LEGEND

HELIKIAN

13 **Granitoid intrusions: 13a,** *Granodiorite, granite;* **13b,** *quartz monzonite.*

12 **Shabogamo Intrusive Suite: 12a,** *Metagabbro to metanorite with relict igneous texture;* **12b,** *amphibolite and hornblende-plagioclase* ± biotite *schist;* **12c,** *chlorite-actinolite-plagioclase schist;* **12d,** *hornblende megacrystic amphibolite;* **12e,** *feldspar megacrystic leucogabbro;* **12f,** *very fine grained gabbro;* **12g,** *metaultrabasic rocks, talc-actinolite schist.*

11 **Sims Formation: 11a,** *Arkose;* **11b,** *orthoquartzite.*

HELIKIAN OR APHEBIAN

10 **Blueberry Lake group: 10a,** *Felsic volcanics, minor volcanogenic sediments;* **10b,** *polymictic conglomerate, tuffaceous sandstone, graywacke, phyllite and slate;* **10c,** *andesite porphyry.*

APHEBIAN

Knob Lake Group

9 **Menihek Formation: 9a,** *Dark gray to black schist, phyllite and slate, commonly graphite bearing;* **9b,** *quartz-feldspar-biotite schist.*

8 **Sokoman Formation: 8a,** *Carbonate iron formation;* **8b,** *silicate and silicate carbonate iron formation;* **8c,** *oxide iron formation,* **8d,** *ferriginous quartzite;* **8e,** *quartz-garnet-two amphibole ± pyroxene schist/gneiss;* **8f,** *cherty magnetite graywacke;* **8g,** *cherty magnetite iron formation with tuff bands and fragments;* **8h,** *leached iron formation, original lithotype unknown in some cases.*

7 **Wishart Formation: 7a,** *Coarse grained white crystalline quartzite;* **7b,** *pelitic schist;* **7c,** *quartz-pebble conglomerate with pelitic schist matrix.*

Nimish Subgroup

6 **Mafic metavolcanic rocks:** *Predominantly with greenschist mineralogy;* **6a,** *with relict pillow structures;* **6b,** *massive;* **6c,** *with relict vesicular texture;* **6d,** *porphyritic;* **6e,** *agglomerate.*

5 **Metatuffaceous sediments and conglomerate: 5a,** *Chlorite* ± actinolite schist, may have considerable carbonate; **5b,** *volcanogenic conglomerate with chlorite schist matrix;* **5c,** *garnetiferous amphibolite.*

4 **Denault Formation: 4a,** *Dolomitic and calcitic marble;* **4b,** *dolomitic marble with chlorite schist.*

3 **Attikamagen Formation: 3a,** *Biotite bearing quartzofeldspathic schist;* **3b,** *biotite bearing quartz-K-feldspar schist;* **3c,** *migmatitic quartzofeldspathic schist/gneiss;* **3d,** *porphyroclastic augen schist;* **3e,** *metagraywacke-siltstone-slate;* **3f,** *gray-black phyllite.*

APHEBIAN OR HELIKIAN

2 **Granitoid intrusions: 2a,** *Coarse grained alaskitic granite;* **2b,** *porphyritic, megacrystic and nonporphyritic granite.*

ARCHEAN

1 **1a, Ashuanipi Metamorphic Complex:** *Banded migmatitic gneiss including pyroxene bearing granites, diorite and minor gabbro;* **1b, Eastern Basement Metamorphic Complex:** *granodiorite-tonalite gneiss, variably mylonitized and retrogressed.*

Note: *Some units not necessarily in stratigraphic order. The Nimish Subgroup although predominantly associated with units 4 and 8, may also occur in Unit 3.*

This legend is common to several map sheets. Certain units may not occur on this map.

SYMBOLS

Outcrop, large outcrop

Geological contact (observed, interpreted, inferred)

Contacts are inferred under water in some areas in order to facilitate reading of the map. The extension of the Julienne Lake deposit is inferred from gravity and magnetic data.

Thrust fault (observed, interpreted) (teeth indicate upthrust side)

High angle reverse fault (interpreted)

Limit of mapping

Bedding, tops unknown (inclined)

Primary igneous layering, tops unknown (inclined)

S_1 foliation in Knob Lake Group (generally parallel S_0) (inclined, horizontal, vertical, dip unknown). Symbol in Ashuanipi Metamorphic Complex denotes cataclastic or mylonitic/phyllonitic foliation developed at same time as S_1 in Knob Lake Group.

Gneissosity and gneissic banding in Ashuanipi Metamorphic Complex (inclined, vertical, dip unknown)

S_2 differentiated or crenulation cleavage (inclined, vertical)

Lineation (trend and plunge)

- *Ridging lineation* — R 50
- *Mineral lineation* — M 50
- *S intersections* — S 50
- *Microcrenulations* — C 50

Trend and plunge of minor fold — 50

Trend lines for imposed cataclastic foliation in Ashuanipi Metamorphic Complex

Mineralization: Pyrite, pyrrhotite, chalcopyrite, pyrolusite — *Py, Po, Cp, Pz*

Producing mine (Fe)

Diamond drill hole — DDH

Locality where radiometric age has been determined, in millions of years. R = rubidium/strontium method; K = potassium/argon method; W = whole rock; b = biotite; m = muscovite. — (A)

Note: Outcrops and drill holes in the mining area between Lorraine, Carol and Luce Lakes are not plotted on the map, and all contacts are shown as solid lines.

This provisional map may be subject to revision and alteration at a later date.

Geology by T. Rivers (1977), T. Rivers and N. Massey (1978) and T. Rivers and M. Clarke (1979) incorporating information from Labrador Mining and Exploration Company, Iron Ore Company of Canada and Canadian Javelin Limited.

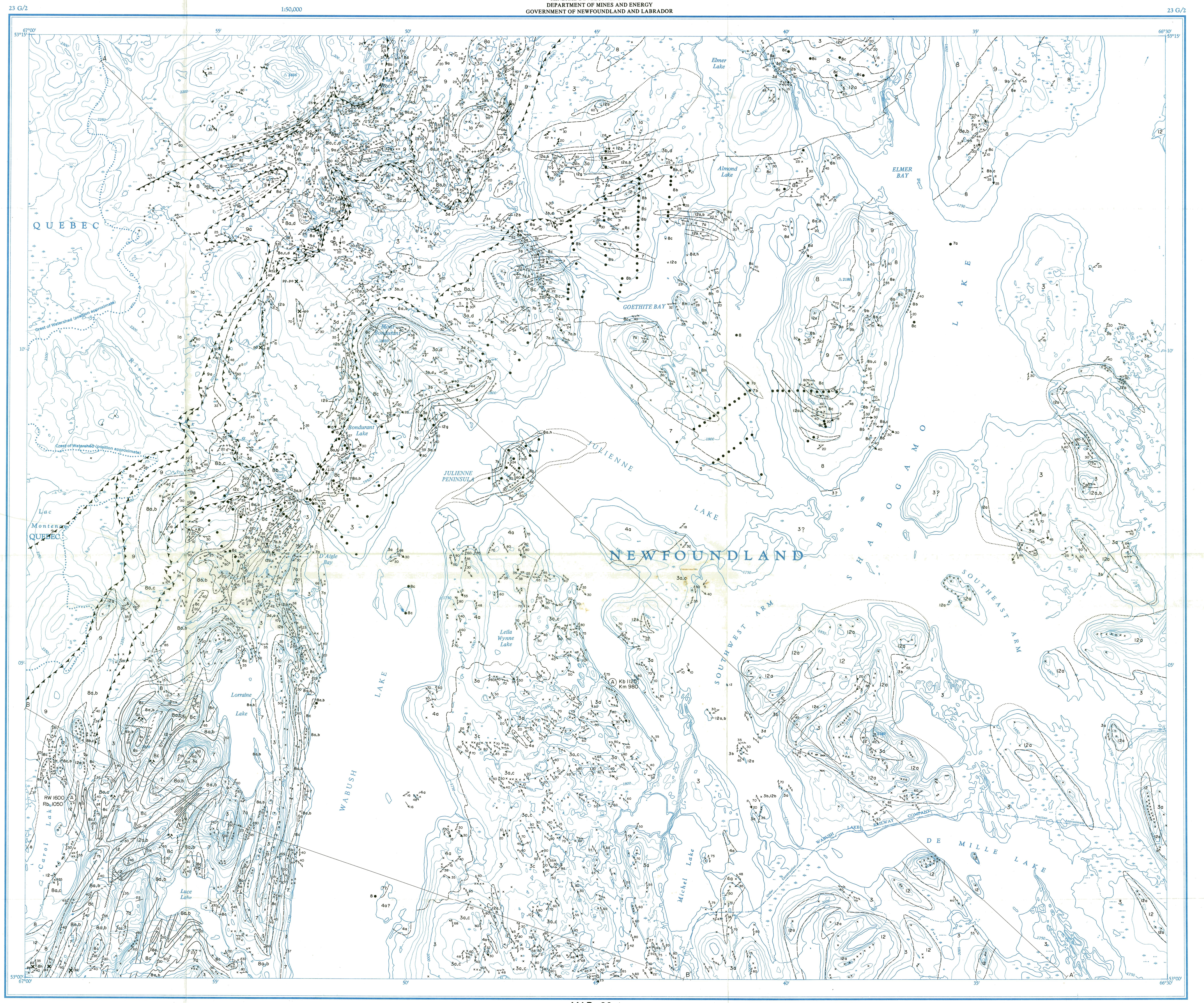
Geological cartography by the Mineral Development Division, Department of Mines and Energy, Government of Newfoundland and Labrador.

Copies of this map may be obtained from the Publications and Information Section, Mineral Development Division, Department of Mines and Energy, P.O. Box 4750, St. John's, Newfoundland A1C 5T7.

Approximate magnetic declination in 1978, 30°24′ West, decreasing by 4.0′ annually.

This project was financed under the Canada/Newfoundland Mineral Development Subsidiary Agreement (1977-1981). This Agreement (a subsidiary of the Canada/Newfoundland General Development Agreement) is financed by contributions from the Government of Newfoundland and Labrador (10 percent) and from the Departments of Regional Economic Expansion (45 percent) and Energy, Mines and Resources (45 percent) of the Government of Canada.

MINERAL DEVELOPMENT DIVISION
DEPARTMENT OF MINES AND ENERGY
GOVERNMENT OF NEWFOUNDLAND AND LABRADOR



MAP 80-1
WABUSH LAKE
NEWFOUNDLAND - QUEBEC

NOTE: See reverse side for cross sections

Roads:	Routes:
all weather	toute saison
dry weather	période sèche
cart track	de terre
trail or portage	sentier ou portage
Railway, normal gauge, single track	Chemin de fer, voie unique (écartement normal) siding / voie d'évitement; station / gare
Power transmission line	Ligne de transport d'énergie
Mine or Open cut	Mine ou fosse à ciel ouvert
Horizontal control point, with elevation	Point géodésique avec cote 454
Bench mark, with elevation	Repère de nivellement avec cote BM 157

SCALE 1:50,000

Miles 1 0 1 2 3 Milles
Metres 1000 500 0 1000 2000 3000 4000 Mètres
Yards 1000 500 0 1000 2000 3000 4000 Verges

CONTOUR INTERVAL 50 FEET
Elevations in Feet above Mean Sea Level
North American Datum 1927
Transverse Mercator Projection

Building	Bâtiment	Barn	Grange
School	École	Post Office	Bureau de poste
Church	Église	Cemetery	Cimetière
Lighthouse	Phare		
River with bridge	Rivière avec pont		
Stream, intermittent or dry	Cours d'eau intermittent, ou à sec		
Lake intermittent; indefinite	Lac intermittent; rive imprécise		
Marsh or Swamp	Marais ou marécage		
Depression contours	Courbes de cuvette		

23 G/2 (220)

MARGINAL NOTES
by T. Rivers

The southern border of the area is about 8 km north of the towns of Labrador City and Wabush. The Wabush-Julienne-Shabogamo Lake system is navigable from Labrador City and allows direct access to most of the map area.

Bedrock geology consists of an Archean craton in the northwest corner of the map area, with Proterozoic metasediments known as the Knob Lake Group and associated intrusive rocks outcropping in the rest of the map area to the southeast. The map area straddles the Grenville Front, a zone here separating the Superior and Grenville Provinces. In this area the front zone is manifested as a series of thrust faults, and the Grenville Front may be considered the northern limit of deformation imposed during the Grenvillian Orogeny.

Previous work in the area includes 2 inch to 1 mile mapping by Iron Ore Company of Canada, (Neale, 1951) and Newfoundland and Labrador Corporation (Boyko, 1953) with follow-up 1 inch to 1,000 foot mapping and geophysical work by Iron Ore Company of Canada and Labrador Mining and Exploration Company, (Beemer 1952, Almond 1953, Eckstrand 1956, MacDermott 1958, Love 1959 and others), and Canadian Javelin Limited (Knowles 1962 and others) in areas of iron formation during the subsequent decade. The area is also covered by the 1 inch to 4 mile regional map and report of the Geological Survey of Canada (Fahrig, 1967) and is included in a study by Knowles (1967). The Iron Ore Company of Canada operates four open pit mines on the west side of Wabush Lake and many detailed geological studies have been made in the area. The Sokoman Formation was subdivided into three units by Muwais (1974), and maps by Muwais and Blaxland (1977) have been compiled directly for the area between Lorraine, Carol and Luce Lakes. Many studies of the mineralogy of the iron formation have been made, including those of Klein (1966, 1973). The terminology of the Knob Lake Group (formerly known as the Gagnon Group) and of other rock units has recently been revised (Rivers, in press).

Radiometric age dates have been determined at two locations in the map area by the K/Ar (Fahrig, 1967) and Rb/Sr (Zodrow, 1971) methods. The K/Ar analyses yield ages in the range 1150-950 Ma, reflecting the metamorphism of Grenvillian age in the region. The Rb/Sr analyses were performed on samples from the Shabogamo Gabbro. The data are incomplete, but suggest an age of intrusion of 1600 Ma, with subsequent metamorphism at about 1000 Ma during the Grenvillian Orogeny.

Unit 1 consists of gneissic rocks which form the basement upon which the Knob Lake Group (units 3-9) was deposited. It is part of the extensive Archean craton composing the Superior Province to the north and west of the map area, and is known locally as the Ashuanipi Metamorphic Complex.

Rocks in unit 1a outcrop in the northwestern corner of the map area and reappear within the Knob Lake Group to the southeast as a series of elongate domes. The unit is composed of banded migmatites, with individual bands varying in composition from granite to diorite, and with pods of gabbro also being occasionally seen. The dioritic and gabbroic portions are typically foliated, and are separated by coarse grained granite to granodiorite with an igneous texture. Field relations, such as local veins and dikes of granite crosscutting the dioritic gneisses, and the common boudinage of dioritic gneisses with boudins completely surrounded by the granite, indicate that the gneissic portions were deformed prior to intrusion by the granitic material. Biotite is the predominant mafic mineral in the unit, but ortho-and clinopyroxenes, often mantled by actinolite, are common in the finer grained portions. Relict pyroxene cyrstals in the coarse parts of the unit are replaced by pseudomorphic aggregates of actinolite and biotite. Roach and Duffell (1968) have described in detail pyroxene bearing granitic and granodioritic gneisses from southwest of the map area, and they appear to be very similar to those occurring within this map area.

Gneisses near the margins of the Ashuanipi Metamorphic Complex, as well as those in some of the smaller bodies, display a cataclastic foliation which crosscuts the gneissic banding, with the gneisses being converted to schists with or without porphyroclastic feldspar augen, and to mylonites and phyllonites. Micas in the phyllonites are predominantly muscovite and biotite.

Unit 3, the Attikamagen Formation, is the lowest unit of the Knob Lake Group in the region, and it outcrops extensively in two northeast trending belts in the map area. The belt to the south of the Wabush-Julienne-Shabogamo Lake system is typically composed of a massive to banded biotite bearing quartzofeldspathic schist which is locally migmatitic (migmatites are of the lit-par-lit type). On the east side of Wabush Lake, where the Attikamagen Formation is well exposed, the presence of quartz-rich layers up to 1 m in thickness, as well as a single occurrence of a 1 m thick layer of magnetite garnet rock in the schist, point to a sedimentary origin for the unit.

The belt to the northwest of Wabush, Julienne, and Shabogamo Lakes, although similar in composition to the southern belt, exhibits different textures. Normal schistose textures are usual in the southern belt, but the predominant texture in the northern belt is porphyroclastic, with augen of feldspar and more rarely garnet, enclosed in a medium to fine grained quartz-feldspar-biotite matrix. In thin section it can be seen that many of the feldspar augen are broken down into subgrains, and the fine grain size of many of the quartzofeldspathic layers together with intergranular recrystallization textures suggest that the unit may have undergone considerable strain during metamorphism.

The Denault Formation, unit 4, which consists of siliceous, dolomitic and calcitic marble, conformably overlies unit 3 on the east side of Wabush Lake, but appears to be absent north and west of the Lake. It is a buff coloured rock, with dolomite as the predominant carbonate, and contains lenses and stringers of quartz; tremolite is common in the southern exposures, and talc has been tentatively identified from a sample west of Leila Wynne Lake.

Unit 7 is known as the Wishart Formation, and in most outcrops consists of a massive coarse grained quartzite. Locally, however, it may possess a vague banding due to concentrations or iron oxides or muscovite on bedding planes. Muwais (1974) notes that the unit grades into pelitic schist at its lower contact with the Attikamagen Formation, and contains up to 20% carbonate near its upper contact with the Sokoman Formation. The thickness of the unit has been measured at about 260 m in the mining area, but it thins abruptly to the north and is not present at all around Bondurant and Flat Rock Lakes.

The Sokoman Formation (unit 8) conformably overlies the Wishart Formation on the west side of Wabush Lake, but elsewhere it lies on the Attikamagen Formation (unit 3). Several lithotypes make up this unit, of which the dominant are silicate-carbonate iron formation and oxide iron formation. In the mining area west of Wabush Lake, where much drilling and detailed mapping have been done, geologists of the Iron Ore Company of Canada have subdivided the Sokoman Formation into three main divisions: lower silicate carbonate, middle oxide, and upper silicate carbonate units (Muwais, 1974). It was not found possible during the present mapping programme to extend these subdivisions much beyond the mining area, however, partly because of insufficient outcrop, but also because in some areas, *e.g.* on the west side of Shabogamo Lake and around Flat Rock Lake, the oxide iron formation appears to be too thin and discontinuous to form mappable units at the scale employed. Furthermore, outcrops of iron formation around Goethite Bay and to a lesser extent on the Julienne Peninsula are extensively leached, rendering recognition of the original lithotype speculative.

Carbonate iron formation (unit 8a) is a distinctive, banded, orange coloured rock composed predominantly of siderite and ferroan dolomite. Quartz stringers and lenses are common and define isoclinal fold closures in some outcrops. Stromatolites have been recorded in carbonate iron formation in the Iron Ore Company mining area (Blaxland, personal communication, 1978). Subordinate iron silicates are common, and the unit grades into unit 8b. Silicate and silicate-carbonate iron formation (unit 8b) is composed of various iron bearing silicate minerals such as cummingtonite-grunerite, garnet, actinolite, hornblende, diopside and hypersthene-eulite with or without carbonates and quartz. Unit 8c is oxide iron formation, which consists of hematite and magnetite with either quartz or chert in varying proportions. Textural variation is considerable within the oxide unit, and is due principally to the amount of recrystallization the rock has undergone. Fine grained varieties which are relatively little recrystallized, and in which relict sedimentary structures are sometimes visible, are known as granular hematite; specular hematite (specularite) is a more coarsely recrystallized type with a well developed schistosity defined by aligned hematite crystals. Coarse grained posttectonic quartz-hematite veins are abundant in recrystallized ores. Ferruginous quartzite, unit 8d, is gradational into lean oxide iron formation in some localities, but elsewhere contains discontinuous bands and lenses of iron carbonates. In many cases, it is not known whether it represents oxide or carbonate units. Quartz-garnet-two amphibole schist (unit 8e) is a distinctive lithology which occurs in several places on the west side of Shabogamo Lake, and has also been noted in subordinate amounts within silicate-carbonate units in the Iron Ore Company mining area. It is typically a coarse grained rock with porphyroblasts of garnet set in a quartz, grunerite, actinolite, minor carbonate matrix. The presence of green amphibole may be due to tuffaceous input into the iron formation. Unit 8h comprises leached iron formation, for which the original lithotype is obscure. Secondary concentrations of goethite and hematite are common in this unit around Goethite Bay.

The Menihek Formation, unit 9, is composed of a dark grey quartz-feldspar-biotite-graphite schist with a well developed schistose fabric. Porphyroblasts of graphite give the unit a distinctive appearance in some outcrops, locally in association with sulphurous rusty zones, but elsewhere, particularly in the northeastern part of the map area, graphite is sporadic and occurs only as grain coatings and the unit is difficult to distinguish from unit 3.

Unit 12, the Shabogamo Intrusive Suite is composed of metagabbro and derived schists and is intrusive into various units of the Knob Lake Group. Relict igneous layering is seen locally, and field relationships indicate that most intrusions are concordant with the main foliation in the Knob Lake Group, having the form of sills or sheets. Unit 12a,varying in composition from metagabbro to metaleucogabbro, is coarse to medium grained in texture. Olivine is quite common, and both ortho- and clino-pyroxenes have been identified in several bodies, some of which approach noritic compositions. Metamorphic corona textures are commonly developed between mafic and felsic phases, as described by Rivers (1978). Many of the smaller intrusions and the margins of larger bodies are composed of hornblende-biotite-plagioclase-quartz schists (unit 12b), with biotite typically predominating over hornblende where intrusive into schists of the Attikamagen Formation (unit 3). In a few intrusions, unit 12b grades into talc, actinolite and chlorite schist (unit 12f), suggesting that some of the bodies had ultramafic portions before metamorphism.

Archean gneisses of the Ashuanipi Metamorphic Complex show the effects of at least two phases of deformation. The earlier of these is indicated by the presence of pervasive gneissic banding in the more mafic portions of the unit, and this has been folded into open folds during the second phase. Injection of the granitic portion of the migmatite took place prior to or during the second phase of deformation, at which time variably plunging open folds, typically lacking an axial surface foliation, were developed. This deformation and associated migmatization comprised part of the Kenoran Orogeny - biotite from similar rocks north of the map area yielded a K-Ar age of 2425 Ma (Fahrig, 1967).

In the Grenville Province, rocks of the Knob Lake Group show effects of three phases of post-Archean deformation. During the first of these asymmetric, recumbent, northeast-trending folds were formed, with axial surfaces overturned towards the northwest and with antiforms probably having considerably greater amplitude than synforms. As D_1 progressed, thrust faults developed separating the rocks into distinct tectonic slices. No major inversions of stratigraphy have been mapped, suggesting that the faults mark the locations of the overturned limbs of large F_1 folds. Parts of three major faults have been mapped out on the basis of stratigraphy and structural features, and a fourth is present on the map sheet to the north. In each of the tectonic slices, rocks of the Ashuanipi Metamorphic Complex have been brought up in the cores of antiforms, so that they outcrop as large elongate arches or as chains of smaller, more equidimensional domes surrounded by the younger rocks of the Knob Lake Group. Whether these fragments of basement represent dissected portions of a single thrust slice or the attenuated antiformal closures of folds which had been subjected to large amounts of heterogeneous simple shear is not known, but in either case it would appear likely that these isolated bodies have become detached from the main mass of Archean gneisses by sole thusts, and have then deformed with the cover sequence.

A penetrative foliation, S_1, axial planar to F_1 folds, was developed in most rocks of the Knob Lake Group, and also in adjacent portions of the Ashuanipi Metamorphic Complex. This is the only penetrative foliation in Knob Lake Group lithologies, and it is defined by the preferred orientation of biotite and muscovite in the schist units, by quartz stringers in marble and by grunerite and specular hematite in iron formation. Commonly S_1 is parallel to S_0 compositional banding, suggesting that small scale, intrafolial F_1 folds are more common than their infrequent recognition in the field would indicate.

The second deformation is characterized by northeast trending, gently plunging folds with axial planes overturned towards the northwest (*i.e.* parallel to F_1). However, due to subsequent folding, F_2 trends are somewhat variable, being approximately north-northeast on the west side of Wabush Lake, east-west north of Julienne Lake and northeast in the northwest corner of the map area. F_2 folds dominate the outcrop pattern in much of the northwestern half of the map, and Iron Ore Company mines are located in doubly plunging F_2 synforms. The S_1 foliation is folded around the F_2 folds, and small scale slides were occasionally observed parallel to axial surfaces of mesoscopic F_2 folds.

F_3 folds are upright, northwest trending structures which occur on a variety of scales. Large folds, with wavelength of 15 - 20 km are inferred from the warping of F_2 trends around the Wabush-Julienne-Shabogamo Lake system, and folding in metagabbro and amphibolite near East Lake indicates wavelengths of the order of 2.5 km. On the outcrop scale, F_3 folds are observed to be quite variable in both trend and plunge; for instance in Humphrey Mine, plunges of between 10° and 50° towards axial directions of between 090° to 160° were observed in a single pit face.

Penetrative fabrics were not developed parallel to F_2 and F_3 axial surfaces, although discrete S_2 crenulation and differentiation cleavages are common in the northwestern part of the map area, where they are subparallel to S_1.

Structural interference patterns on the map scale are evident throughout the northwestern half of the map; such structures are undoubtedly present elsewhere too, but on account of a general absence of identifiable marker horizons within the Attikamagen Formation, they cannot be mapped out at the scale employed. The patterns are predominantly due to the superposition of F_3 folds on the combined F_1/F_2 folded surfaces. A shallow dome and basin interference pattern is developed around Flat Rock Lake, with Menihek Formation filling basinal areas and Sokoman Formation and Ashuanipi Metamorphic Complex occupying antiformal cores. A larger scale interference pattern is shown by the interdigitation of quartzite of unit 7 with quartzofeldspathic schists of unit 3 west of Goethite Bay and around Lorraine Lake. This is the result of an F_3 antiform exposing a core of Attikamagen Formation which exhibits F_1 and F_2 structures, including synformal keels of Wishart and Sokoman Formation. Structural interference patterns such as these are not common on a mesoscopic scale, probably because F_3 folds are not often observed in outcrop.

Lineations are encountered in most outcrops in the field. Southeast trending down-dip ridging and mineral lineations are common near the thrust faults, and are considered to be related to the development of these features. Other lineations of similar character but different orientation, were rotated during subsequent deformation episodes. Additionally, lineations defined by microcrenulations or by the intersection of S planes are developed parallel to the axes of F_2 and F_3 folds.

The presence of orthopyroxene in granitoid rocks of the Ashuanipi Metamorphic Complex indicates that metamorphism attained granulite grade during the Kenoran Orogeny. In thin section, manifest evidence of subsequent incomplete retrogression to greenschist facies is seen, in the form of partial sericitization of feldspars, and the presence of actinolite, epidote and chlorite. The age of this retrogression is not known.

In the Knob Lake Group metamorphic grade is variable, being in greenschist facies near the border with the Ashuanipi Metamorphic Complex and rising to amphibolite facies in a southeasterly direction. Isograds are thus grossly parallel to the northeast trend of lithological contacts, but their exact position has not been determined due to a lack of suitable lithologies bearing index assemblages.

Metamorphic textures indicate that the metamorphic peak was synchronous with D_1 deformation in the Knob Lake Group, but it is not known if this event was part of the Hudsonian or Grenvillian Orogenies.

The timing of emplacement of the gabbros and associated rocks of unit 12 is not definitely established. Fahrig (1967) suggested that they form part of the Elsonian event, about 1350 Ma (Neohelikian), which implies that the metamorphic coronas were developed during the Grenvillian Orogeny. This appears likely, though available evidence does not preclude emplacement before the Hudsonian Orogeny.

Substantial iron deposits exist on the west side of Wabush Lake, four of which are currently being mined by the Iron Ore Company of Canada. The ores are in oxide iron formation (unit 8c), and are composed of hematite and magnetite with quartz as the dominant gangue mineral. Grade mined is between 35 - 42 percent Fe. Preliminary drilling and geophysical work has been performed on several of the remaining deposits on the west side of the lake, and indications are that many of these deposits contain tonnages and grades of ore suitable for mining in large scale open pit operations such as are conducted at present. The deposits are all held by the Iron Ore Company of Canada. The deposit on the Julienne Peninsula, previously held by Newfoundland and Labrador Corporation and Canadian Javelin, has recently reverted to the Crown. That deposit is estimated to contain about 500 million tonnes (excluding lake extensions) averaging 34.2 percent Fe (Newfoundland Department of Mines and Energy Summary Report, 1975).

The possibility that large deposits of iron ore occur on the west side of Shabogamo Lake cannot be ruled out. Exposure in that region is poor and additional exploration is required to establish the geology in more detail. Oxide iron formation has been observed in drill core east of Elmer Lake, but little is known of the potential of that deposit.

The grade of leached ores around Goethite Bay, despite secondary enrichment, is considered to be generally lower than that of many of the unleached deposits. Leached iron formation was also noted south and east of Carol Lake (Neale, 1951), where secondary goethite and pyrolusite are common.

Apart from iron formation, mineral showings are limited to disseminated sulphides asssociated with fractured quartz veins and dikes. These occur mainly in the area north and west of Mont Bondurant, and are hosted by the Attikamagen and Sokoman Formations. The mineralization is dominantly pyrrhotite and pyrite with minor chalcopyrite, and is associated with localized leaching and chlorite deposition. The sulphides appear to be hydrothermal in origin, and the locations of the showings may be controlled by the local structural geometry, as several are spatially related to thrust faults.

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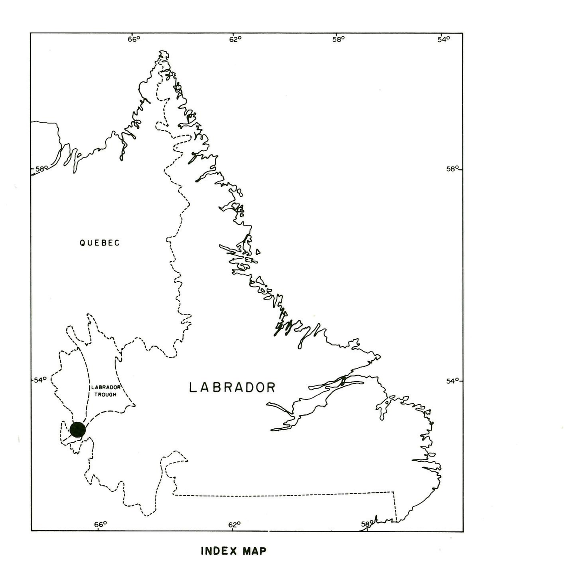
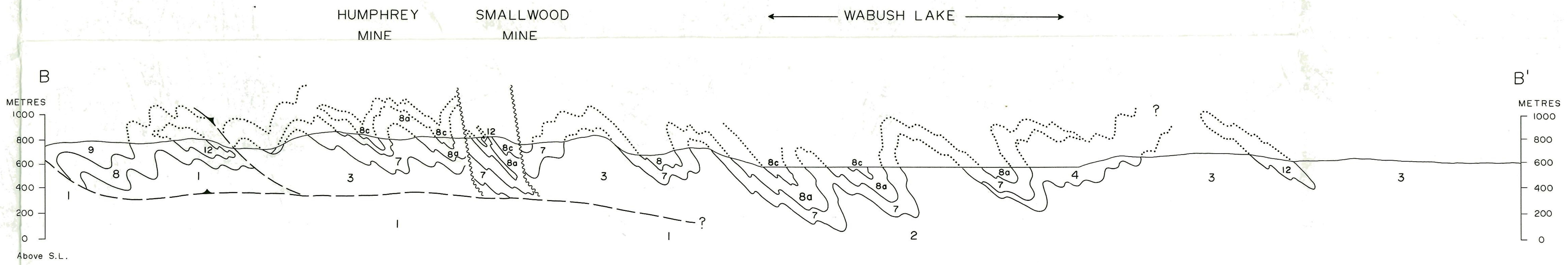


INDEX MAP


A
A'
METRES
1000
800
600
400
200
0
Above S.L.
MONT BONDURANT
WABUSH LAKE
JULIENNE PENINSULA
JULIENNE LAKE
SOUTHWEST ARM, SHABOGAMO LAKE
DE MILLE LAKE


B
B'
METRES
1000
800
600
400
200
0
Above S.L.
HUMPHREY MINE
SMALLWOOD MINE
WABUSH LAKE