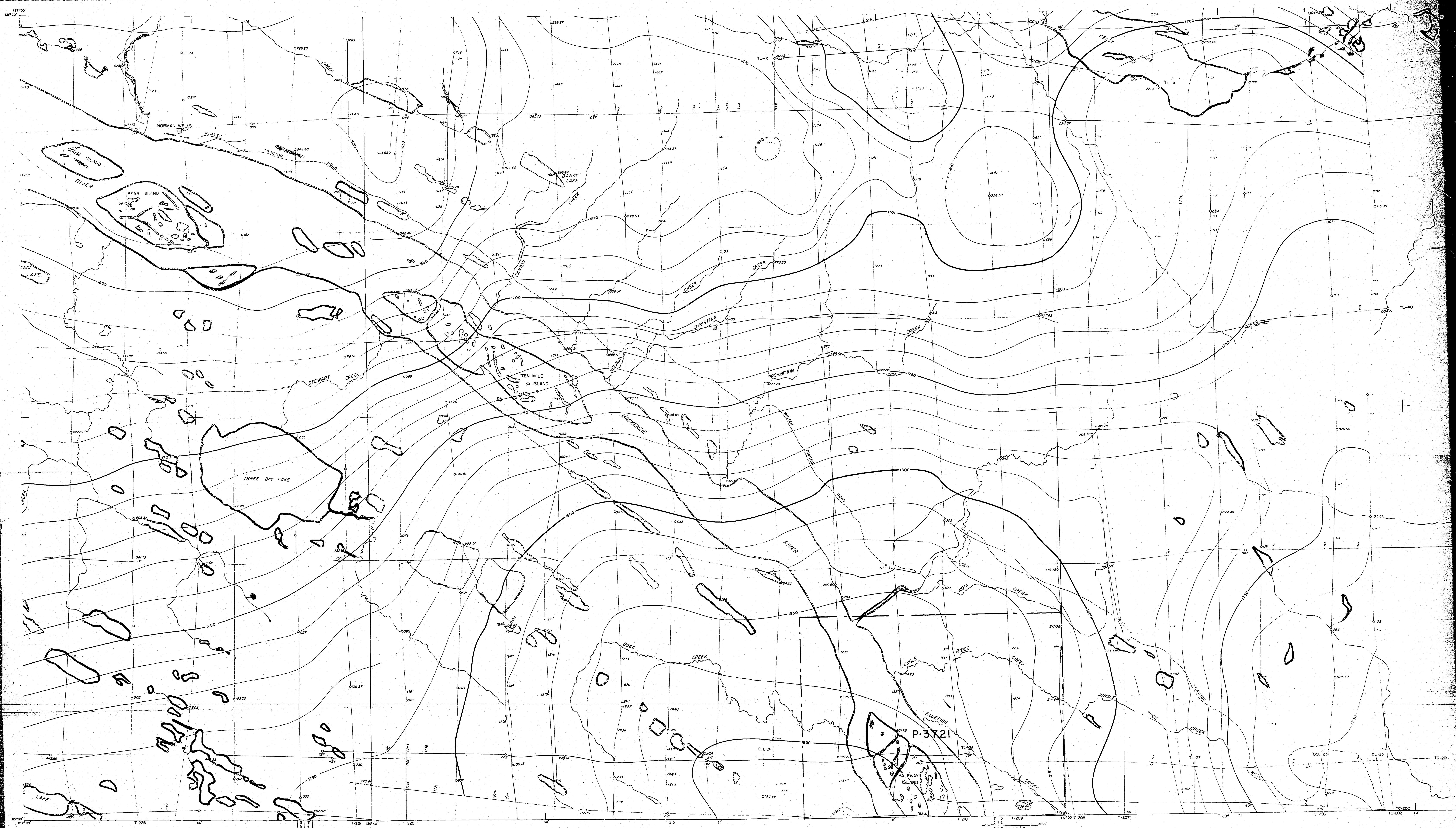
FORT NORMAN AREA, N.W.T.

SCALE
 1 0 1 2 3 4
 MILE
 1 Inch to 1 Mile

A correction for regional gradient has been applied at the rate of -

Flown and Computed by
 LOCKWOOD SURVEY CORPORATION LIMITED
 TORONTO, CANADA
 1965





FLIGHT ALTITUDE
TRAVERSE INTERVAL
CONTROL LINE INTERVAL
CONTOUR INTERVAL
BASE INTENSITY

3500 FEET A.S.L.
1.5 MILES
5 MILES
10 MILES
ARBITRARY

SHEET INDEX
CANADIAN AERO SERVICE LIMITED
OTTAWA, ONTARIO

APPROXIMATE MEAN
CORRECTION JAN 40
REGIONAL MAGNETIC VALUES

HORIZONTAL CONTROL
BASED ON
PLANIMETRIC MAPS COMPILED BY CANADIAN
AERO SERVICE LIMITED. ALSO PRELIMINARY
TOPOGRAPHIC MAPS PUBLISHED BY THE DE-
PARTMENT OF MINES AND TECHNICAL SURVEYS,
OTTAWA.

AIRBORNE MAGNETOMETER SURVEY
TOTAL MAGNETIC INTENSITY MAP
NORTHWEST TERRITORIES PLAINS
SHELL OIL COMPANY OF CANADA LIMITED

FEET 0 2000 4000 6000 8000 10000

FLIGHT ALTITUDE
TRAVERSE INTERVAL
CONTROL LINE INTERVAL
CONTOUR INTERVAL
BASE INTENSITY

3500 FEET A.S.L.
1.5 MILES
5 MILES
10 MILES
ARBITRARY

SHEET INDEX
CANADIAN AERO SERVICE LIMITED
OTTAWA, ONTARIO

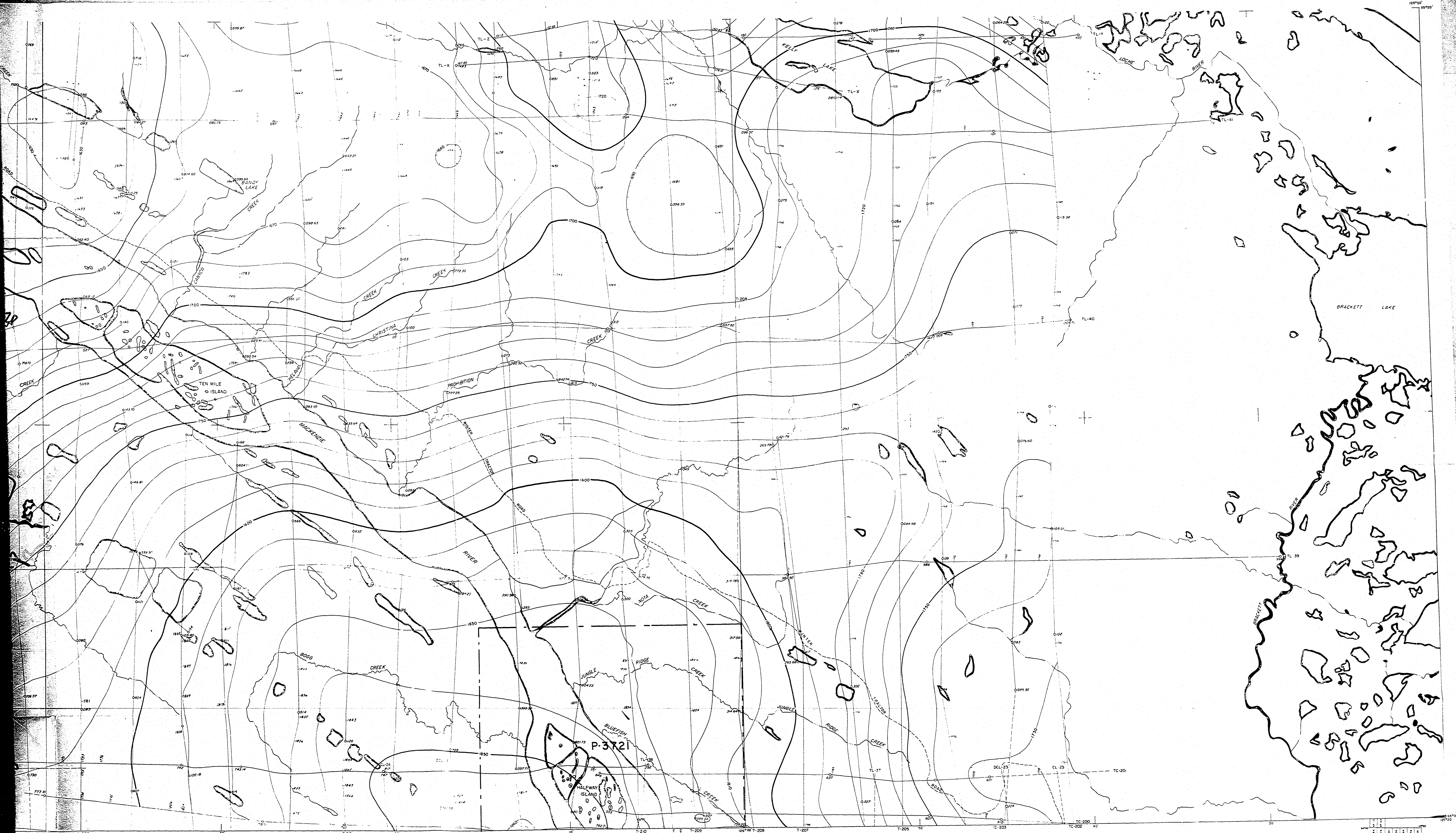
APPROXIMATE MEAN
CORRECTION JAN 40
REGIONAL MAGNETIC VALUES

HORIZONTAL CONTROL
BASED ON
PLANIMETRIC MAPS COMPILED BY CANADIAN
AERO SERVICE LIMITED. ALSO PRELIMINARY
TOPOGRAPHIC MAPS PUBLISHED BY THE DE-
PARTMENT OF MINES AND TECHNICAL SURVEYS,
OTTAWA.

1 of 2

AIRBORNE MAGNETOMETER SURVEY
TOTAL MAGNETIC INTENSITY MAP
NORTHWEST TERRITORIES
SHELL OIL COMPANY OF CANADA LIMITED

FEET 0 2000 4000 6000 8000 10000



AIRBORNE MAGNETOMETER SURVEY
TOTAL MAGNETIC INTENSITY MAP
NORTHWEST TERRITORIES PLAINS
SHELL OIL COMPANY OF CANADA LIMITED

FLIGHT ALTITUDE 3500 FEET A.S.L.
TRAVERSE INTERVAL 1.5 MILES
CONTING LINE INTERVAL 6 MILES
CONTOUR INTERVAL 10 CANVAS
BASE INTENSITY ARBITRARY

SHEET INDEX

TL-1	TL-2	TL-3	TL-4	TL-5	TL-6	TL-7	TL-8	TL-9	TL-10
TL-11	TL-12	TL-13	TL-14	TL-15	TL-16	TL-17	TL-18	TL-19	TL-20
TL-21	TL-22	TL-23	TL-24	TL-25	TL-26	TL-27	TL-28	TL-29	TL-30
TL-31	TL-32	TL-33	TL-34	TL-35	TL-36	TL-37	TL-38	TL-39	TL-40

CANADIAN AERO SERVICE LIMITED
OTTAWA, ONTARIO

AIRBORNE MAGNETOMETER SURVEY
TOTAL MAGNETIC INTENSITY MAP
NORTHWEST TERRITORIES PLAINS
SHELL OIL COMPANY OF CANADA LIMITED

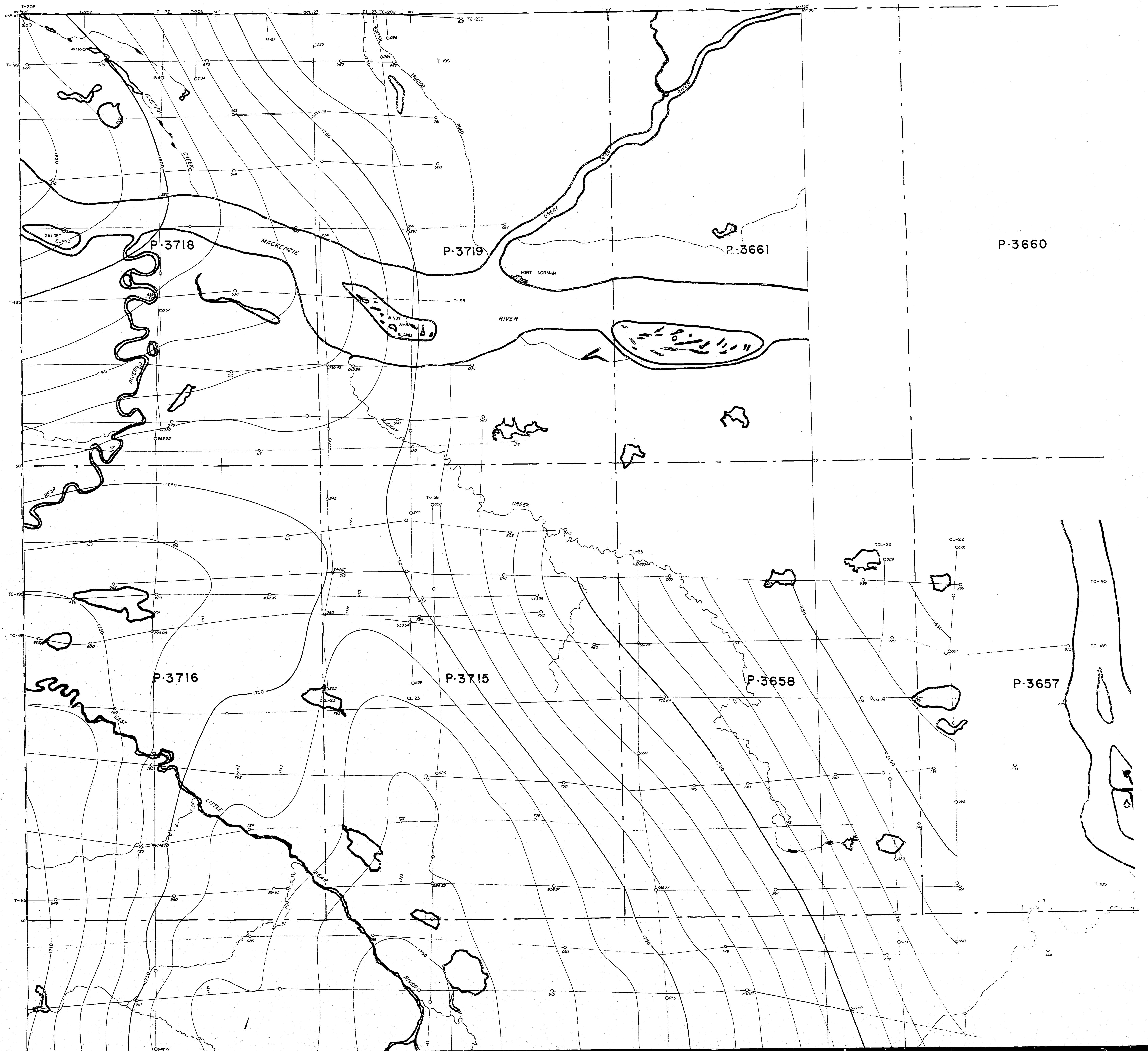
FLIGHT ALTITUDE 3500 FEET A.S.L.
TRAVERSE INTERVAL 1.5 MILES
CONTING LINE INTERVAL 6 MILES
CONTOUR INTERVAL 10 CANVAS
BASE INTENSITY ARBITRARY

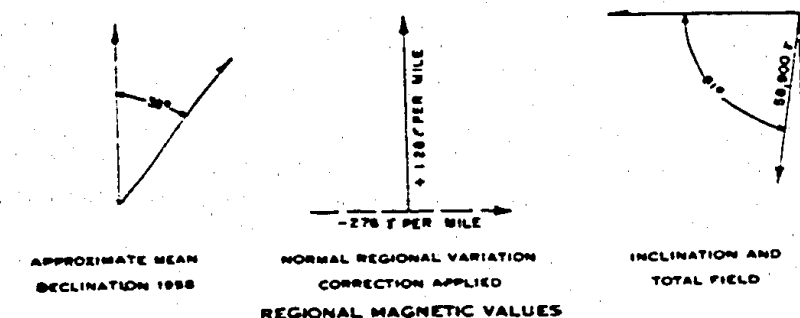
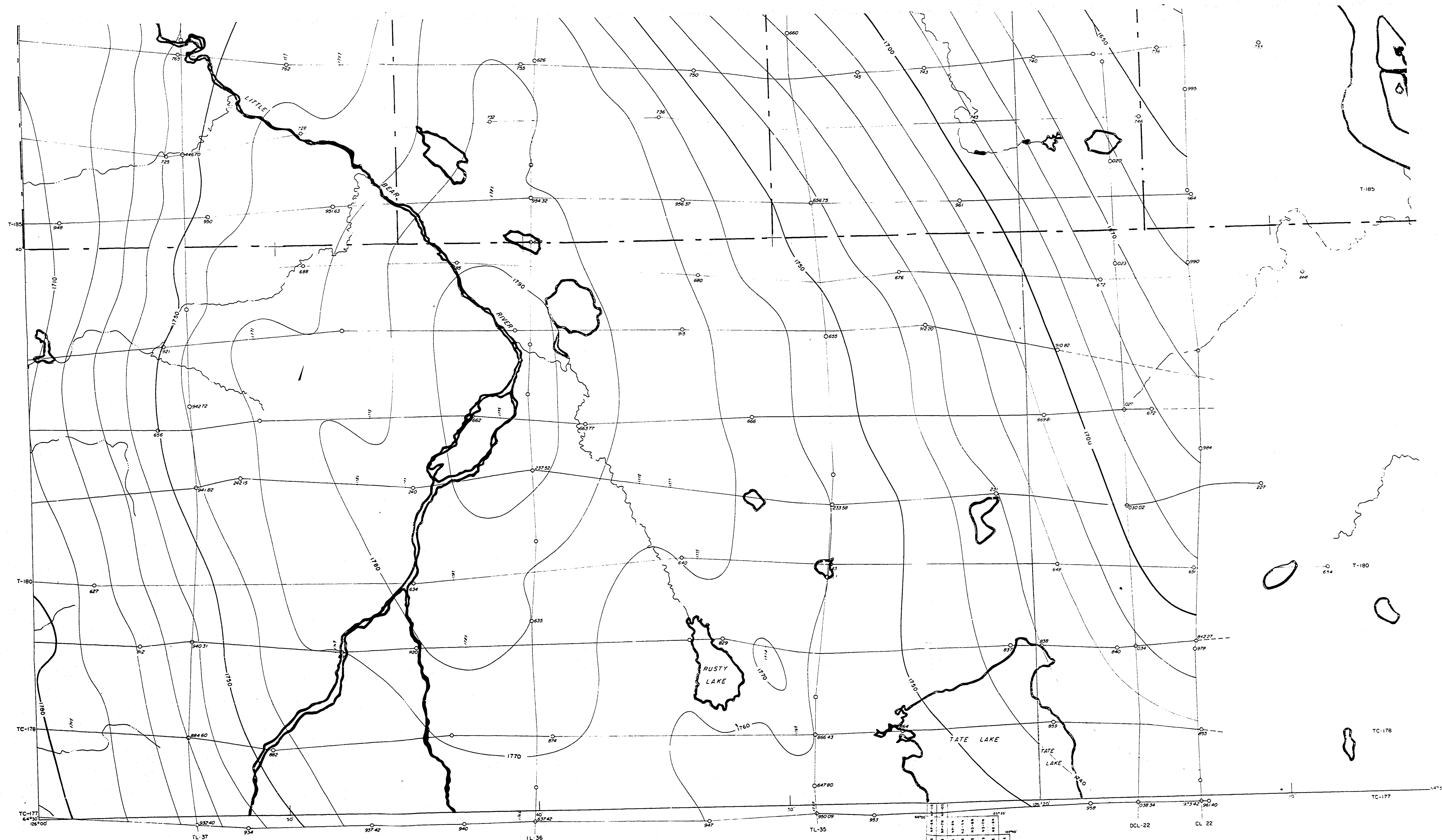
2 of 2

SHEET INDEX

TL-1	TL-2	TL-3	TL-4	TL-5	TL-6	TL-7	TL-8	TL-9	TL-10
TL-11	TL-12	TL-13	TL-14	TL-15	TL-16	TL-17	TL-18	TL-19	TL-20
TL-21	TL-22	TL-23	TL-24	TL-25	TL-26	TL-27	TL-28	TL-29	TL-30
TL-31	TL-32	TL-33	TL-34	TL-35	TL-36	TL-37	TL-38	TL-39	TL-40

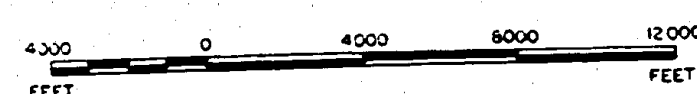
CANADIAN AERO SERVICE LIMITED
OTTAWA, ONTARIO





HORIZONTAL CONTROL: BASED ON PLANNIMETRIC MAPS COMPILED BY CANADIAN AERO SERVICE LIMITED. ALSO PRELIMINARY TOPOGRAPHIC MAPS PUBLISHED BY THE DEPARTMENT OF MINES AND TECHNICAL SURVEYS, OTTAWA.

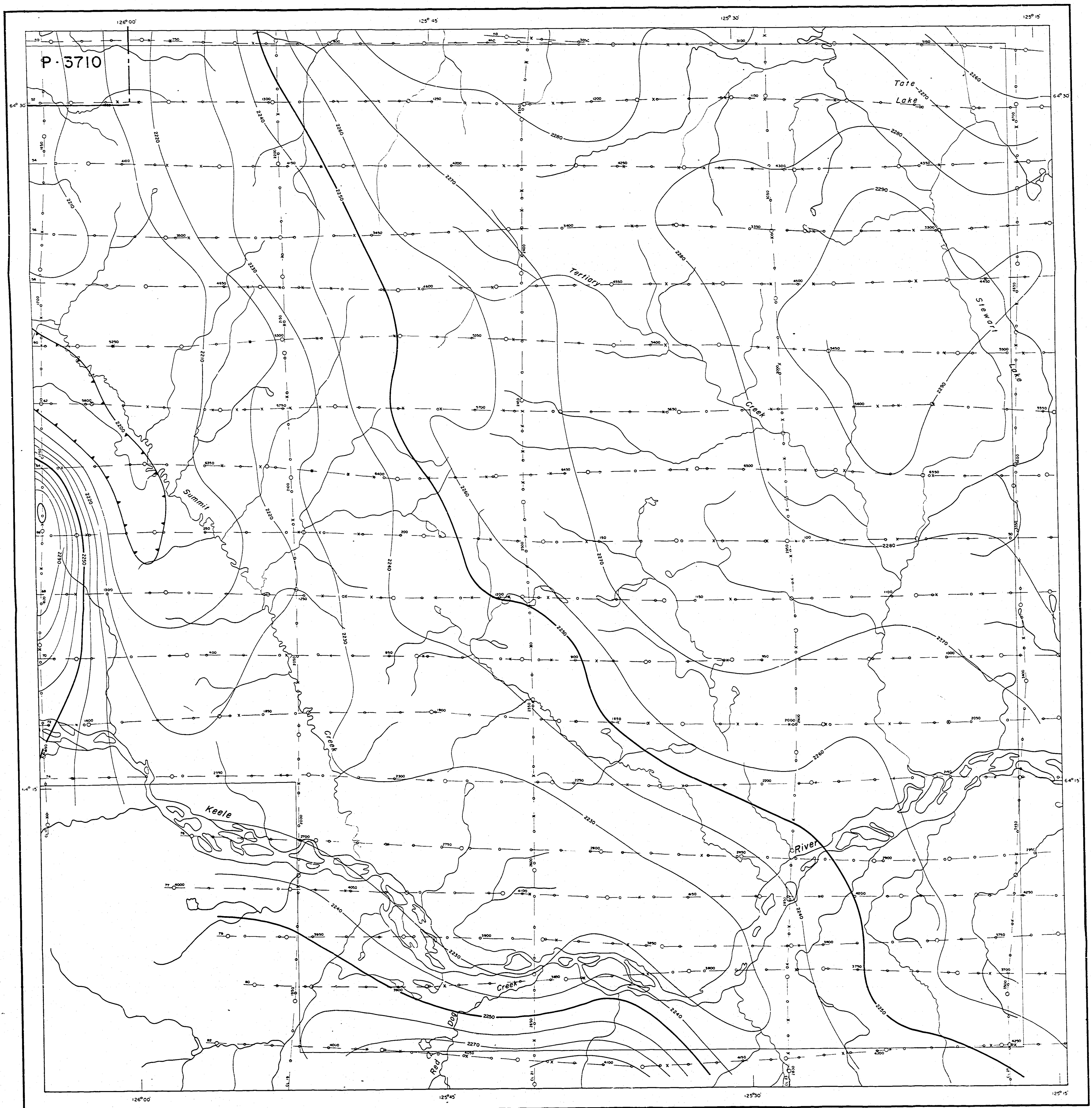
NORTHWEST TERRITORIES PLAINS **SHELL OIL COMPANY OF CANADA LIMITED**



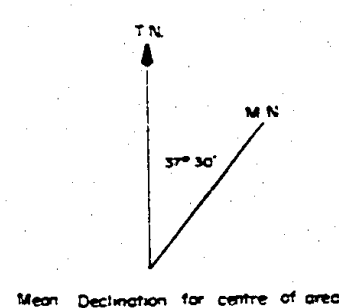
FLIGHT ALTITUDE 3500 FEET A.S.L.
TRAVERSE INTERVAL 1.5 MILES
CONTROL LINE INTERVAL 6 MILES
CONTOUR INTERVAL 10 GAMMAS
BASE INTENSITY ARBITRARY

SHEET INDEX
CANADIAN AERO SERVICE LIMITED
OTTAWA, ONTARIO

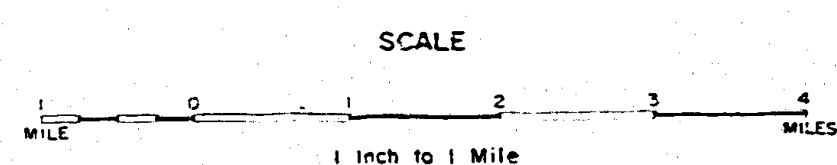
AMERADA PETROLEUM CORPORATION AIRBORNE GEOPHYSICAL SURVEY



CONTROL INTERVAL 10 GAMMA
 MEAN FLIGHT LINE SPACING 2 MILES
 CONTROL LINE SPACING 6 MILES
 ALTITUDE ABOVE SEA LEVEL 4500 FEET
 250 GAMMA CONTOUR
 50 GAMMA CONTOUR
 10 GAMMA CONTOUR
 MAGNETIC LOW
 FIDUCIAL POINTS
 FLIGHT LINES
 INFLECTION POINTS

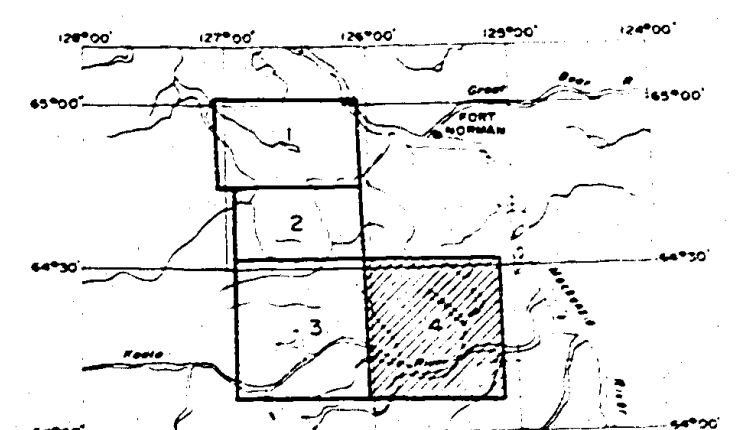


FORT NORMAN AREA, N.W.T.



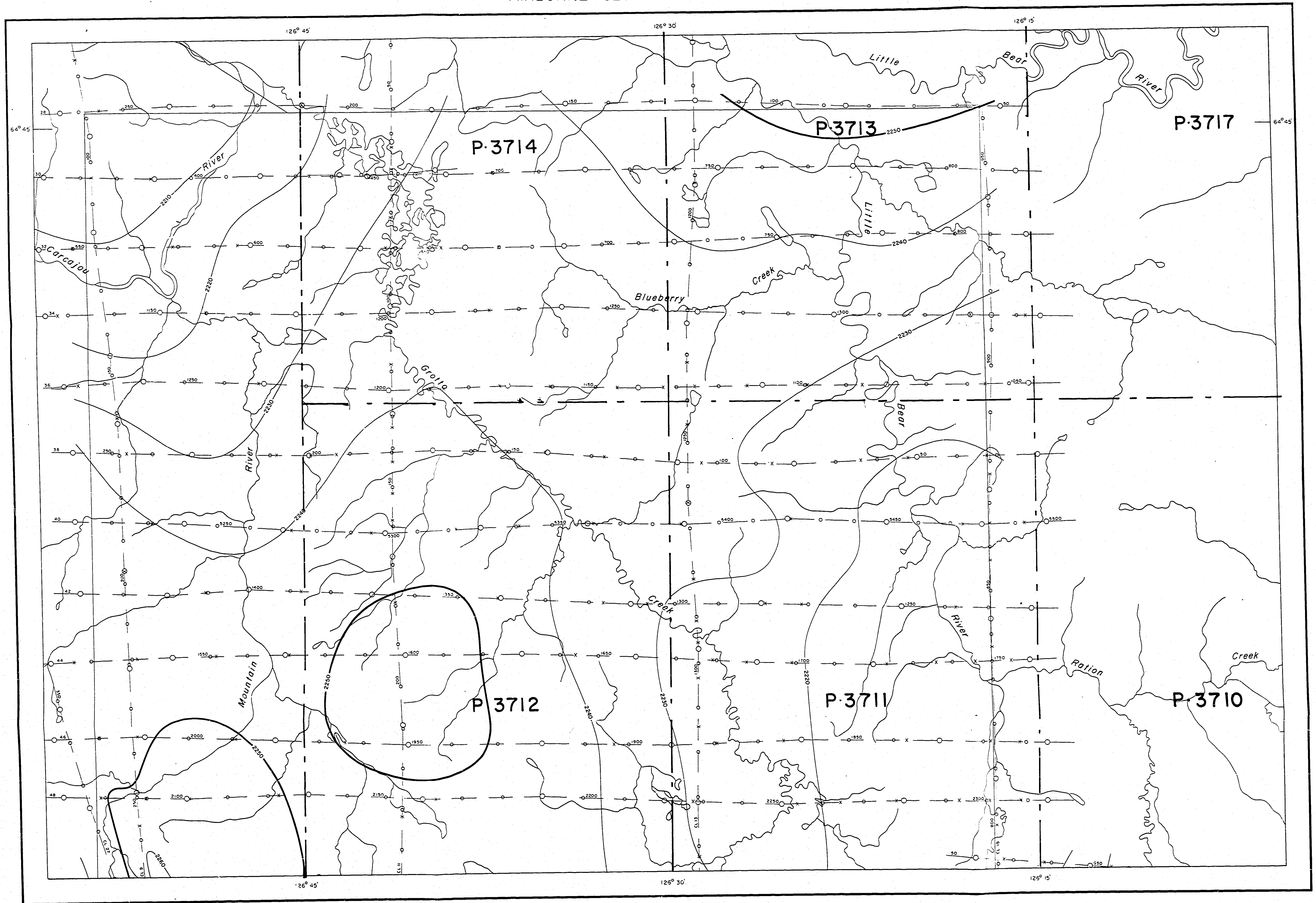
A correction for regional gradient has been applied at the rate of -
0.46 gammas per mile S to N - 2.98 gammas per mile W to E

Flown and Compiled by
 LOCKWOOD SURVEY CORPORATION LIMITED
 TORONTO, CANADA
 1965

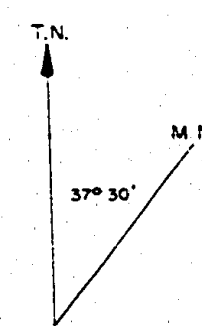


AMERADA PETROLEUM CORPORATION

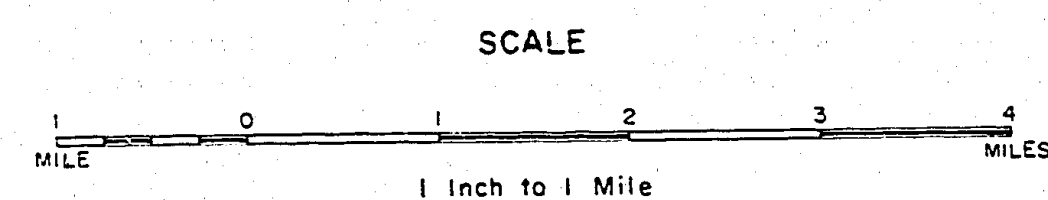
AIRBORNE GEOPHYSICAL SURVEY



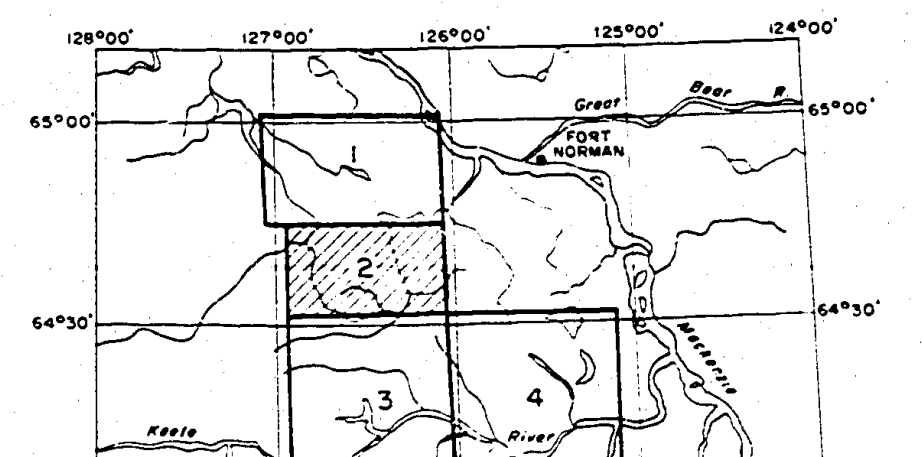
CONTOUR INTERVAL ----- 10 GAMMA
 MEAN FLIGHT LINE SPACING ----- 2 MILES
 CONTROL LINE SPACING ----- 6 MILES
 ALTITUDE ABOVE SEA LEVEL ----- 4500 FEET
 250 GAMMA CONTOUR -----
 50 GAMMA CONTOUR -----
 10 GAMMA CONTOUR -----
 MAGNETIC LOW -----



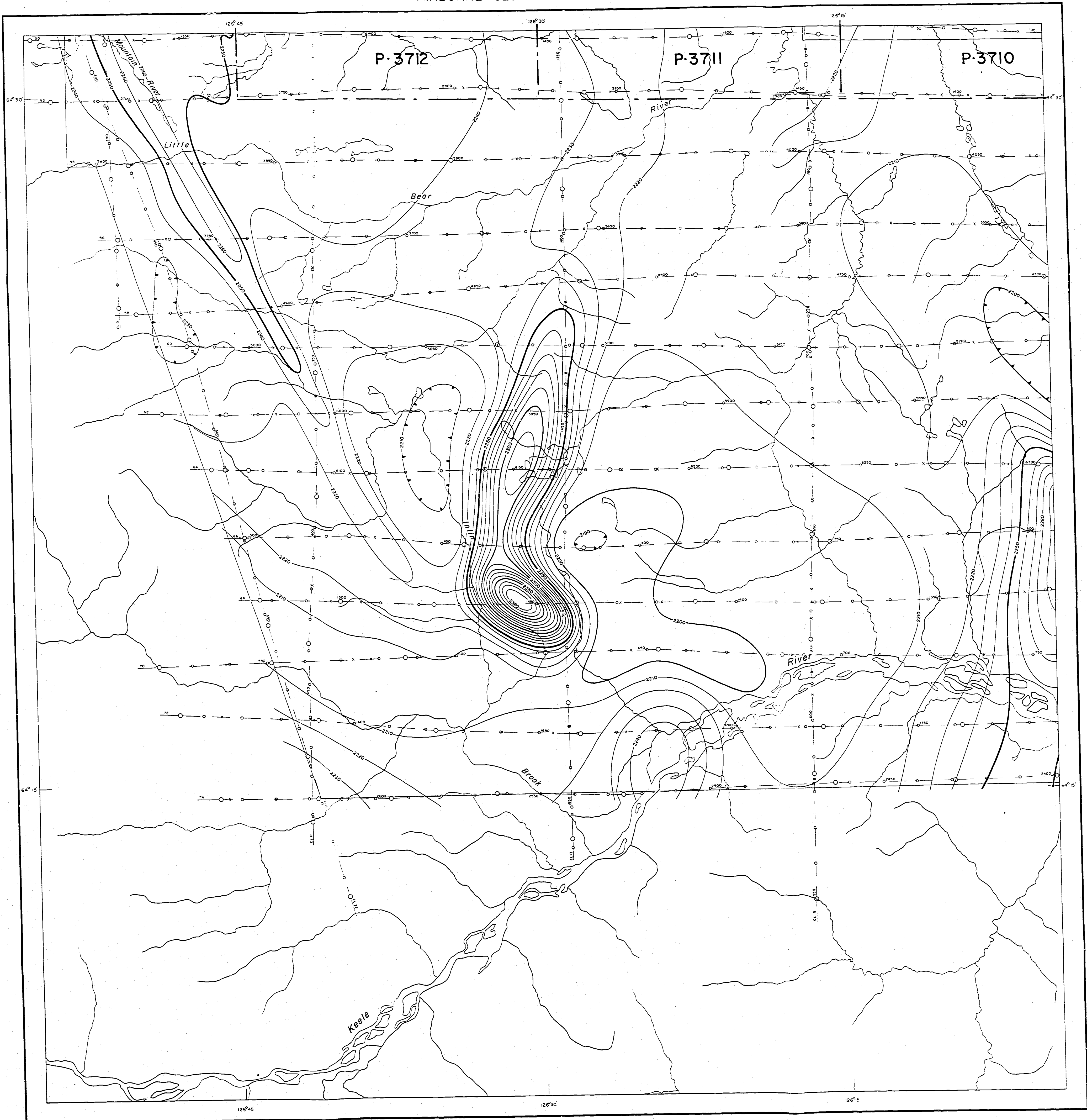
FORT NORMAN AREA, N.W.T.



Flown and Compiled by:
 LOCKWOOD SURVEY CORPORATION LIMITED
 TORONTO, CANADA
 1965



AMERADA PETROLEUM CORPORATION
AIRBORNE GEOPHYSICAL SURVEY

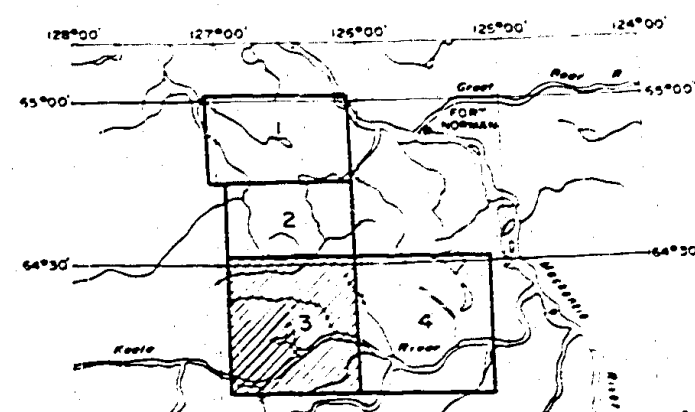


CONTOUR INTERVAL 10 GAMMA
MEAN FLIGHT LINE SPACING 2 MILES
CONTROL LINE SPACING 6 MILES
ALTITUDE ABOVE SEA LEVEL 4500 FEET
250 GAMMA CONTOUR
50 GAMMA CONTOUR
10 GAMMA CONTOUR
MAGNETIC LOW
FIDUCIAL POINTS
..... 34900

FORT NORMAN AREA, N.W.T.

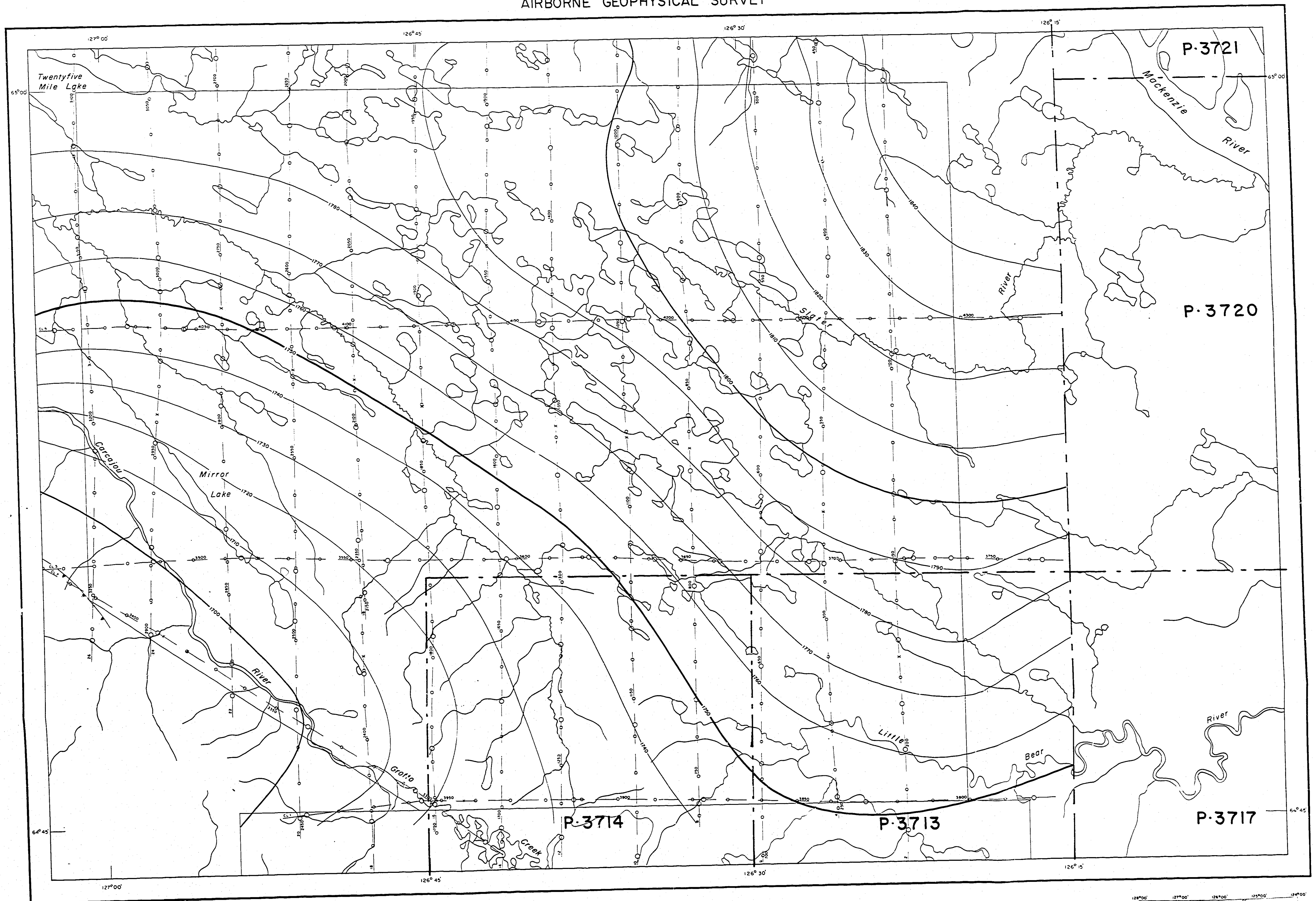
SCALE
1 inch to 1 mile
MILE 0 1 2 3 4

Flown and Contoured by
LOCKWOOD SURVEY CORPORATION LIMITED
TORONTO, CANADA
1955

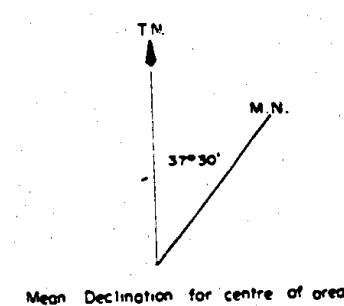


AMERADA PETROLEUM CORPORATION

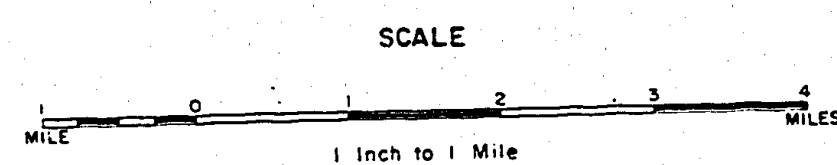
AIRBORNE GEOPHYSICAL SURVEY



CONTOUR INTERVAL 10 GAMMA
 MEAN FLIGHT LINE 2 MILES
 CONTROL LINE SPACING 6 MILES
 ALTITUDE ABOVE SEA LEVEL 3500 FEET
 250 GAMMA CONTOUR
 50 GAMMA CONTOUR
 10 GAMMA CONTOUR
 MAGNETIC LOW
 FIDUCIAL POINTS 3480 O
 FLIGHT LINES
 Mean Declination for centre of area



FORT NORMAN AREA, N.W.T.



A correction for regional gradient has been applied at the rate of - 0.74 gammas per mile S to N - 3.20 gammas per mile W to E.

Drawn and Compiled by
 LOCKWOOD SURVEY CORPORATION LIMITED
 TORONTO, CANADA
 1965

