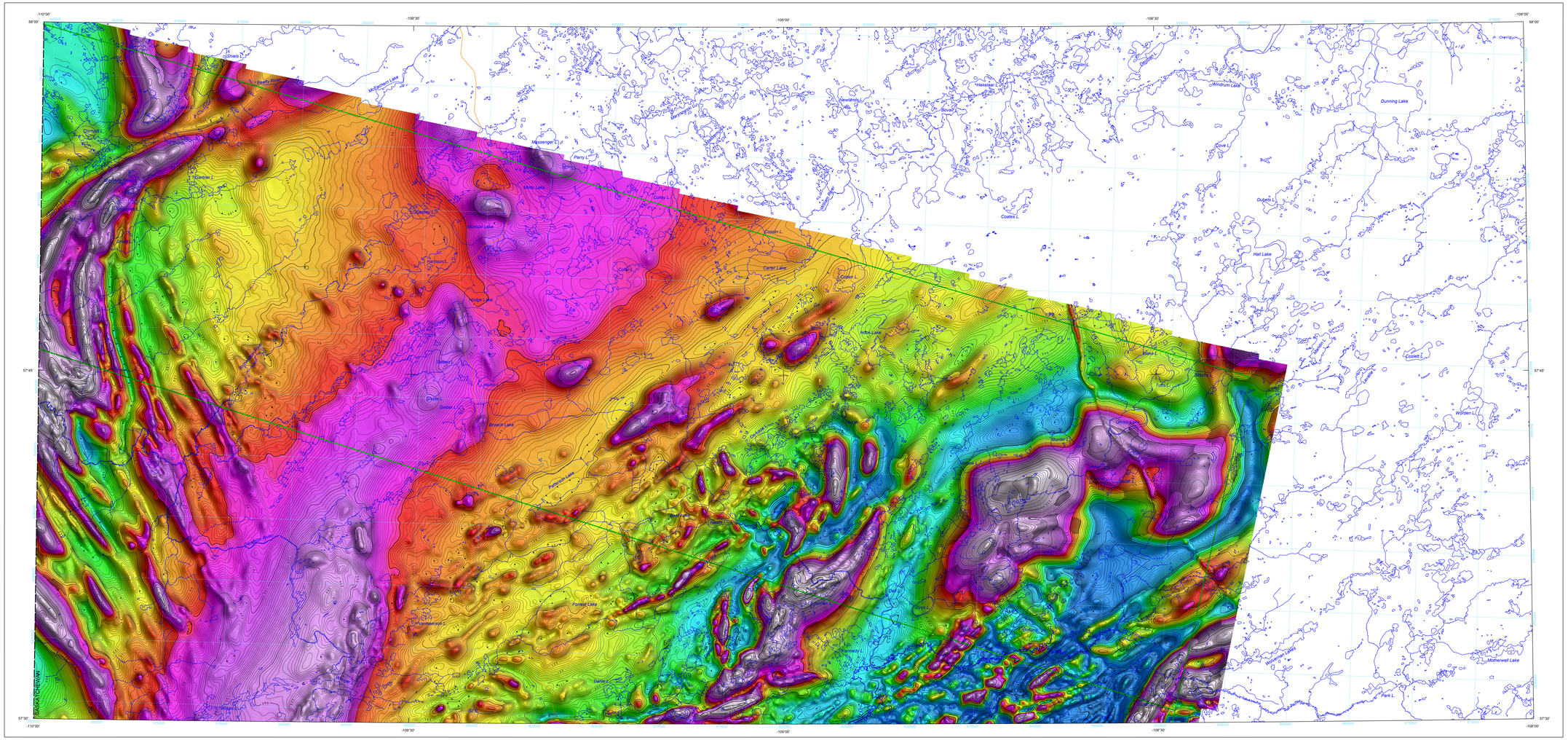
Natural Resources Canada / Ressources naturelles Canada

RESIDUAL TOTAL MAGNETIC FIELD



Residual Total Magnetic Field

This map of the residual total magnetic field was derived primarily from data acquired during an aeromagnetic survey carried out by Geo Data Solutions GDS Inc. from March 1, 2017 to April 2, 2017. The survey covered blocks A and B (blocks A and B, respectively, in the 2017 survey and blocks A and B in 2009) originating from a survey flown by Fugro Airborne Surveys Corp. supplements the new survey data in block C. Data from all survey blocks were recorded using split-beam cesium vapour magnetometers (sensitivity = 0.005 nT) mounted in each of the tail booms of two GDS Piper Navajo and a Cessna Titan 404 aircraft operated by Fugro Airborne Surveys Corp.

Survey project specifications

	Block A	Block B	Block C	Block C (In-fill)
Survey year	2017	2017	2009	2017
Aircraft registration	C-FQQB C-FVTL	C-FQQB C-FVTL	C-FYAU	C-FQQB C-FVTL
Flight height	Drape, 100 m	Drape, 100 m	Drape, 125 m	Drape, 100 m
Line spacing	250 m	250 m	400 m	400 m
Line direction	45° / 225°	100° / 280°	100° / 280°	100° / 280°
Tie line spacing	1200 m	1200 m	2400 m	2400 m
Tie line direction	135° / 315°	10° / 190°	10° / 190°	10° / 190°

In block C, the in-fill flight lines and tie lines for the current 2017 survey were offset to provide the denser coverage of 200 m line and 1200 m tie line spacing when combined with the 2009 survey.

The flight path was recovered following post-flight differential corrections to the raw Global Positioning System (GPS) data. The survey blocks were flown on a pre-determined flight drape surface to minimize differences in magnetic values at the intersections of tie lines and traverse lines. The drape surface for each block was flown at a 100 m clearance. Because the magnetic field varies inversely with elevation, a surface level of the 2017 survey drape surface before these intersection differences were computer-analysed to obtain a mutually levelled set of flight line magnetic data. The levelled values were then interpolated to a 62.5 m grid. The International Geomagnetic Reference Field (IGRF) defined at the average GPS altitude of 534 m for the current mid-survey date of 2017/03/17 was then removed. Subtracting the IGRF, which approximates the Earth's main field, from the grid, produces a residual component related almost entirely to magnetizations within the Earth's crust.

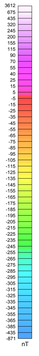
This publication is available for free download through GEOSCAN (http://geoscan.nrcan.gc.ca/). Corresponding digital profile and gridded data as well as similar data for adjacent airborne geophysical surveys are available from Natural Resources Canada's Geoscience Data Repository for Aeromagnetic data at: http://gdr.agg.nrcan.gc.ca/gdr-bin/aero_e.look.pl. The raw survey data are also available, for a fee, from the Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A 0E8. Telephone: (613) 995-5326, email: info@gsc@nrcan.gc.ca

Acknowledgements

The authors thank G. Delaney at the Saskatchewan Geological Survey, and D. Pana and N. Atkinson at the Alberta Geological Survey for their feedback on the original survey bounds and support of the project. Thanks also to the field crew chief, Carlos Cortada at Geo Data Solutions GDS Inc. for his cooperation during the GSC field inspection visit as well as Albert Sayegh for his cartographic design expertise.

References

Buckle, J. L., Coyle, M., Carson, J. M., Harvey, B. J. A. and Delaney, G., 2009: Geophysical Series, Southern Athabasca Basin Geophysical Survey, Saskatchewan, parts of NTS 74-F and 74-E; Geological Survey of Canada, Open File 6017; Saskatchewan Ministry of Energy and Resources, Open File 2009-1, scale 1:250 000. https://doi.org/10.4095/247305

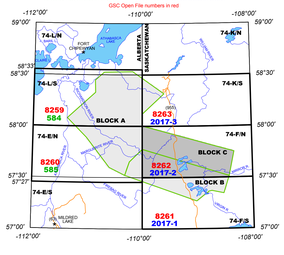


ISOMAGNETIC LINES

500 nT
100 nT
25 nT
5 nT
Magnetic low

PLANIMETRIC SYMBOLS

Drainage
Building
Road
Project Limit
Provincial Boundary



NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND GEOPHYSICAL MAP INDEX

GEOLOGICAL SURVEY OF CANADA OPEN FILE 8262
SASKATCHEWAN GEOLOGICAL SURVEY OPEN FILE REPORT 2017-2

RESIDUAL TOTAL MAGNETIC FIELD

AEROMAGNETIC SURVEY OF THE MARGUERITE RIVER AREA

SASKATCHEWAN
Part of NTS 74-F North

Scale 1:100 000

2000 0 1000 2000 4000 6000
(METRES)
NAD83(CSRS) / UTM zone 12N

Universal Transverse Mercator Projection
North American Datum, 1983

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Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications

Authors: F. Kiss and V. Tschirhart

Data acquisition, data compilation and map production by Geo Data Solutions GDS Inc., Saskatoon, Canada.
Contract and project management by the Geological Survey of Canada, Ottawa, Ontario.
Cartographic design by A. Sayegh.
Permanent link: https://doi.org/10.4095/302749

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MAP LOCATION

OPEN FILE
DOSSIER PUBLIC
8262
GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA
2017

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OPEN FILE REPORT
2017-2
SASKATCHEWAN GEOLOGICAL SURVEY
2017

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Geological Survey of Canada, Open File 8262;
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AEROMAGNETIC SURVEY OF THE MARGUERITE RIVER AREA

Canada

Government of Saskatchewan