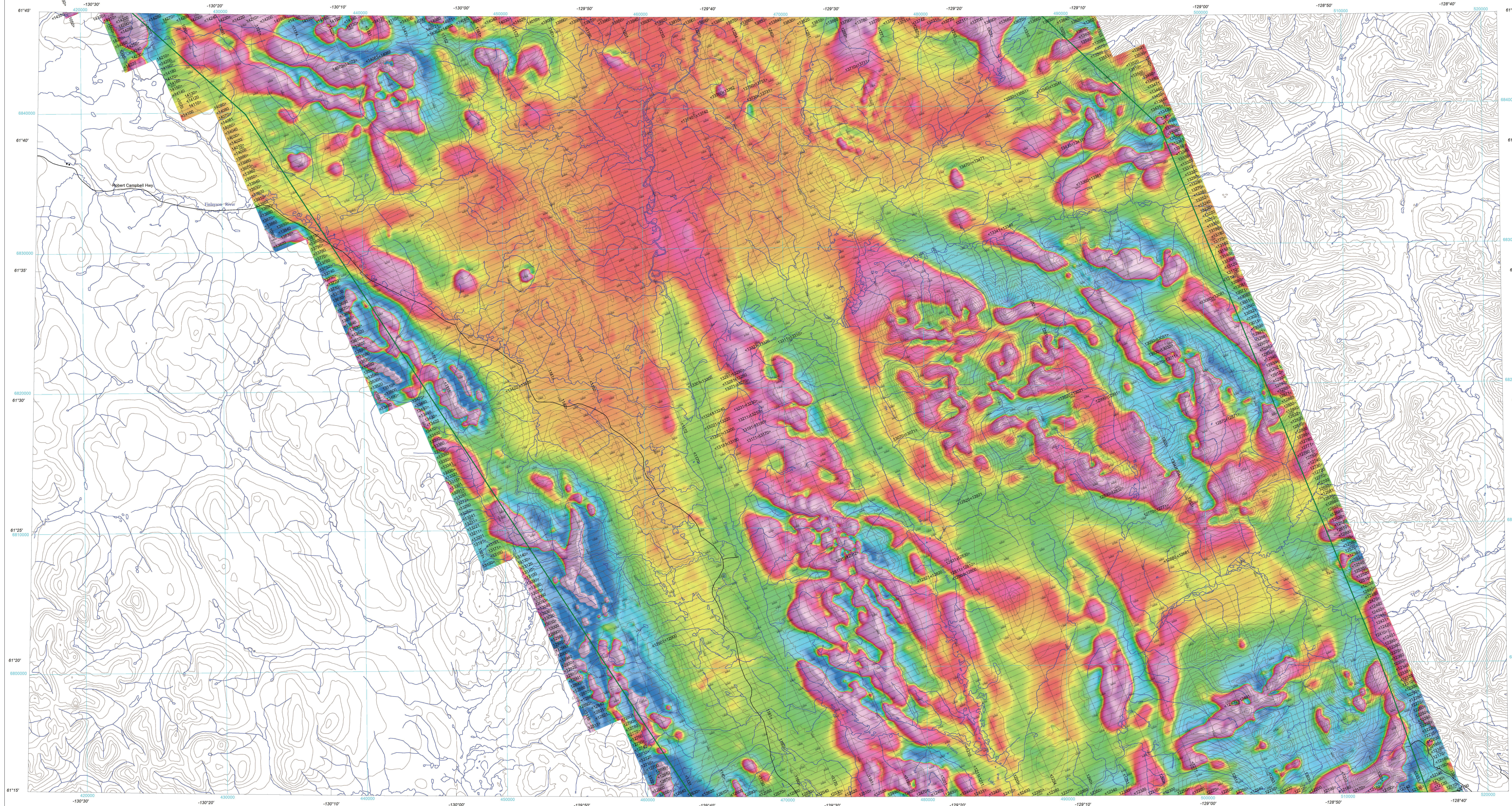


FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD



First Vertical Derivative of the Magnetic Field

This map of the first vertical derivative of the magnetic field was derived from data acquired during an aeromagnetic survey carried out by Sander Geophysics Limited from March 2, 2016 to April 11, 2016. The data were recorded using split-beam cesium vapour magnetometers (sensitivity = 0.005 nT) mounted in each of the tail booms of a Britten-Norman Islander aircraft (C-GSGR and C-GSXX). The nominal traverse and control line spacings were, respectively, 400 m and 2400 m, and the aircraft flew at a nominal terrain clearance of 120 m. Traverse lines were oriented N47°E with orthogonal control lines. The flight path was recovered following post-flight differential corrections to the raw Global Positioning System (GPS) data and inspection of ground images recorded by a vertically-mounted video camera. The survey was flown on a pre-determined flight surface to minimize differences in magnetic values at the intersections of control and traverse lines. These differences were computer-analysed to obtain a mutually levelled set of flight-line magnetic data. The levelled values were then interpolated to a 100 m grid. The International Geomagnetic Reference Field (IGRF) defined at the average GPS altitude of 1000 m for the year 2016.23 was then removed. Removal of the IGRF, representing the magnetic field of the Earth's core, produces a residual component related almost entirely to magnetizations within the Earth's crust.

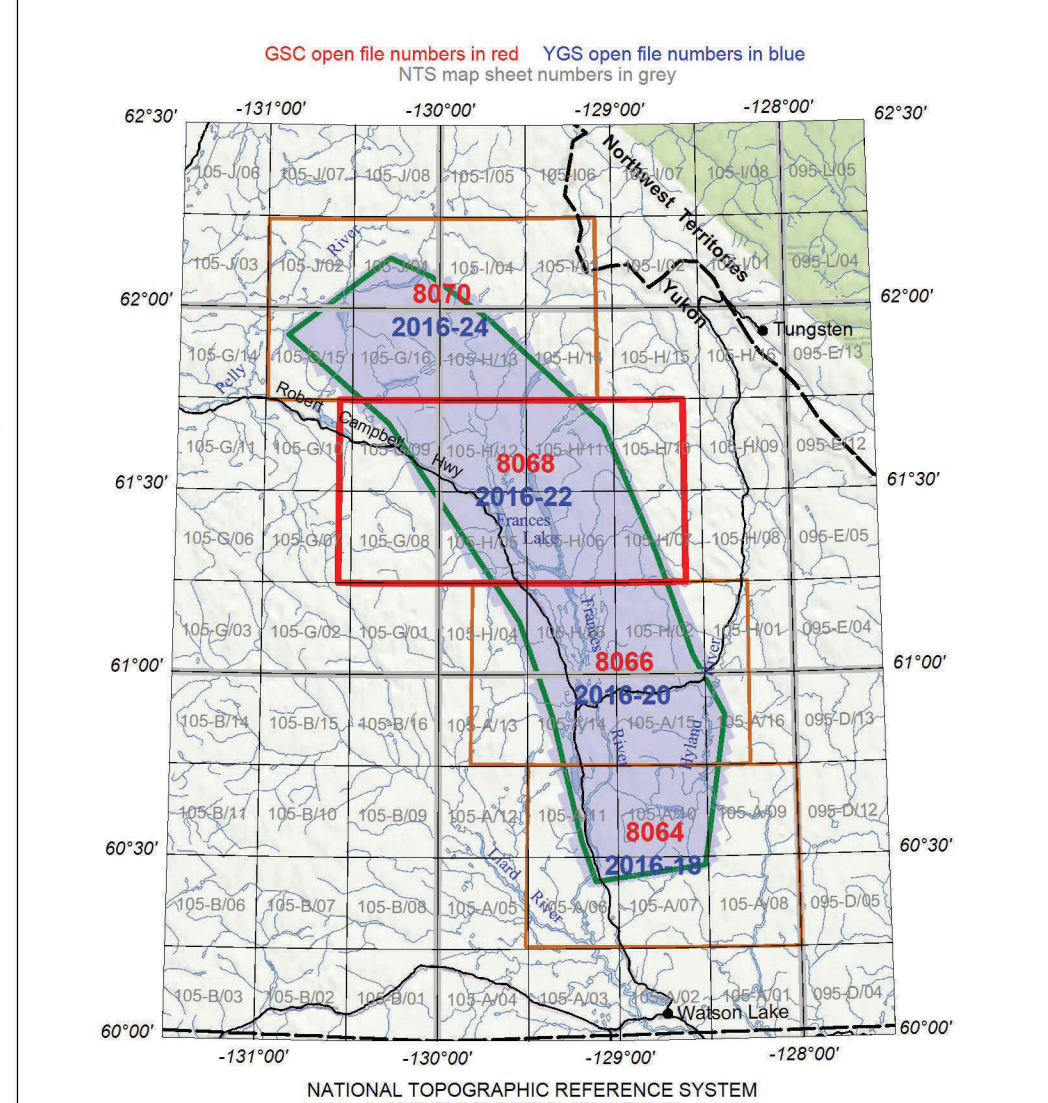
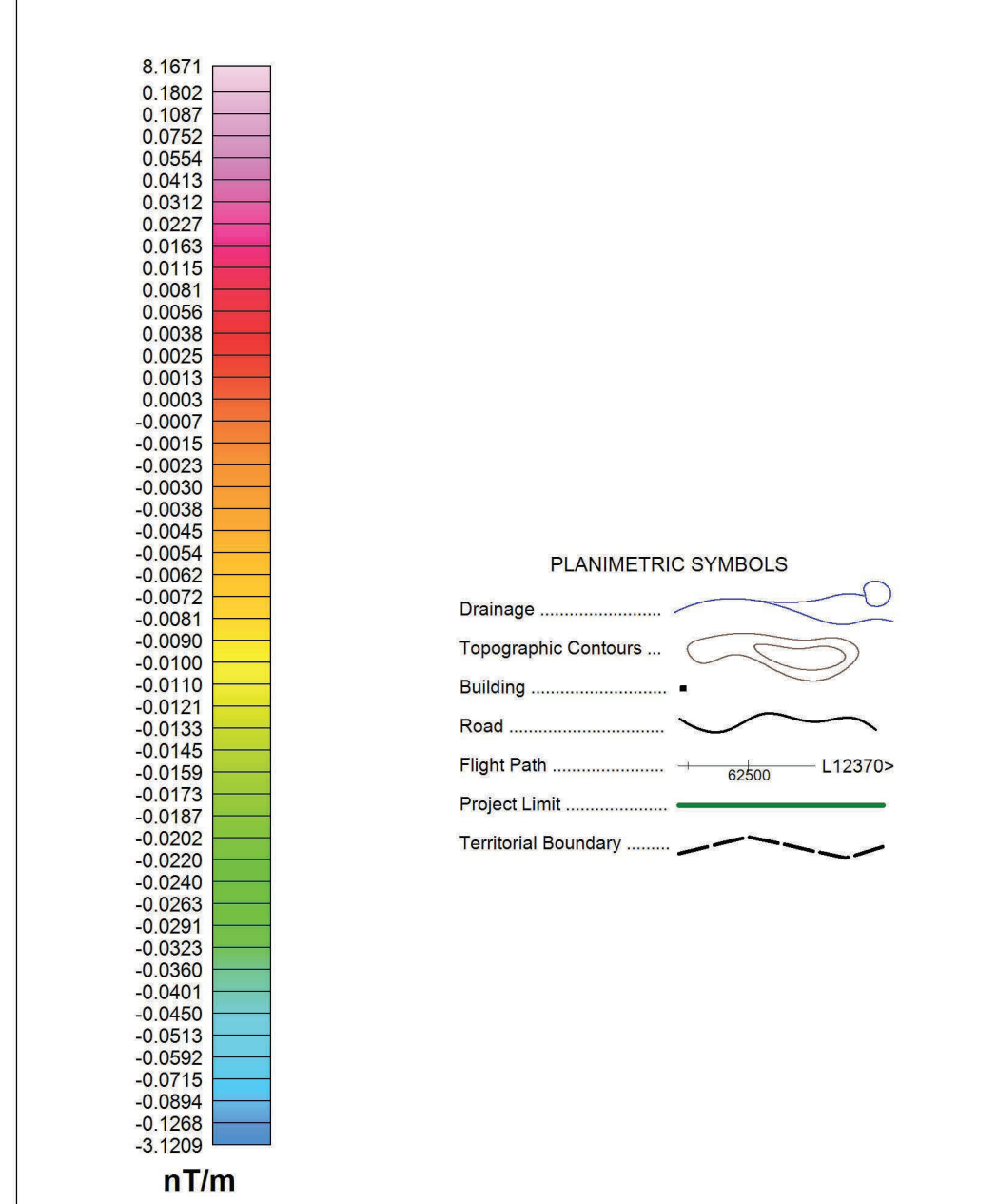
The first vertical derivative of the magnetic field is the rate of change of the magnetic field in the vertical direction. Computation of the first vertical derivative removes long-wavelength features of the magnetic field and significantly improves the resolution of closely spaced and superposed anomalies. A property of first vertical derivative maps is the coincidence of the zero-value contour with vertical contacts at high magnetic latitudes (Hood, 1965).

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://pubs.nrcan.gc.ca/online/>. The same products are also available, for a fee, from the Geophysical Data Centre, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A 0E8. Telephone: (613) 995-5326, email: infocentre@nrcan.ca.

Copies of this map may also be obtained from the Yukon Geological Survey, Energy, Mines and Resources, Government of Yukon, P.O. Box 2703 (K-102), Whitehorse, Yukon, Y1A 2C8. Telephone: (867) 667-3201, email: geology@gov.yk.ca, website: <http://www.geology.gov.yk.ca>.

Acknowledgements
The authors thank the field crew chief, Kevin Charles (Sander Geophysics Limited) for his cooperation and Richard Fortin (GSC) for his technical assistance during the start-up phase of this survey contract. We also thank Douglas Oneschuk (GSC) for his cartographic design expertise.

References
Hood, P.J., 1965. Gradient measurements in aeromagnetic surveying. *Geophysics*, v. 30, p. 891-902.

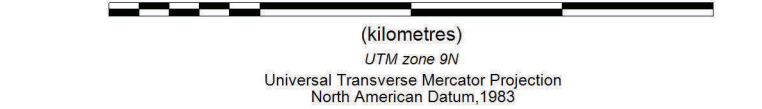


This aeromagnetic survey and the production of this map were funded by phase 2 of the Geo-mapping for Energy and Minerals (GEM-2) program of the Earth Sciences Sector, Natural Resources Canada.

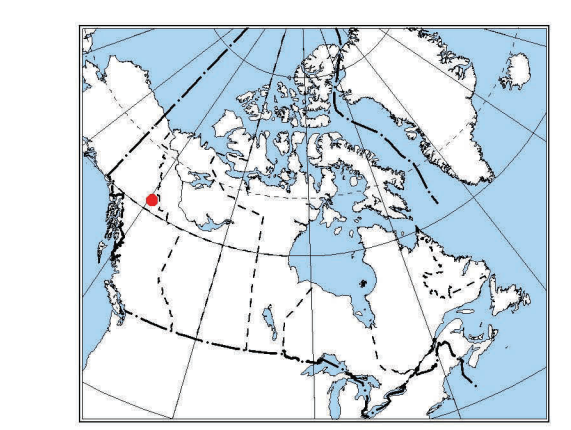
Authors: F. Kiss and O. Boulanger
Data acquisition, data compilation and map production by Sander Geophysics Limited, Ottawa, Ontario.
Contract and project management by the Geological Survey of Canada, Ottawa, Ontario.
Cartographic design by D. Oneschuk.
doi:10.4095/298883

GSC OPEN FILE 8068 / YGS OPEN FILE 2016-22
FIRST VERTICAL DERIVATIVE OF THE MAGNETIC FIELD
AEROMAGNETIC SURVEY OF THE FRANCES LAKE AREA

YUKON
NTS 105-H/6, 12 and parts of 105-G/9, H/5, 7, 10, 11
Scale 1:100 000



Yukon Geological Survey
4150 St. Laurent Street, Whitehorse, Yukon, Canada
Telephone: (867) 667-3201, Fax: (867) 667-3202
Internet: www.geology.gov.yk.ca



<p>OPEN FILE DOSSIER PUBLIC 8068 GSC OPEN FILE 8068 / YGS OPEN FILE 2016-22 2016</p>	<p>Publications in this series have not been edited; they are released as submitted by the author. Les publications de cette série n'ont pas été revues; elles sont publiées telles qu'elles ont été soumises par l'auteur.</p>	<p>OPEN FILE 2016-22 YUKON GEOLOGICAL SURVEY 2016</p>
--	---	---

Recommended citation
Kiss, F. and Boulanger, O., 2016. First Vertical Derivative of the Magnetic Field, Aeromagnetic Survey of the Frances Lake Area, Yukon. NTS 105-H/6, 12 and parts of 105-G/9, H/5, 7, 10, 11. Geological Survey of Canada, Open File 8068. Yukon Geological Survey, Open File 2016-22. Scale 1:100 000. doi:10.4095/298883