GEOLOGY OF THE ADLAVIK ISLANDS

by

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INTRODUCTION

This report summarizes geological mapping undertaken during a six week period in the Adlavik Islands on coastal Labrador south of Cape Makkovik. The map area is covered under topographic map sheets 13J/15 and 130/2, (N.T.S. 1:50,000) and is an eastern extension of field mapping completed in 1978 as reported by Bailey *et al.* (1979).

Previous reconnaissance mapping in the Adlavik Islands was done by Kranck (1953) and Stevenson (1970). The object of the present mapping project was to determine the distribution of Aillik Group volcanics and granitic intrusive rocks and to assess the mineral potential of the area.

GENERAL GEOLOGY

The map area is underlain by the Aillik Group, an Aphebian supercrustal sequence of volcanics and sediments intruded by a complex of synkinematic to postkinematic felsic to intermediate plutonic rocks. Aillik Group volcanics were mapped on some of the more northern islands within the map area but are generally absent or occur only as enclaves within the granitic rocks in the south. Outcrop distribution within the area is limited to approximately 15% of the total area but is fresh and free of lichen and vegetation. Large intervening expanses of sea result in correlation difficulties from island to island.

Stratigraphy

The Aillik Group as described by Bailey *et al.* (1979) consists of basal pelitic semi-schist and lower mafic pillow lavas, a middle sequence of mixed felsic volcanics and epiclastic derivatives and an upper sequence of mafic pillow lavas, tuff, rhyolite ash flow, ash flow tuff, and hypabyssal rhyolite. Generally within the map area only the middle part of the Aillik Group was encountered. In addition the stratigraphic succession is uncertain due to the limited nature of the outcrop.

Felsic conglomerate and breccia (Unit 1)

This unit outcrops on Gull Rocks and is a continuation of units outcropping along strike on Pomiadluk Point. It is from 50 to 100 metres thick and contains large pebbles to cobbles of felsic volcanics and granite in a fine grained, dark gray, psammitic matrix containing abundant sheared lenticular epidote and chlorite streaks. The granitic clasts have an internal fabric and are more abundant towards the base of the section, grading upwards into smaller more elongate and sub angular felsic volcanic clasts toward the top of the section. Minor, mafic tuff horizons, one metre thick, occur above the coarse granite clast bearing horizon. This unit is gradatinal into the overlying felsic tuff and arkose unit.

Felsic tuff and arkose (Unit 2)

These rocks are commonly highly felspathized and the distinction between felsic tuff and arkose is equivocal. Generally where the rocks lack any well developed sedimentary structures and contain prophyroblasts of K-feldspar and quartz, they have been mapped as felsic tuff. Near contacts with granite intrusions, the degree of felspathization is so extreme as to preclude any reasonable differentiation between sediments and volcanics in outcrop; the rocks may be in part intrusive.

LEGEND

HELIKIAN

7 Complex migmatite - gray banded gneiss paleosome, medium grained granitic neosomeL

6 Syenite, syenodiorite - massive coarse grained and cummulate banded syenite.

5 Granite, granitic gneiss in part(?); Quartz monzonite; coarse grained gray granodiorite; pink porphyritic granite: includes both syntectonic and post tectonic granites.

APHEBIAN

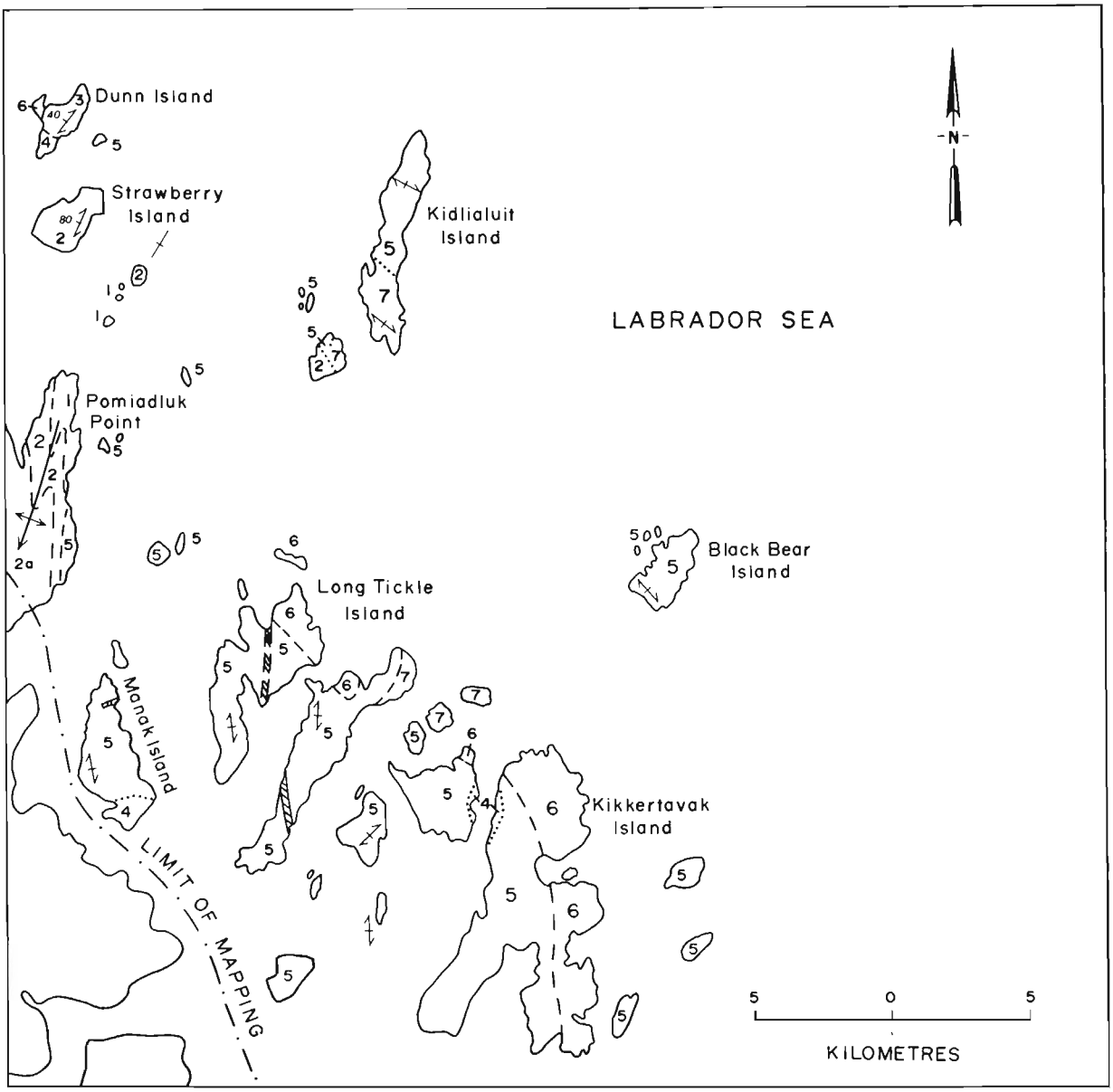
AILLIK GROUP

4 Mafic volcanics, mafic flow and flow breccia

3 Tuffaceous sediments, pink, red and green tuffaceous sediments, minor volcanic conglomerate.

2 Felsic tuff, crystal tuff, minor arkose, banded psammite; 2a, arkose sandstone

1 Felsic conglomerate and breccia, polylithologic volcanic conglomerate, minor mafic tuff.


Dunn Island
Strawberry Island
Kidlialuit Island
LABRADOR SEA
Pomiadluk Point
Long Tickle Island
Black Bear Island
Manak Island
Kikkertavak Island
LIMIT OF MAPPING
N
5 0 5
KILOMETRES

The felsic tuff is a very light weathering saccaroidal rock with numerous 1-5 mm porphyroblasts of pink K-feldspar and quartz. It contains somewhat discontinuous bands and streaks of mafic minerals and alteration veinlets of chlorite. Specular hematite and calcite are common and are frequently associated with higher radiometric values. Some minor discontinuous lenses of gray and black banded psammite are interbedded with the felsic tuff on Belle Island off Pomiadluk Point where the best exposures of this unit outcrop. To the north on Strawberry Island, the felsic tuff is more massive and has a somewhat igneous texture due to a greater degree of felspathization.

Tuffaceous sediments (Unit 3)

Well bedded and crossbedded pink, gray and green tuffaceous sediments outcrop on the east side of Dunn Island. Lenses of volcanic conglomerate containing subangular to rounded clasts of chert and felsic volcanics in an epidote-rich matrix are contained within the sediments. Over large areas on Dunn Island, numerous mafic dikes and aplite veins have crosscut the sediments and, with strong felspathization, has resulted in a rock type with characteristics of a migmatite.

Mafic volcanics (Unit 4)

Highly sheared mafic volcanics and volcanic breccia with pervasive epidote and potassic feldspar alteration outcrop on Manak Island and Kikkertavik Island. The outcrops are surrounded by granite and quartz monzonite and may be large enclaves.

Intrusive Rocks

Intrusive rocks vary from minor pyroxenite to syenite, quartz monzonite and granite. The marginal zones of most plutons host many mafic dikes and Aillik Group volcanic xenoliths. In addition very strong inhomogeneous deformation and gradational contacts between most phases cause difficulty in defining mappable units. No staining or thin sectioning has been done and the following brief descriptions are based on field observation only.

Granite-Quartz Monzonite (Unit 5)

The greater part of the map area is underlain by homogeneous granite to quartz monzonite intrusions. The texture varies from medium grained equigranular to coarsely porphyritic. The quartz content varies from approximately 5% to 30%. More massive pink prophyritic granites in the northern part of the map area closely resemble the Strawberry granite described by Kranck (1953), and are most probably posttectonic granites. However, they have not been included as a separate unit on the accompanying map.

Toward the margins of the intrusions, numerous xenoliths of mafic dike rocks, Aillik Group volcanics and gabbro with well developed cumulate banding are found chaoticaly distributed within the grainte and quartz monzonite. The marginal areas also show strong heterogeneous deformation with well developed mineral foliations. Late stage pegmatite and aplite veins are common throughout the granite and quartz monzonite.

Syenite (Unit 6)

Massive nonfoliated syenite to syeno-diorite intrusions displaying well developed cumulate banding borders the granite and quartz monzonite of Unit 5. Age relations are uncertain but the absence of foliations suggest that it postdates the granite and quartz monzonite although it may be a late phase of the same magmatic event.

Migmatite (Unit 7)

On Kidlialuit Island there are exposures of complex migmatite generally displaying an agmatitic texture. The

paleosome is a gray, banded quartzofeldspathic gneiss invaded by a medium grained leucogranite neosome. Age relations are uncertain; the gneissic paleosome was not encounterd elsewhere in the map area and contact relations are ambiguous.

Dike rocks

At least three phases of mafic dike injection are present in the plutonic rocks, with an early disrupted and boudinaged phase, and two later phases showing crosscutting relations. Dark brown weathering, carbonate rich, lamprophyre dikes are also present. The dike rocks have not been included on the accompanying map.

STRUCTURAL GEOLOGY

The Aillik Group volcanics in the northern part of the map area host a strong northeast trending penetrative axial planar fabric which dips steeply to the northwest; no earlier fabrics were noted.

Igneous intrusions in the south generally show a weak to moderate north-south Hudsonian fabric with localized late east-west trending Grenville shears.

ECONOMIC GEOLOGY

Primary exploration potential within the map area is for uranium deposits in the Aillik Group volcanics. Normal background over the felsic volcanics is in the order of 400 cps. A number of areas registered up to four times background. Generally, areas with chlorite-hematite alteration veinlets yield the highest anomalies.

Other radiometric anomalies are associated with allanite-bearing pegmatite veins within the granitic rocks. One small anomaly (7,000 cps) occurs over approximately 30 m x 1 m within a pyrite-bearing quartz-muscovite vein near the migmatite-granite contact on Kidlialuit Island.

Minor pyrite-pyrrhotite and molybdenite mineralization was noted but generally only a few minor flecks of molybdenite were seen.

ACKNOWLEDGEMENTS

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