



Industry, Energy and Technology

Mines

**GEOCHEMICAL DATA FROM SELECT FELSIC
VOLCANIC AND OPHIOLITIC ROCKS (NTS MAP
AREAS 2D/05 AND 12A/08), BAIE D'ESPOIR
GROUP AND COY POND COMPLEX,
CENTRAL NEWFOUNDLAND**

J.G. Hinchey

Open File NFLD/3397

**St. John's, Newfoundland
March, 2022**

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Recommended citation:

Hinchey, J.G.

2022: Geochemical data from select felsic volcanic and ophiolitic rocks (NTS map areas 2D/05 and 12A/08), Baie D’Espoir Group and Coy Pond Complex, central Newfoundland. Government of Newfoundland and Labrador, Department of Industry, Energy and Technology, Geological Survey, Open File NFLD/3397, 8 pages.



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SUMMARY

This Open File release consists of whole-rock geochemical data from 119 rock samples of felsic volcanic rocks (Baie D'Espoir Group) and felsic end members of the Coy Pond Ophiolitic Complex. Samples were collected from both outcrop and diamond-drill core. A general location for the collected samples is given Figure 1, with additional locational and descriptive information given in Appendix A. Interpretation of the lithochemical data, as well as information on the regional geological setting, are found in Hinchey and Sandeman (2022).

NOTES ON DATABASE

This data release contains whole-rock major-element, trace-element and rare-earth-element (REE) geochemical analyses of lithological units collected by the author in 2015. This Open File places data in the public domain; no interpretation of the data is included in this report.

The compilation includes sample location data in Universal Transverse Mercator (UTM) coordinates (Zone 21, NAD27) and brief sample descriptions (Appendix A). The geochemical data are available in digital format (*i.e.*, *.csv comma-separated value files) in appendices B to G. Unprocessed data for several standards and duplicates are also provided in appendices B to G and may be used by the reader to assess the accuracy and precision of the analyzed data. A list of abbreviations used in the report is provided in Table 1.

All samples selected for geochemical analysis were prepared at the Geological Survey of Newfoundland and Labrador's (GSNL) geochemical laboratory in St. John's. The analytical methods used for each element are described in Finch *et al.* (2018), and are listed in Table 2.

Most analysis were conducted at the GSNL geochemical laboratory.

Major elements and some trace elements (Ba, Cr and Zr) were analyzed by ICP-OES FUS following lithium metaborate fusion. FeO was measured by the titration method and LOI by the gravimetric method. Other trace elements, including the rare-earth elements (REE), were analyzed by ICP-MS FUS following lithium metaborate fusion. A subset of trace elements (As, Be, Cu, Li, Mn, Ni, Pb, Rb, Sc, Ti, V and Zn) were analyzed by ICP-OES following four-acid digestion. Silver was analyzed by ICP-OES following nitric acid digestion. Fluoride (F) was analyzed by ion selective electrode (ISE) following a sodium carbonate and potassium nitrate fusion. A subset of nineteen samples were also analyzed by

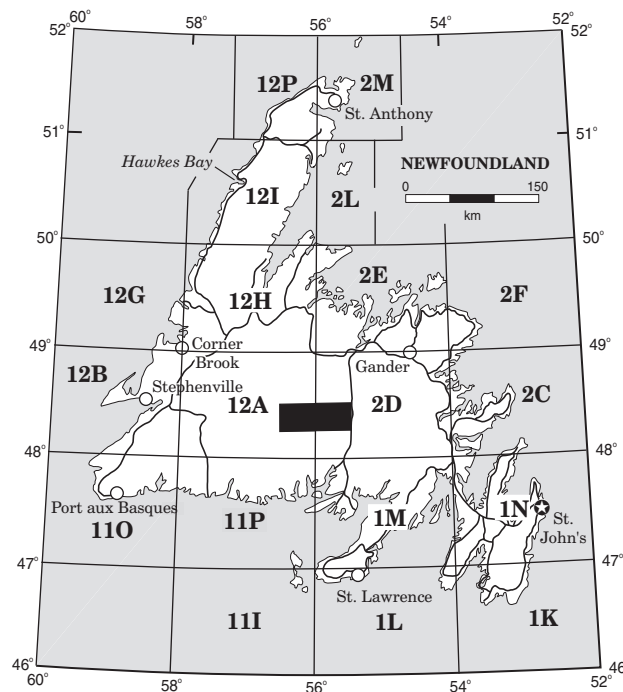


Figure 1. Location map of the study area in central Newfoundland.

Table 1. List of abbreviations

Abbreviation	Explanation
-99	Sample was not analyzed for that element
Fe ₂ O ₃ Total	Total measured iron
ICP-OES-4-ACID	Inductively Coupled Plasma Optical Emission Spectrometry following HF-HCl-HNO ₃ -HClO ₄ acid digestion
ICP-OES-FUS	Inductively Coupled Plasma Optical Emission Spectrometry following lithium metaborate/tetraborate fusion
ICP-OES-HNO ₃	Inductively Coupled Plasma Optical Emission Spectrometry following nitric acid digestion
ICP-MS-FUS	Inductively Coupled Plasma Mass Spectrometry following lithium metaborate/tetraborate fusion
INAA	Instrumental Neutron Activation Analysis
ISE	Ion-selective electrode
LOI	Loss-on-ignition
negative detection limit	Below detection limit
pct	Percent
ppm	Parts per million
ppb	Parts per billion
REE	Rare-earth elements
Wt %	Weight percent

Table 2. Analytical methods for geochemical analyses

Element	Analytical Method
SiO ₂ , Al ₂ O ₃ , Fe ₂ O ₃ Total, MgO, CaO, Na ₂ O, K ₂ O, TiO ₂ , MnO, P ₂ O ₅ , Cr, Zr, Ba	ICP-OES-FUS
Fe ₂ O ₃	Calculation
FeO	Titration
LOI	Gravimetric
As, Be, Cu, Li, Mn, Ni, Pb, Rb, Sc, Ti, V, Zn	ICP-OES-4-ACID
Bi, Ce, Ce, Co, Cs, Dy, Er, Eu, Ga, Ge, Gd, Ho, Hf, La, Lu, Mo, Nb, Nd, Pr, Sm, Sn, Sr, Ta, Tb, Th, Tl, Tm, U, W, Y, Yb	ICP-MS-FUS
Ag	ICP-OES-HNO ₃
F	ISE
As, Au, Ba, Br, Ce, Co, Cr, Cs, Eu, Fe, Hf, La, Lu, Mo, Na, Rb, Sb, Sc, Se, Sm, Ta, Tb, Th, U, W, Yb, Zr	INAA

instrumental neutron activation analysis (INAA) at Becquerel Laboratories (now Bureau Veritas) in Mississauga, ON. Analytical methods involve bombardment of the samples with neutrons in a nuclear reactor, followed by a radioactivity cooling interval, after which the contained elements are identified and quantified by gamma ray spectral analysis.

A code of -99, reported for a given element, indicates that it was not analyzed. All other negative numbers indicate the concentration of the specific element in the sample was below the detection limit (*e.g.*, -0.01 indicates the measured value was below the detection limit of 0.01). Major elements are reported in weight percent, and trace elements are reported in ppm with the exception of gold, which is reported in ppb.

ACKNOWLEDGMENTS

Sample preparation and analysis was conducted under the supervision of Chris Finch at the GSNL geochemical laboratory. Alex Calon is thanked for able assistance during field work. Pauline Honarvar is thanked for a helpful review of an early draft of this file.

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APPENDICES

Appendices are available as digital comma-separated value files (.csv) through [this link](#).

Appendix A: Sample Location and Descriptions

Appendix B: Major-element ICP-OES FUS Data (including standards and duplicate samples)

Appendix C: Trace-element ICP-MS FUS Data (including standards and duplicate samples)

Appendix D: Trace-element ICP-OES 4-Acid Data (including standards and duplicate samples)

Appendix E: Silver (Ag) ICP-OES HNO₃ Data (including standards and duplicate samples)

Appendix F: Fluoride (F) ISE Data (including standards and duplicate samples)

Appendix G: Gold (Au) (and additional elements) INAA Data (including standards and duplicate samples)

Appendix H: Drillhole Collar Data