

GEOLOGY OF THE RYAN-FLETCHER LAKE DISTRICT, ALBERTA

Map 25

Adjoining Sheet No. 27

R5

R4

110°30'

59°15'

40'

35'

TP118

TP118

TP117

TP117

TP116

TP116

TP115

TP115

R5

R4

Adjoining Sheet No. 16

RYAN - FLETCHER LAKES LEGEND

PRECAMBRIAN*

REGIONAL CATACLASTIC ZONES

Zones of regional cataclasis and recrystallization have affected granite gneisses, granitoids and metasedimentary rocks to produce: ultramylonite, mylonite, cataclaste, blastomylonite, and flaser gneiss; megacrystic and typically streaky; may contain rounded or augen rock clasts or feldspar porphyroclasts (O).

- RECRYSTALLIZED CATACLASTIC ROCK:** green to black; granuolose (siliceous) to schistose, with biotite, chlorite, sericite; feldspar and minor quartz porphyroclasts in a massive to foliated, finely banded, cataclastic, aphanitic matrix. Largely metasedimentary rock parent material.
- RECRYSTALLIZED CATACLASTIC ROCK:** mostly light colored, with white to pink feldspar porphyroclasts from 5 to 20 mm long comprising 2 to 5 percent of the rock, in a foliated, finely banded, cataclastic, aphanitic matrix. Largely granite gneiss parent material.
- RECRYSTALLIZED CATACLASTIC ROCK:** dark colored, with white to gray anhedral feldspar porphyroclasts and subhedral quartz porphyroclasts 10 to 50 mm long; foliated, locally gneissose; aphanitic matrix, locally medium-grained; minor apite and pegmatite. Largely Fishing Creek Quartz Diorite and Wylie Lake Granodiorite Phase parent materials.

METASEDIMENTARY ROCKS (LOW-GRADE)

BURNWOOD GROUP: reddish arkosic sandstone with minor grit and pebble bands interbedded with subordinate thin green (chloritic) phyllositic argillite bands; milky gash quartz veins locally numerous.

GRANITOID ROCKS

ARCH LAKE GRANITOID

ARCH LAKE GRANITE PHASE: typically reddish overall; 20 to 40 percent red subhedral, elongate to tabular feldspar megacrysts, from 15 to 30 mm long, aligned subparallel in a medium-grained (locally coarse-grained) usually well-banded, locally scattered pyrite, quartz, and biotite. Mafic mineral content 8 to 15 percent. Minor textural variations include reduced amounts of feldspar megacrysts or augen in characteristically crushed matrix.

ARCH LAKE TRANSITIONAL GRANITE PHASE: similar to Arch Lake Granite but essentially lacking larger feldspar megacrysts, the remaining 10 percent smaller feldspar megacrysts are 10 to 15 mm long.

CHEPMEYAN RED GRANITE: typically red to pink, equigranular, medium-grained but locally fine-grained; massive to poorly foliated, biotite (chloritic) content generally increases with degree of foliation; fairly homogeneous lithology with very few small-scale xenoliths, locally gneissic; minor pegmatites and quartz veins.

WYLIE LAKE GRANITOID

LEUCOCRATIC GRANITE: commonly found as small bodies intimately mixed with other Wylie Lake Granitoid rocks. Present in widely ranging proportions in outcrop; only concentrations over 50 percent are shown. White to pink to reddish leucocratic masses of varied texture, typically equigranular, medium-grained but ranging to coarse- and fine-grained, massive; borders sharp or gradational, simple or complex in outline (C, 7).

UNDIFFERENTIATED GRANITOID: lack of local field data does not allow better definition and subdivision of these areas; this broadly defined unit is composed principally of Fishing Creek Quartz Diorite and Wylie Lake Granodiorite Phase; Granodiorite D and Granodiorite E are subordinate.

FISHING CREEK QUARTZ DIORITE: medium gray overall; mottled grayish white on a medium- to dark-gray background in hand specimen; medium-grained, typically almost megacrystic but locally may be distinctly megacrystic or equigranular; megacrystic white to gray to pale green feldspars from 5 to 10 mm long in a greenish gray matrix of feldspar, quartz, and biotite; typically poorly foliated, locally massive, or gneissic. Rock type is predominantly quartz diorite but ranges to quartz-bearing diorite and granodiorite. Schlieren of biotite concentrations or metasedimentary rocks may be present.

GRANODIORITE E: generally greenish, or brownish to reddish overall, finely mottled; abundant pink to red subhedral feldspars (6 to 8 mm) tend to be megacrystic in an essentially equigranular, massive to poorly foliated matrix of quartz, feldspar and biotite (chloritic). Composition ranges from granodiorite to granite.

WYLIE LAKE GRANODIORITE PHASE: generally dark greenish or brownish red; may appear finely mottled; medium-grained, typically equigranular except for rare 15 mm pink feldspar megacrysts in a feldspar, quartz, and biotite matrix; typically poorly foliated to massive. Rock types are predominantly granodiorite with minor quartz diorite.

SLAVE GRANITOID

SLAVE PG GRANITE PHASE: overall pink to red mottled color pattern; abundant white to pink to red coarse feldspars 8 mm ± across in a medium- to coarse-grained, massive to poorly foliated, matrix of quartz, feldspar and biotite (chloritic) with minor muscovite. Rock composition is dominantly granite with variation into the granodiorite field.

SLAVE GRANITE PHASE: typically whitish gray to pink; medium- to coarse-grained (locally fine-grained); up to 5 percent white to pink feldspar megacrysts, from 15 to 40 mm long, in a matrix of feldspar, quartz, and biotite (< 1 to 5 percent); massive to more commonly foliated (foliation better defined by higher biotite content); typically gneissic, may be locally gneissic; includes minor small-scale mafic xenolithic lenses of metasedimentary rock.

MAFIC SLAVE GRANITE PHASE: similar to Slave Granite but with notably higher biotite content (up to 10 percent).

MEGACRYSTIC COMPONENT: up to 15 percent feldspar megacrysts 15 to 50 mm long, either randomly oriented or aligned with the foliation of map units 101 to 102 (I).

METASEDIMENTARY ROCKS (HIGH-GRADE)

METASEDIMENTARY ROCKS: the high-grade metasedimentary rock types included in this map unit are lithologically and texturally gradational, and in part intermixed on a small scale in outcrop. Typically impure quartzite; fresh surface is dark greenish bluish gray; fine-grained, layered, with ferruginous and garnetiferous zones, locally scattered pyrite, gossans, and milky or bluish gray quartz pods and veins. Minor amphibole present locally. Minor, common lithologic gradational variations to (1) fine- to medium-grained, metamorphous or distinct aggregations and masses; locally gneissic; (2) fine-grained, retrograde phyllite and schist (biotite, chlorite, sericite, and uncommon hornblende), and phyllite.

AMPHIBOLITE

Dark brownish green (fresh surface) to grayish green; typically medium-grained; biotite may be common; composition ranges from essentially amphibole-pure, or amphibole-rich amphibolite, to a feldspathic biotite amphibolite; commonly foliated but may be banded where feldspar rich; minor pyrite common.

GRANITE GNEISS

HORNBLende GRANITE GNEISS: typically pink to reddish with dark green bands; quartz-feldspar bands interlayered with mafic-rich bands (hornblende, with biotite; generally chloritic on hand specimen scale; fine- to medium-grained; typically equigranular, uncommonly well-banded, uncommonly poorly banded, and rarely foliated. Composition is predominantly granite, with minor granodiorite, and quartz diorite. Large areas are migmatitic, particularly where intimately associated with minor lenses, pods, or bands of metasedimentary rocks, pegmatite, or amphibolite.

BIOTITE GRANITE GNEISS: typically pink to reddish; quartz-feldspar bands interlayered with mafic-rich bands (biotite, possibly with subordinate hornblende; may be chloritic) on hand specimen scale; fine- to medium-grained; generally equigranular, rarely megacrystic; commonly well-banded but may be locally poorly banded to foliated, and leucocratic phases may be nearly massive. Composition is predominantly granite, with minor quartz monzonite, granodiorite, quartz diorite, and monodiorite. Large areas are migmatitic, particularly where intimately associated with minor lenses, pods, and bands of metasedimentary rocks, pegmatite, or amphibolite.

NOTE:

Rock groups are arranged in approximate chronological sequence. Nomenclature follows Streckeisen (1967): Classification and Nomenclature of Igneous Rocks; Neues Jahrbuch für Mineralogie, Abhandlungen.

Base maps compiled from planimetric sheets published by Alberta Energy and Natural Resources, Resource and Evaluation and Planning Division, Edmonton.

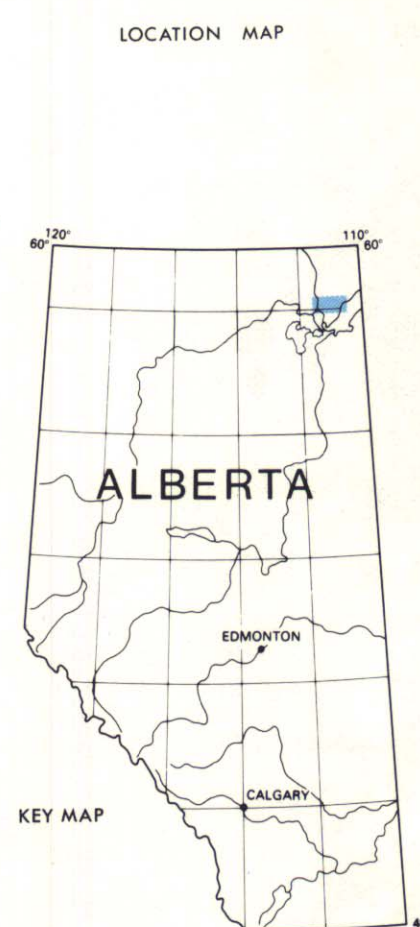
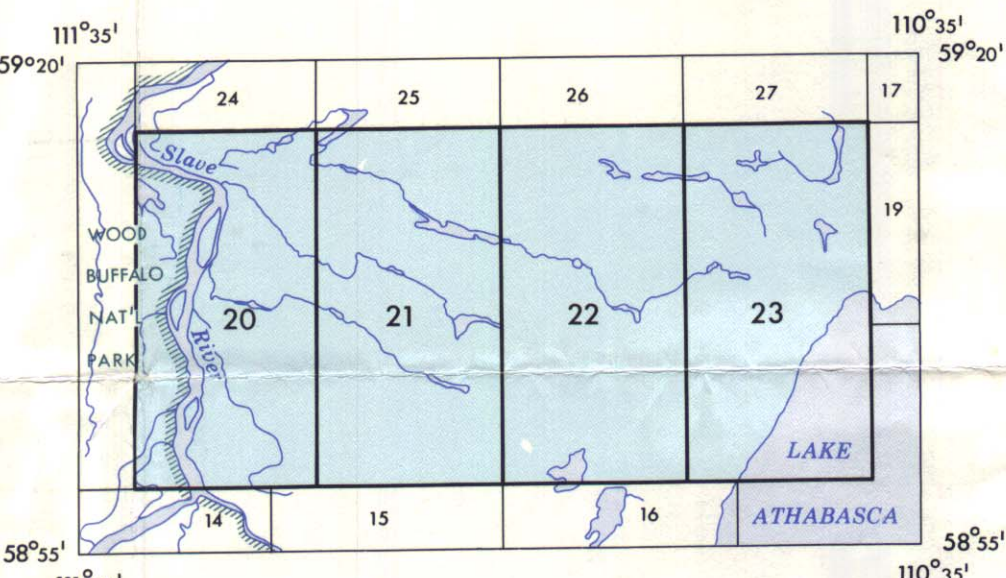
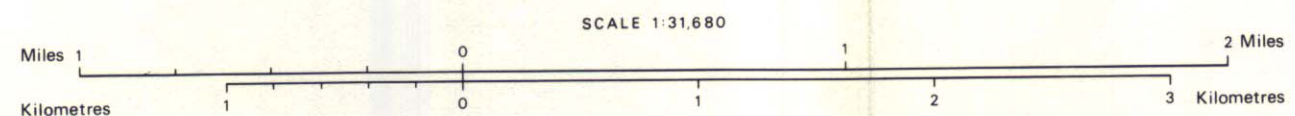
Aerial Photographs covering this area are obtainable from the Bureau of Surveys and Mapping, Alberta Energy and Natural Resources, Edmonton, and the National Air Photographic Library, Ottawa.

Approximate magnetic declination 29°55' E and 29°31' E for the Ryan Lake and Fletcher Lake respectively, decreasing 4' annually.

Geology by John D. Godfrey, Maurice B. Dusseault, 1972.
Map drawn by C.A. Parent
Published 1982.

GEOLOGY OF THE FLETCHER LAKE DISTRICT, ALBERTA

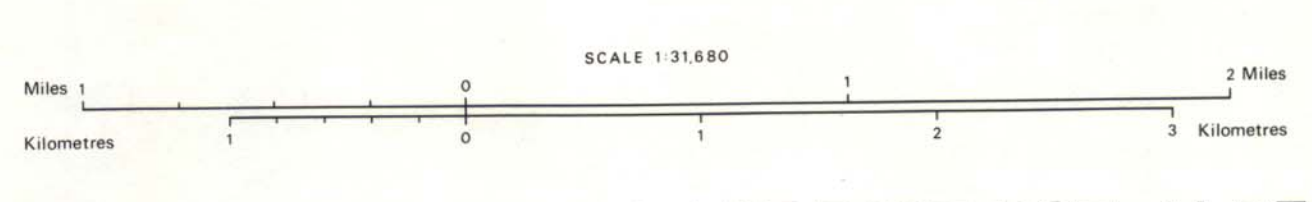
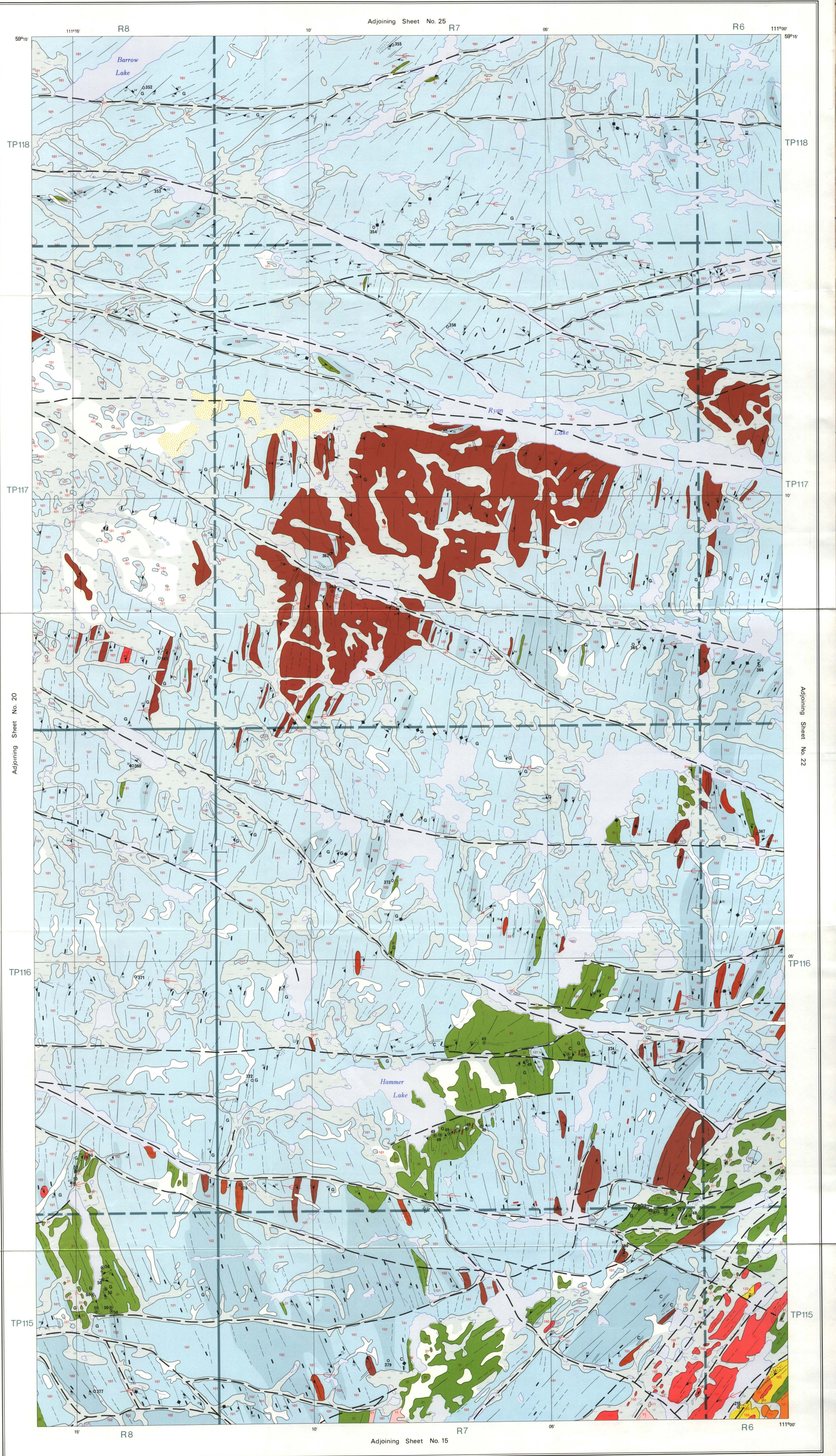
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- Geological boundary (defined, approximate)
- Foliation (defined: dip known, dip vertical; foliation assumed)
- Foliation trend*
- Lineation (combined with dip of foliation)
- Extreme contour (structural trend)
- Tight fold (structural trend)
- Local gneissosity in generally massive to foliated rock
- Joint (dip known, vertical; unknown)
- Fault (defined, dip known, assumed)
- Shear (with dip)
- Breccia
- Mylonite (local)
- Quartz vein
- Granitoid standard sample
- Metasedimentary band standard sample
- Mineral occurrence (magnetite)
- Yellow stain, mineral
- Garnet
- Chlorite (abundant)
- Epidote (abundant)
- Graphite
- Isotopic age (millions of years): biotite (b), muscovite (m); K-Ar (k); U of A
- Glacial stria (direction of ice movement indicated)
- Wind-cut groove (wind direction indicated)
- Raised beach (wind direction indicated)
- Dune*
- Esker*
- Drumlin
- Kettle
- Crevasse filling (ridge shown)
- Sand covered area
- Drainage
- Muskeg
- Township boundary
- National Park boundary
- *Primarily aerial photographic interpretation



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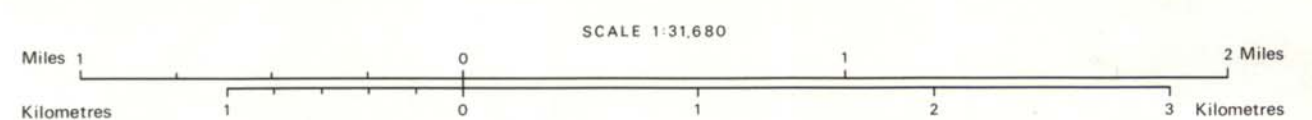
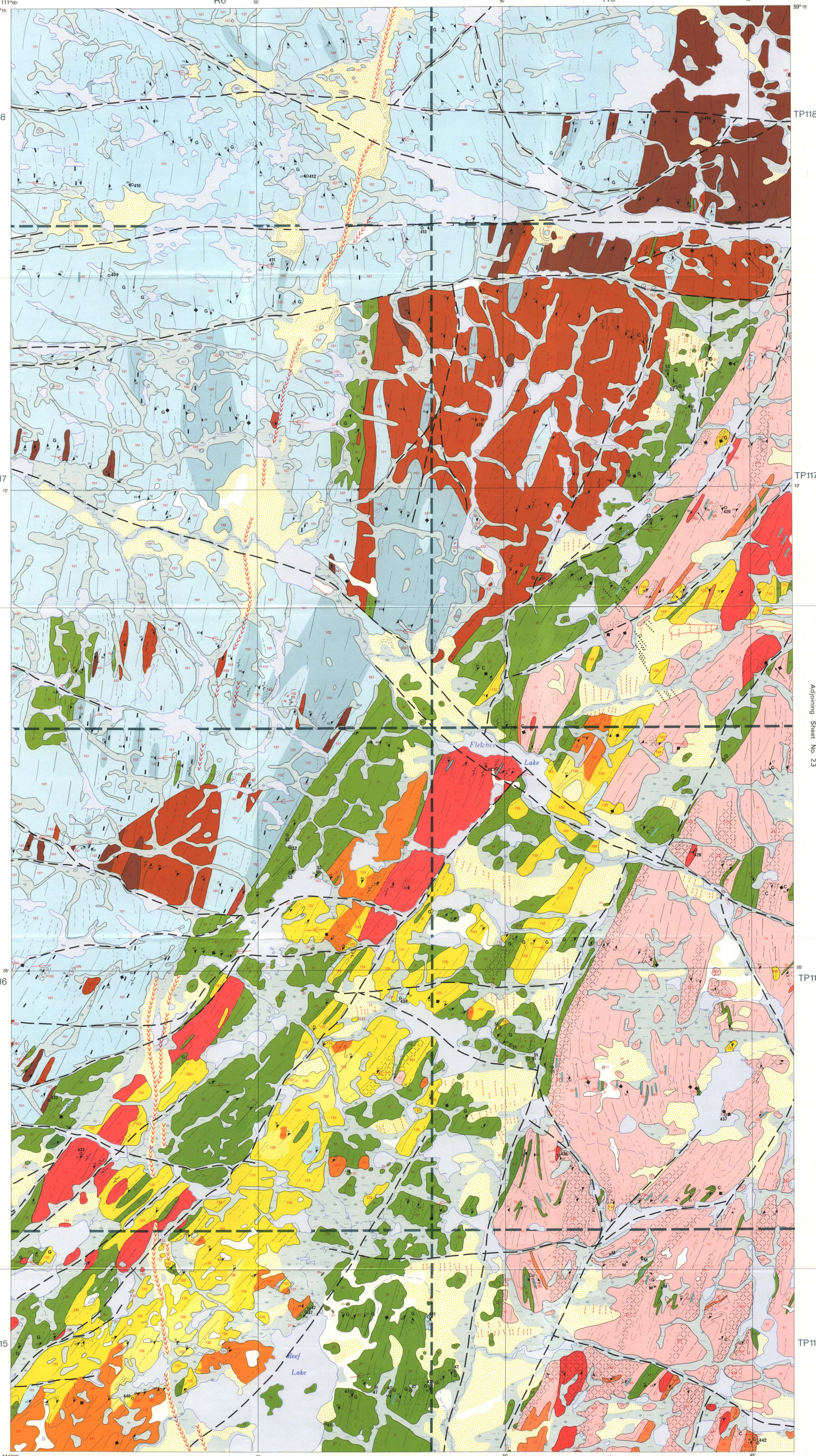


GEOLOGY OF THE RYAN LAKE DISTRICT, ALBERTA
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R6

R5



GEOLOGY OF THE FLETCHER LAKE DISTRICT, ALBERTA

Sheet No. 22



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