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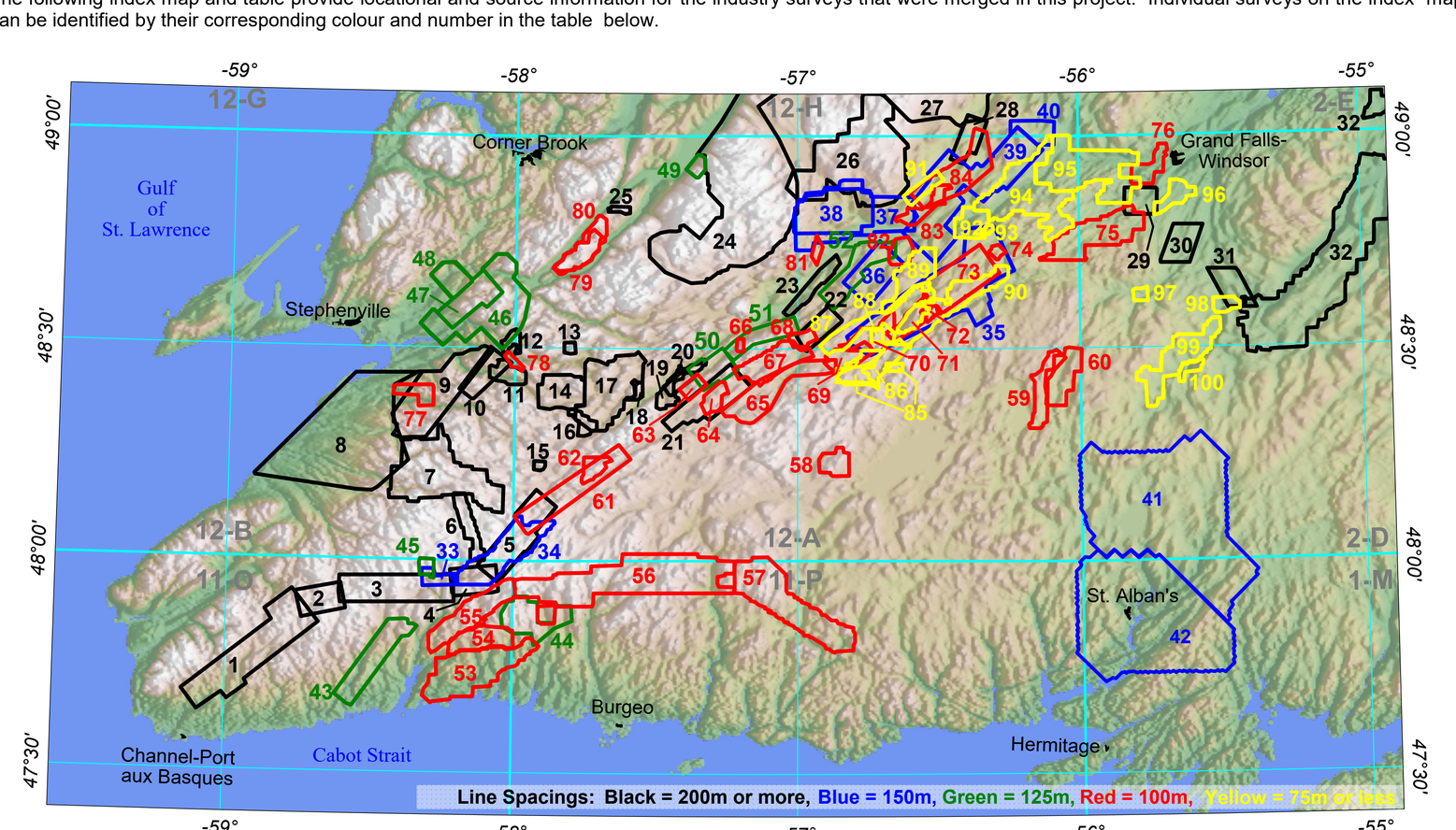
ANALYTIC SIGNAL OF THE MAGNETIC FIELD

Descriptive Notes

Regional aeromagnetic data used in this compilation were acquired from the Geological Survey of Canada Geophysical Data Repository. Digital data from high-resolution surveys flown by mineral exploration companies and the Geological Survey of Newfoundland and Labrador were made available through the Geoscience Atlas, Newfoundland and Labrador Department of Industry, Energy and Technology and the Geological Survey of Canada Geophysical Data Repository. Results from all high-resolution surveys were levelled to the regional data using the Geosoft Grid Knit utility. The analytic signal is useful in locating the edges of magnetic source bodies and is defined as the square root of the sum of the squares of the magnetic derivatives in the x, y, and z directions. Apparent mismatches between survey blocks are a result of differing line spacing, flight altitudes and equipment platforms. For more detailed information regarding this data presentation, please refer to the online open file documentation.

This publication is available for free download through GEOSCAN at https://geoscan.nrcan.gc.ca. Corresponding digital gridded data can be downloaded from the Geological Survey of Canada Data Repository for Geophysical Data at http://gdr.agg.nrcan.gc.ca. Digital data and further information regarding detailed Newfoundland surveys can be accessed or downloaded through GSNL's Geoscience Atlas, at https://gis.geosurv.gov.nl.ca/.

The following index map and table provide locational and source information for the industry surveys that were merged in this project. Individual surveys on the index map can be identified by their corresponding colour and number in the table below.



SURVEY INDEX AND NATIONAL TOPOGRAPHIC SYSTEM REFERENCE

Index Number	Survey ID	Survey Area	Contractor	Client	Year	Line Spacing (m)	Mag Sensor Height (m)	Survey Type	Platform
1	DN09268	Cape Ray Blocks 1,2,3	Fugro	Cornerstone Capital Resources Inc.	2003	200	100	M	F
2	DN09269	Cape Ray Block 4	Fugro	Cornerstone Capital Resources Inc.	2003	200	100	M	F
3	DN09270	Cape Ray Block 5	Fugro	Cornerstone Capital Resources Inc.	2003	200	100	M	F
4	DN09272	Cape Ray Block 6	Fugro	Cornerstone Capital Resources Inc.	2003	200	100	M	F
5	DN09273	Cape Ray Blocks 7,8,9	Fugro	Cornerstone Capital Resources Inc.	2003	200	100	M	F
6	DN04730	Prospectors Pond	Aero Surveys	New Island Resources Inc.	1997	220	30	E-M	H
7	DN04729	Robinsons River	Aero Surveys	New Island Resources Inc.	1997	220	30	E-M	H
8	DN08003	Stephenville / Flat Bay	AeroQuest	Vulcan Minerals Inc.	2006	200	30	M	H
9	DN13780	Stephenville / Steel Mountain	AeroQuest	Marathon PGM Corp.	2008	250	51	E-M	H
10	DN11185	Nita's Brook Property	AeroQuest	Benton Resources Corp.	2005	200	47	E-M	H
11	DN16756	Puddle Pond - Barachois Brook Block E	Fugro	Buchans Minerals Corp.; Benton Resources Corp.; Buchans River Ltd.; Quest Inc.; R. Quinlan	2009	200	35	E-M	H
12	DN16755	Puddle Pond - Barachois Brook Block G	Fugro	Buchans Minerals Corp.; Benton Resources Corp.; Buchans River Ltd.; Quest Inc.; R. Quinlan	2009	200	35	E-M	H
13	DN16753	Puddle Pond - Barachois Brook Block F	Fugro	Buchans Minerals Corp.; Benton Resources Corp.; Buchans River Ltd.; Quest Inc.; R. Quinlan	2009	200	35	E-M	H
14	DN16751	Puddle Pond - Barachois Brook Block C	Fugro	Buchans Minerals Corp.; Benton Resources Corp.; Buchans River Ltd.; Quest Inc.; R. Quinlan	2009	200	35	E-M	H
15	DN16757	Puddle Pond - Barachois Brook Block D	Fugro	Buchans Minerals Corp.; Benton Resources Corp.; Buchans River Ltd.; Quest Inc.; R. Quinlan	2009	200	35	E-M	H
16	DN16519	Puddle Pond - Barachois Brook Block B	Fugro	Buchans Minerals Corp.; Benton Resources Corp.; Buchans River Ltd.; Quest Inc.; R. Quinlan	2009	200	35	E-M	H
17	DN14324	Puddle Pond / Long Range	Geotech	Royal Roads Corp.; Benton Resources Corp.	2008	200	62	E-M	H
18	DN16752	Puddle Pond - Barachois Brook Block A	Fugro	Buchans Minerals Corp.; Benton Resources Corp.; Buchans River Ltd.; Quest Inc.; R. Quinlan	2009	200	35	E-M	H
19	DN17484	Lloyds Lake / MolyPeak & Horn-Mesh	Geotech	Puddle Pond Resources Inc.; North Range Resources Ltd.	2011	200	69	E-M	H
20	DN01003	Lloyds River	Aerodat	Noranda Mining & Exploration Inc.	1995	200	45	E-M-V	H
21	DN01001	Stanley Waters	Aerodat	Noranda Mining & Exploration Inc.	1995	200	45	E-M-V	H
22	DN01002	Harmsworth Steady	Aerodat	Noranda Mining & Exploration Inc.	1995	200	45	E-M-V	H
23	DN13692	Red Indian Lake / Healy Bay	AeroQuest	Messina Minerals Inc.	2007	200	51	E-M	H
24	DN14044	Topsails Block 2	UTS Geophysics	Altius Resources Inc.; JNR Resources Inc.	2008	200	50	M-R	F
25	DN07590	Block B, Glover Island	Fugro	New Island Minerals Ltd.	2000	200	40	E-M	H
26	DN15609	Topsails Block 3	UTS Geophysics	Altius Resources Inc.; JNR Resources Inc.	2008	200	50	M-R	F
27	DN15629	Topsails Block 1	UTS Geophysics	Altius Resources Inc.; JNR Resources Inc.	2008	200	50	M-R	F
28	DN11109	LJG Property	AeroQuest	Benton Resources Corp.	2005	200	47	E-M	H
29	DN08867	Twilight	Goldak	Altius Resources Inc.	2002	200	80	M-V	F
30	DN08250	Paradise Lake	Goldak	Altius Resources Inc.	2002	200	80	M-V	F
31	DN07724	Rolling Pond	Goldak	Altius Resources Inc.	2002	200	80	M-V	F
32	DN24569	Gander Lake South	CGG / Fugro	Palisade Resources; Krinor Resources; New Found Gold Corp.	2017	200	35	E-M	H
33	DN17878	Finger Pond West	Geotech	Marathon Gold Corp.	2012	150	50	E-M	H
34	DN17860	Finger Pond East	Geotech	Marathon Gold Corp.	2012	150	50	E-M	H
35	DN02032	Tally Pond & Duck Pond	Aerodat	Noranda Mining & Exploration Inc.	1988	150	45	E-M-V	H
36	DN08012	Buchans Block C	CGG Geoterrex-Dighem	Billiton Exploration Canada Ltd.	1998	150	73	E-M	F
37	DN08011	Buchans Block B	CGG Geoterrex-Dighem	Billiton Exploration Canada Ltd.	1998	150	73	E-M	F
38	GSC	Red Indian Line II - L	CGG Geoterrex-Dighem	BHP Billiton	1998	150	73	E-M	H
39	DN08013	Buchans Block D	CGG Geoterrex-Dighem	Billiton Exploration Canada Ltd.	1998	150	73	E-M	F
40	GSC	Red Indian Line II - I	CGG Geoterrex-Dighem	Billiton	1998	150	73	E-M	H
41	DN09913	Twillick Brook	Sander Geophysics Ltd.	Geological Survey of Newfoundland and Labrador	2019	150	90	M-R-V	F
42	DN09911	St. Alban's	Goldak Airborne Surveys	Geological Survey of Newfoundland and Labrador	2015	150	125	M-R	F
43	DN12507	La Poile	AeroQuest	UCore Uranium Inc.	2007	125	30	E-M-R	H
44	DN12421	Peter Snout	AeroQuest	UCore Uranium Inc.	2007	125	30	E-M-R	H
45	DN12513	Deep Brook	AeroQuest	UCore Uranium Inc.	2007	125	30	E-M-R	H
46	DN12145	Lost Pond Ext. 1	AeroQuest	UCore Uranium Inc.	2006	125	30	E-M-R	H
47	DN12128	Lost Pond	AeroQuest	Hot Rock Uranium Corp.; UCore Uranium Inc.	2006	125	30	E-M-R	H
48	DN12510	Lost Pond Ext. 2	AeroQuest	UCore Uranium Inc.	2006	125	30	E-M-R	H
49	DN12512	Grommit Lake	AeroQuest	UCore Uranium Inc.	2007	125	30	E-M-R	H
50	N00192	Glitter Pond	Dighem	BP Resources Canada Ltd.; Noranda Exploration	1990	125	48	E-M-V	H
51	N00197,8	Tulks Hill	Aerodat	BP Resources Canada Ltd.; Noranda Exploration	1990	125	48	E-M-V	H
52	N00195,6	Bobby's Pond West	Aerodat	BP Resources Canada Ltd.; Noranda Exploration	1990	125	48	E-M-V	H
53	DN14551	Hope Brook	AeroQuest	Quest Inc.; Quinlan Prospecting; Stares Prospecting; Benton Resources Corp.	2008	100	40	M	F
54	DN12359	Strickland	AeroQuest	Commander Resources Ltd.	2006	100	30	E-M-R	H
55	DN11417	Hermitage West	AeroQuest	Pathfinder Resources Ltd.; Commander Resources Ltd.	2006	100	30	E-M-R	H
56	DN11414	Hermitage Central	AeroQuest	Commander Resources Ltd.	2006	100	30	E-M-R	H
57	DN11423	Hermitage East	AeroQuest	Pathfinder Resources Ltd.; Commander Resources Ltd.	2006	100	30	E-M-R	H
58	DN11296	Granite Lake Project	AeroQuest	Playfair Mining Ltd.	2006	100	30	E-M-R	H
59	DN06682,3	Great Burnt Lake Block B & A	AeroQuest	Celtic Minerals Ltd.	2007	100	30	E-M	H
60	DN08783	Pipestone Pond	Sial	Celtic Minerals Ltd.	1996	100	45	E-M-V	H
61	DN14441	Staghorn Lake	AeroQuest	Metals Creek Resources Corp.	2009	100	50	M	F
62	DN24339	Victoria Lake / Victoria River	Scott Hogg & Associates	Antler Gold Inc.; Altius Resources Inc	2017	100	35	M	H
63	DN11925	Boomerang	AeroQuest	Messina Minerals Inc.	2006	100	30	E-M-R	H
64	DN18453	Victoria Lake	AeroQuest	Crosshair Exploration and Mining Corp.; Paragon Minerals Corp.	2011	100	59	E-M	H
65	DN10943	Valentine Lake	Geophysics GPR International	Richmont Mines Inc.; Mountain Lake Resources Inc.	2007	100	30	M-R-V	H
66	DN10212	Tulks Hill	AeroQuest	Prominex Resources Corp.	2006	100	51	M-E	H
67	DN11802	Long Lake	AeroQuest	Messina Minerals Inc.	2006	100	47	E-M	H
68	DN12569	Costigan Lake	AeroQuest	Messina Minerals Inc.	2007	100	51	E-M	H
69	DN14158	South Tally Pond Block 1	AeroQuest	Paragon Minerals Corp.	2011	100	59	E-M	H
70	DN08183	South Tally Pond	McPhar	Altius Resources Inc.; Thundermin Ltd.	2004	100	65	E-M	H
71	DN13583	South Tally Pond Block 2	AeroQuest	Paragon Minerals Corp.	2011	100	59	E-M	H
72	DN10541	Tally Pond	Geotech	Buchans River Ltd.; Royal Roads Corp.	2008	100	63	M-E	H
73	DN10044	Duck Pond	Geotech	Teck Limited	2008	100	62	M-E	H
74	DN11681	Burnt Pond	Geotech	Buchans River Ltd.; Royal Roads Corp.	2008	100	63	E-M	H
75	DN24281	Grand Falls / Crystal Lake	Scott Hogg & Associates	Antler Gold Inc.; Altius Resources Inc.	2017	100	35	M	H
76	DN05015	Grand Falls - Windsor	Aero Surveys	Copper Hill Resources Inc.; Pearl Resources Inc.	1997	100	30	E-M	H
77	DN13780	Stephenville / Steel Mountain	AeroQuest	Marathon PGM Corp.	2008	100	51	E-M	H
78	DN17369	Southwest Brook / Four Corners	Fugro	Four Corners Mining Corp.; Triple Nine Resources Ltd.	2010	100	35	E-M	H
79	DN12245	Glover Island	Geotech	Crew Gold Corp.	2008	100	68	E-M	H
80	DN07584	Block A, Glover Island	Fugro	New Island Minerals Ltd.	2000	100	40	E-M	H
81	DN12697	Red Indian Lake / Skidder Brook	AeroQuest	Messina Minerals Inc.	2007	100	51	E-M	H
82	DN08787	Hungry Hill	Sial	Celtic Minerals Ltd.	1996	100	45	E-M-V	H
83	DN20398	Buchans Junction	CGG / Fugro	Xstrata Zinc Canada; Canstar Resources Inc.	2012	100	35	E-M	H
84	DN09904	Little Joe Glodes	Fugro	Geological Survey of Canada; Geological Survey of Newfoundland & Labrador	2007	100	40	M	H
85	DN24310	Wilding Lake East and West	Scott Hogg & Associates	Antler Gold Inc.; Altius Resources Inc.	2017	75	35	M	H
86	DN09336	Lake Douglas	AeroQuest	Paragon Minerals Corp.	2007	75	51	E-M	H
87	DN10465	Harpoon Lake & Barren Lake	AeroQuest	Paragon Minerals Corp.	2007	75	51	M-E	H
88	DN18888	South Tally Pond / Lemarchant	AeroQuest	Paragon Minerals Corp.	2011	75	59	E-M	H
89	DN03088	South Golden Promise 2	Fugro	Rubicon Minerals Corp.	2003	75	30	E-M	H
90	DN24154	Noel Paul's Brook	Scott Hogg & Associates	Antler Gold Inc.; Altius Resources Inc.	2017	75	35	M	H
91	DN17364	Buchans Junction	Geotech	Eagleridge International Ltd.; Vinland Resources	2012	50	49	E-M	H
92	DN03087	South Golden Promise 1	Fugro	Rubicon Minerals Corp.	2003	75	30	E-M	H
93	DN08947	Licence 8947M	Fugro	Rubicon Minerals Corp.	2003	75	30	E-M	H
94	DN03080	Golden Promise West	Fugro	Rubicon Minerals Corp.	2003	75	30	E-M	H
95	DN03079	Golden Promise East	Fugro	Rubicon Minerals Corp.	2003	75	30	E-M	H
96	DN09215	Golden Star	Fugro	Linear Gold Corp.	2003	75	30	E-M	H
97	DN08291	SW Rattling Brook	Fugro	Rubicon Minerals Corp.	2002	50	30	M	H
98	DN08292	Beaver - Miguels	Fugro	Rubicon Minerals Corp.	2003	50	30	M	H
99	DN09216	Reid	Fugro	Linear Gold Corp.	2003	75	30	E-M	H
100	DN11926	Huxter Lane	AeroQuest	Paragon Minerals Corp.	2006	75	30	E-M	H

E=Electromagnetic M=Magnetic R=Radiometric V=VLF F=Fixed Wing H=Helicopter

This Open File is a contribution to the Targeted Geoscience Initiative (TGI) program of the Lands and Minerals Sector, Natural Resources Canada.

CHARACTERIZATION OF A HIGHLY PROSPECTIVE FAULT SYSTEM WITH AIRBORNE GEOPHYSICS DATA WEST-CENTRAL NEWFOUNDLAND

GEOLOGICAL SURVEY OF CANADA OPEN FILE 8779
NEWFOUNDLAND AND LABRADOR DEPARTMENT OF INDUSTRY, ENERGY AND TECHNOLOGY
GEOLOGICAL SURVEY OPEN FILE NFLD/3393, MAP 2021-04

ANALYTIC SIGNAL OF THE MAGNETIC FIELD

CHARACTERIZATION OF A HIGHLY PROSPECTIVE FAULT SYSTEM WITH AIRBORNE GEOPHYSICS DATA WEST-CENTRAL NEWFOUNDLAND

NEWFOUNDLAND AND LABRADOR
NTS 12-A and parts of NTS 1-M, 2-D, 11-O, P and 12-B

Scale 1:250 000

5 0 5 10 15 (kilometres)
NAD83 / UTM zone 21N

Universal Transverse Mercator Projection
North American Datum 1983

Hydrography base at the scale of 1:250 000 from Natural Resources Canada, with modifications
Topography base at 100 metre intervals

Authors: D. Oneschuk and G. Kilfoil

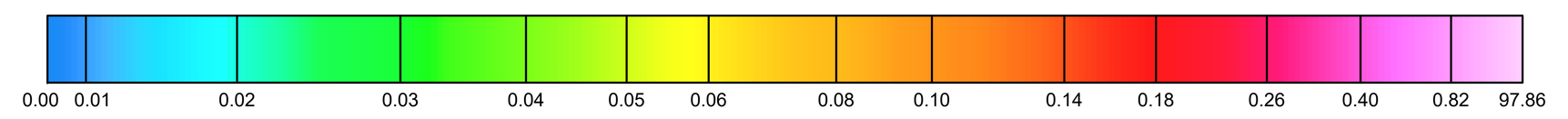
Data compilation and digital cartography by
D. Oneschuk, Geological Survey of Canada

Permanent link: https://doi.org/10.4095/328205

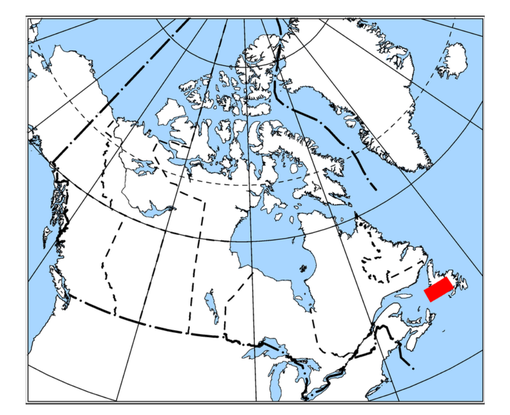
The authors would like to thank Ian Honsberger (GSC) for initiating this project and for his encouragement and support throughout its progression, and Mark Pilkington (GSC) for his helpful comments and suggestions to improve the maps.

Map Series Summary
GSC Open File 8776: Residual total magnetic field
GSC Open File 8777: First vertical derivative of the magnetic field
GSC Open File 8778: Tilt angle of the magnetic field
GSC Open File 8779: Analytic signal of the magnetic field
GSC Open File 8780: Potassium
GSC Open File 8781: Equivalent uranium
GSC Open File 8782: Equivalent thorium
GSC Open File 8783: Total Count

nT/m



PLANIMETRIC SYMBOLS
Road
Drainage
Topographic Contour
Built Up Area



MAP LOCATION

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GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA
2021

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Newfoundland and Labrador
Department of Industry, Energy and Technology
Geological Survey Open File
NFLD/3393, Map 2021-04

Recommended citation
Oneschuk, D. and Kilfoil, G., 2021.
Analytic Signal of the Magnetic Field,
Characterization of a highly prospective fault system with airborne geophysics data, west-central Newfoundland,
Newfoundland and Labrador, NTS 12-A and parts of NTS 1-M, 2-D, 11-O, P and 12-B;
Geological Survey of Canada, Open File 8779;
Newfoundland and Labrador Department of Industry, Energy and Technology,
Geological Survey Open File NFLD/3393, Map 2021-04;
Scale 1:250 000. https://doi.org/10.4095/328205

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