

INTRODUCTION

The Sleeper Islands are composed of volcanic rocks that are presumably correlative with the Flaherty Formation of the Belcher Islands about 45 km to the south (Baragar and Lamontagne, 1980).

The Flaherty Formation and an earlier volcanic succession, the Eskimo Formation, were erupted in a subsiding, predominantly carbonate basin, marginal to the Ungava lobe of the Archaean Superior Craton.

BELCHER ISLANDS SECTION

A section across each of the Eskimo and Flaherty formations in the vicinity of Eskimo Harbour, northern Belcher Islands, was mapped and sampled in detail as a basis for comparison with volcanic rocks of the Sleeper Islands.

The Eskimo section is illustrated in Figure 1. It is 870 m thick, but includes 2 members that are interpreted as sills (Halg all) related to Flaherty Formation volcanism.

The Flaherty section near Eskimo Harbour on northern Flaherty Island is shown in Figure 2, with its principal chemical variations. The section transects a steeply west-dipping succession of predominantly basaltic flows.

Diagene intrusions range up to 300 m thick into the Eskimo Formation and succeeding sedimentary strata and possibly into the base of the Flaherty Formation.

Haig intrusions are best interpreted as a phase of Flaherty magmatism. Their absence above the Flaherty Formation plus the fact that they both have similar petrological characteristics.

The Flaherty Formation consists of a variety of mafic to ultramafic rocks, including pillowed and massive basalt, massive flow, and agglomerate and lapilli tuff.

SLEEPER ISLANDS

The Sleeper Islands consist of two major and innumerable small islands which, being only slightly elevated above sea level, are remarkably free of drift and lichen.

The islands are underlain by Flaherty volcanic rocks which are here divided into six units, at least one of which is sufficiently distinctive and continuous to warrant a separate designation as the Kidney Member or Kidney flow.

The lowermost unit (F1nb) consists of a number (at least 6 to 8) of thin, aphyric, basaltic flows ranging in thickness from 5 to 10 m.

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DESCRIPTION NOTES

The Flaherty assemblage on Sleeper Islands is broadly similar to the sampled section on the Belcher Islands, but differs from it primarily in the number of plagioclase megacrysts that are present.

The Flaherty Formation along the eastern side of the Sleeper Islands is at least one major gabbro sill intersected by a thick plagioclase gnomerophyre.

Detailed sections across exposures of the Haig sill were mapped on the east side of the synclinal point (Section 1), and one of the outer of the paired settings of islands along the eastern shore at latitude 57° 34' (Section 2).

A composite section incorporating data from the two sections is shown in Figure 4. In general terms, the sill comprises a thick base of plagioclase gnomerophyre and overlying mass of normal gabbro.

The upper part of the Haig sill is divided into lower unit (F1pb) and upper unit (F1pb2).

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ACKNOWLEDGMENTS

The field work for this project was accomplished with the indispensable contributions of my field party members: C.G. Lamontagne, Robert Hart, and many other people who have assisted in various ways.

Model lead ages from the Labrador Trough and their stratigraphic implications: In The Early Proterozoic Tere-Hudson Orogen of North America, (ed.) J.F. Lewis and H.R. Stauffer, Geological Association of Canada, Special Paper 37, p. 413-431.

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Eskimo Formation - Belcher Islands

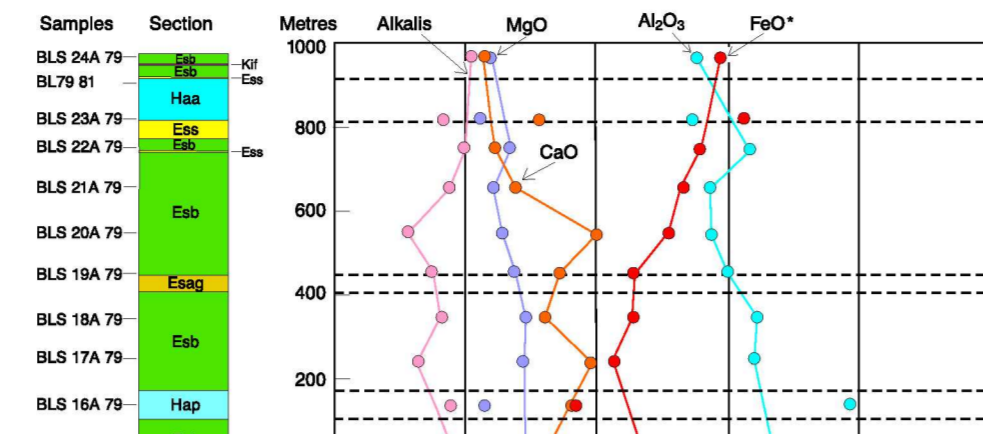


Figure 1a. Section across Eskimo Formation showing variations in composition with stratigraphic level of some significant major (Fig. 1a) and minor (Fig. 1b) elements.

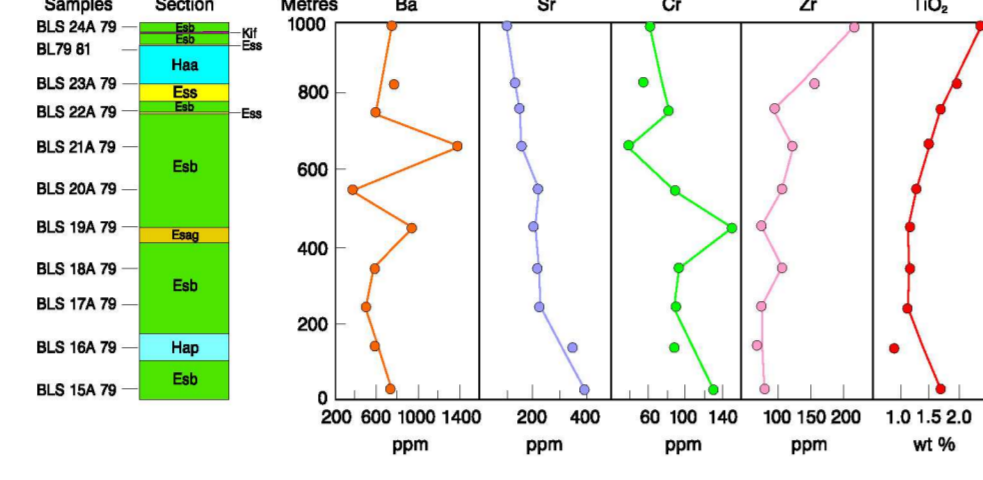


Figure 1b. Section across Eskimo Formation showing variations in composition with stratigraphic level of some significant major (Fig. 1a) and minor (Fig. 1b) elements.

Age and Correlations

Trace ages (U-Pb) were determined on pegmatite and granophyre segregations from the upper parts of Haig sills on the Belcher and Sleeper Islands.

The Flaherty section near Eskimo Harbour on northern Flaherty Island is shown in Figure 2, with its principal chemical variations. The section transects a steeply west-dipping succession of predominantly basaltic flows.

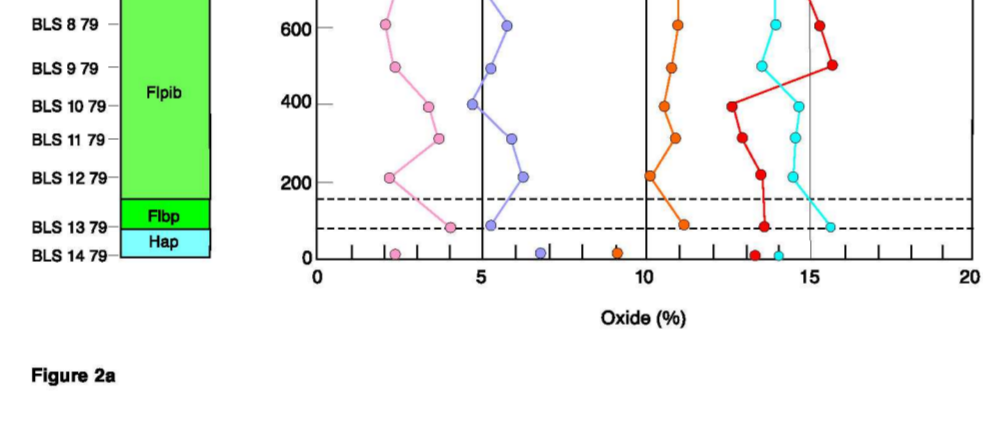


Figure 2a. Section across Flaherty Formation on Belcher Islands showing variations with stratigraphic level of some significant major (Fig. 2a) and minor (Fig. 2b) elements.

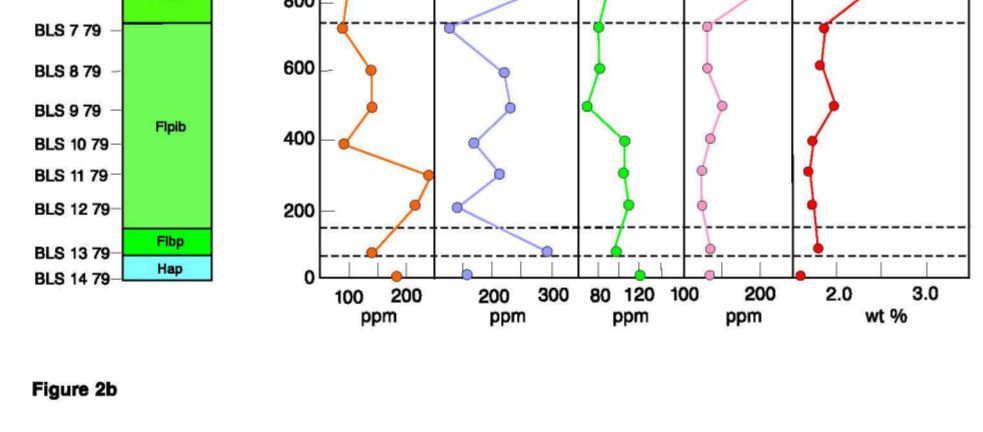


Figure 2b. Section across Flaherty Formation on Belcher Islands showing variations with stratigraphic level of some significant major (Fig. 2a) and minor (Fig. 2b) elements.

Haig Sill - Sleeper Islands

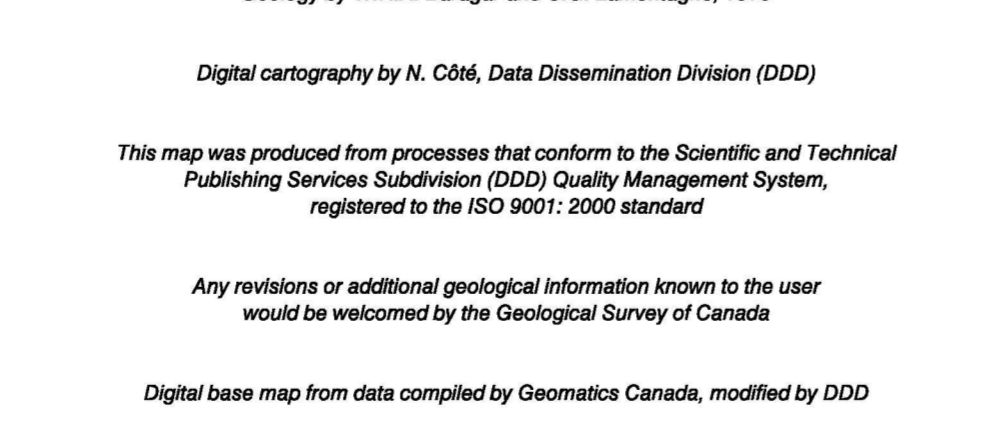


Figure 4a. Composite section of a Haig sill immediately underlying the Flaherty volcanic succession on Sleeper Islands. Variations in some significant major elements (Fig. 4a) and normative minerals (Fig. 4b) with height in the sill are shown.

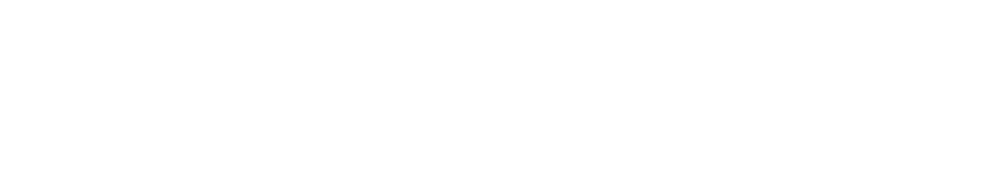


Figure 4b. Normative mineral diagram for the Haig sill section. The gabbro is represented by grey bars, megacrystic gabbro by coarse random strokes, and filter-press dykes by thin black units.

Flaherty Formation - Sleeper Islands

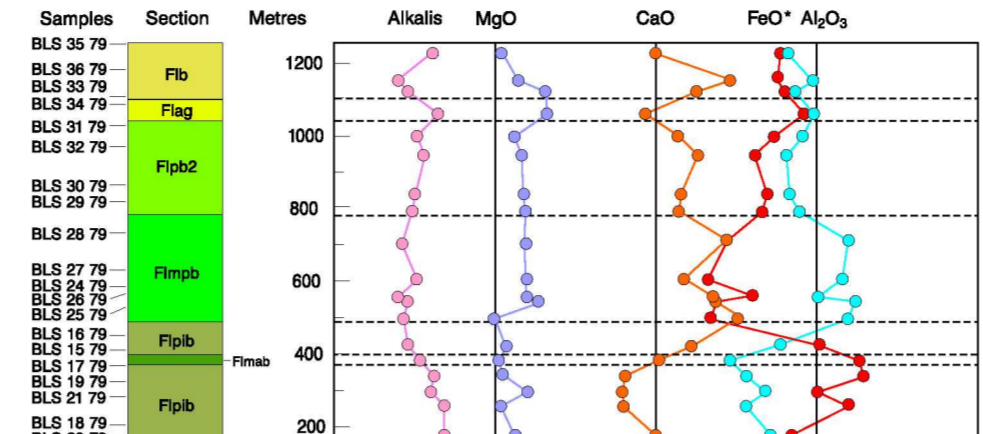


Figure 3a. Section across Flaherty Formation on Sleeper Islands showing variations with stratigraphic level of some significant major (Fig. 3a) and minor (Fig. 3b) elements.

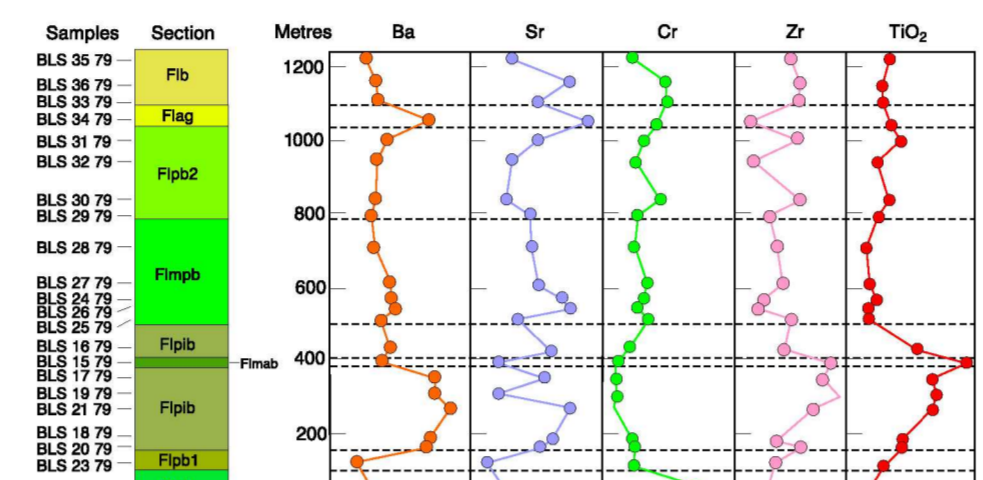


Figure 3b. Section across Flaherty Formation on Sleeper Islands showing variations with stratigraphic level of some significant major (Fig. 3a) and minor (Fig. 3b) elements.

Flaherty Formation - Belcher Islands

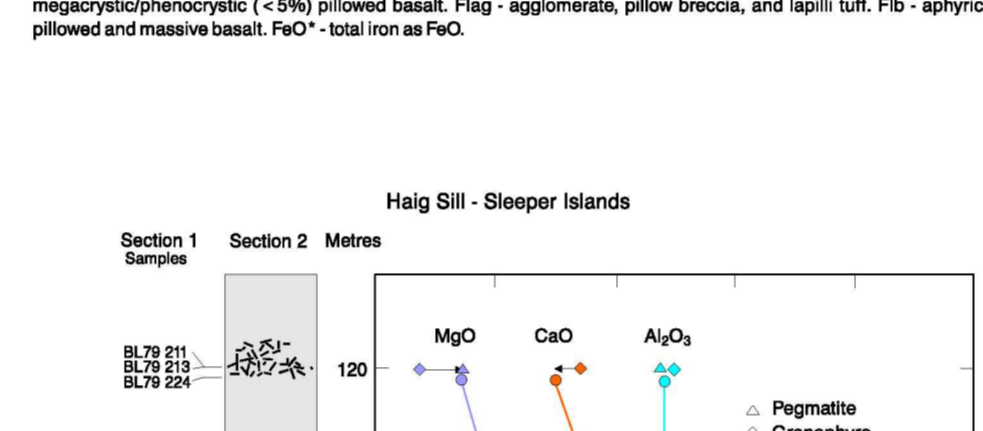


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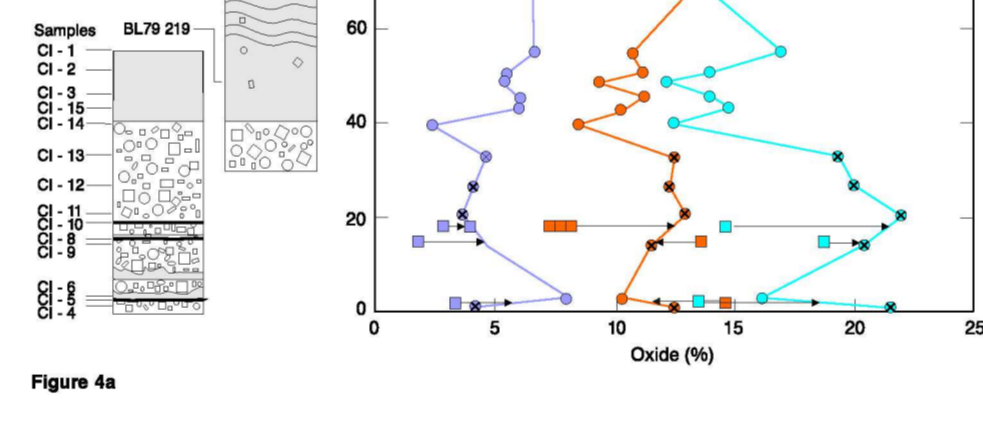


Figure 2b. Section across Flaherty Formation on Belcher Islands showing variations with stratigraphic level of some significant major (Fig. 2a) and minor (Fig. 2b) elements.

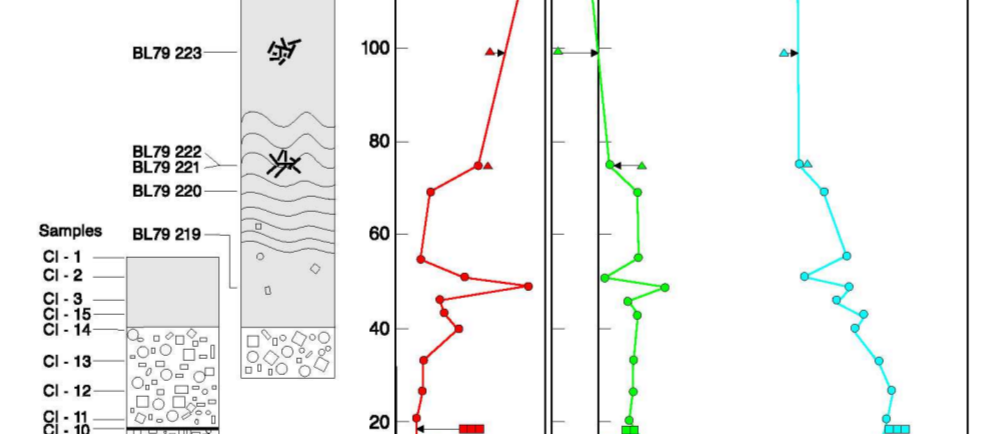


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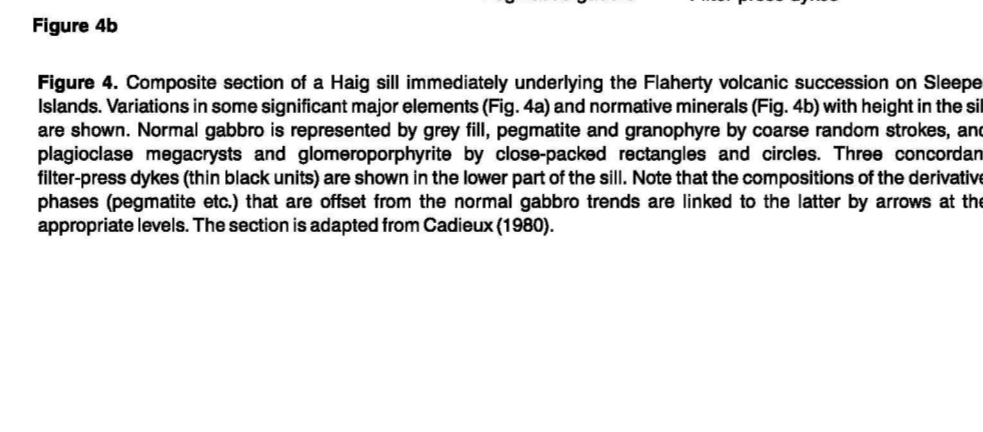
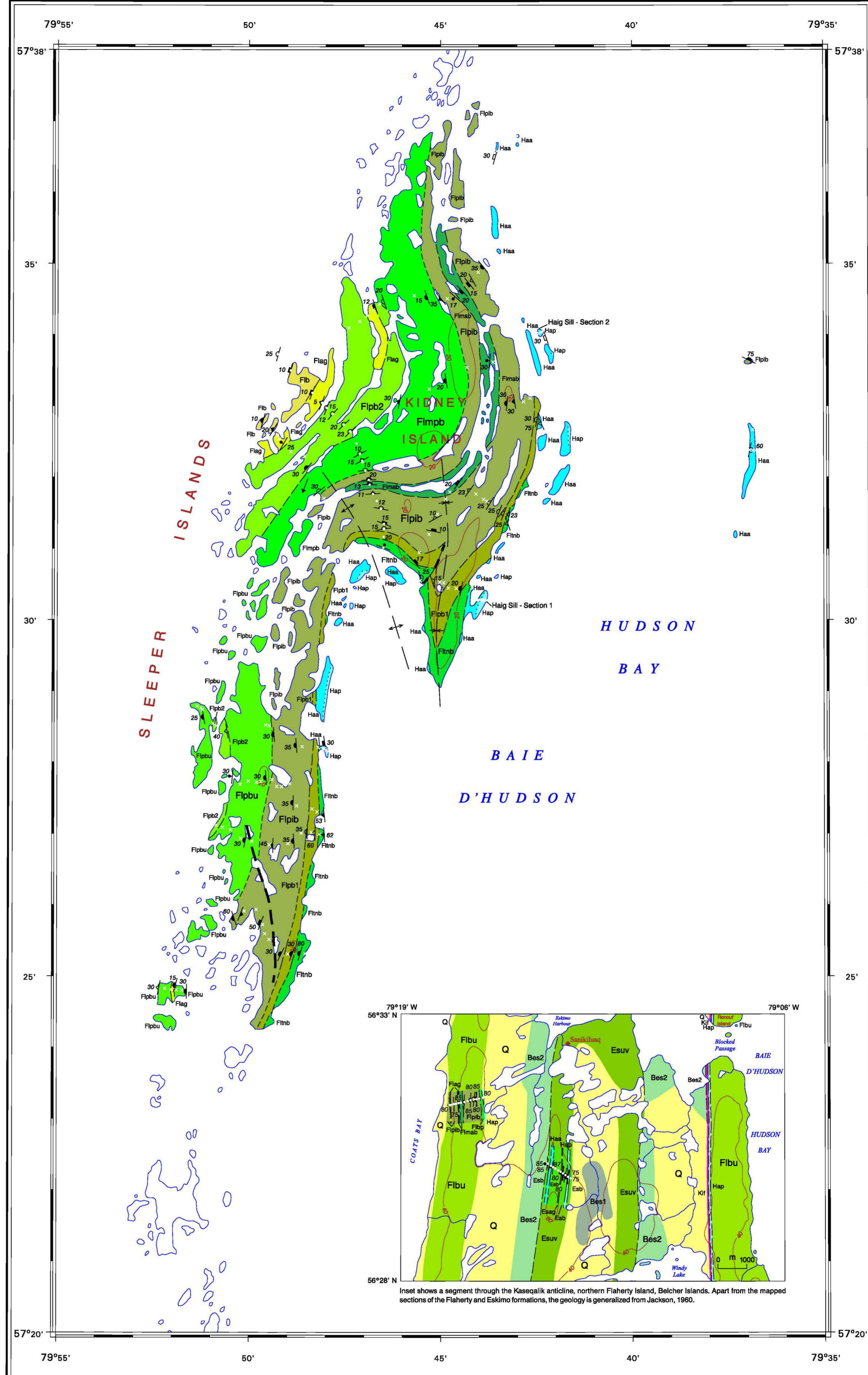


Figure 4b. Normative mineral diagram for the Haig sill section. The gabbro is represented by grey bars, megacrystic gabbro by coarse random strokes, and filter-press dykes by thin black units.



Figure 4c. Section across Haig sill immediately underlying the Flaherty volcanic succession on Sleeper Islands. Variations in some significant major elements (Fig. 4a) and normative minerals (Fig. 4b) with height in the sill are shown.

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MAP 2114A GEOLOGY SLEEPER ISLANDS EASTERN HUDSON BAY NUNAVUT. Scale 1:75 000. Includes a legend, scale bar, and location map of the islands in the Hudson Bay region of Nunavut, Canada.

- LEGEND
QUATERNARY - RECENT: Q Overburden.
PALEOPROTEROZOIC BELCHER GROUP: Haig intrusions (Hap-Haa).
FLAHERTY FORMATION - SLEEPER ISLANDS: F1nb, F1pb, F1pb2, F1mb, F1mbu, F1mba, F1pib, F1pib1, F1nbu, F1nba, F1nba1, F1nba2, F1nba3, F1nba4, F1nba5, F1nba6, F1nba7, F1nba8, F1nba9, F1nba10, F1nba11, F1nba12, F1nba13, F1nba14, F1nba15, F1nba16, F1nba17, F1nba18, F1nba19, F1nba20.
ESKIMO FORMATION: Estb, Esag, Esuv.
Geological contact, internal, Haig sill. Fault oblique, interpreted. Bedding, inclined, (top unknown, known). Pillowed flows, inclined, (top unknown, known, overturned). Ingenuous layering, inclined, (top unknown, known). Flow contact, inclined, (top unknown, known). Lineation, generation unknown. Anticline axis (approximate). Synclinal axis (approximate). Geochemical sampling sites (shown in white on map). Station not otherwise identified (shown in white on map).

Recommended citation: Baragar, W.R.A., 2007. Geology, Sleeper Islands, eastern Hudson Bay, Nunavut; Geological Survey of Canada, Map 2114A, scale 1:75 000.