CANADA
DEPARTMENT
OF
MINES AND TECHNICAL SURVEYS
GEOLOGICAL SURVEY OF CANADA

GEOLOGICAL SERIES

SHEET 63 K/14 (West Half)

LEGEND

ARCHÆAN OR PROTEROZOIC

10a, 10b — **10a**, *porphyritic quartz latite, quartz latite, dacite*; **10b**, *granite-pegmatite*

7a-b, 7c-d — *Younger granitic intrusions;* **7a**, *biotite granodiorite; some alaskitic granodiorite and hornblende granodiorite;* **7b**, *granite;* **7c**, *hornblende granodiorite; some hornblende quartz diorite and biotite granodiorite;* **7d**, *diorite and gabbro.* (**G**, *gneissic;* **C**, *cataclastic;* **P**, *porphyritic;* **B**, *granoblastic*)

9 — *Fine-grained, siliceous rocks; derived from adjoining granitic rocks (5a, 7)*

6a, 6b — *Intrusions of intermediate age:* **6a**, *hornblende gabbro and hornblende diorite;* **6b**, *'Porphyritic latite'*

8 — *Rocks of uncertain relations; all or part may be equivalent to 5a, 5g, or 7c*

5 — *Older granodiorite and quartz diorite;* **5a**, *'quartz-eye' granite;* **5b**, *massive facies of 5a;* **5c**, *intrusive breccia of 5a;* **5d**, *'Fine-grained granodiorite';* **5e**, *porphyritic quartz latite border facies of 5d;* **5f**, *intrusive breccia of 5d;* **5g**, *'Quartz diorite-gneiss'*

ARCHÆAN

AMISK SERIES (1-4)

4 — *Rhyolite, porphyritic rhyolite*

1 — *Greenstones derived from mafic flows and pillow lavas; minor mafic intrusive rocks and flow breccia;* **1a**, *agglomerate and tuff; minor pillow lava;* **1b**, *layered mafic volcanic rocks, may be sheared pillow lava*

2, 3 — **2.** *Amphibolite derived from 1; some pseudo-gabbro and pseudo-diorite*
3. *Pseudo-gabbro and pseudo-diorite derived from 2*

KISSEYNEW COMPLEX
(Age relation to Amisk series uncertain)

G — *Quartz latite*

F — *Fine-grained, alaskitic granodiorite; some biotite granodiorite*

E — *Hornblende gabbro*

D — *Mixed gneisses; granitized paragneisses*

C — *Amphibolite; may be derived in part from sedimentary rocks*

B — *Gneisses and schists of uncertain derivation; commonly garnetiferous*

A — *Biotite-plagioclase-quartz gneiss;* **Aa**, *conglomerate-gneiss;* **Ab**, *biotite-plagioclase-quartz schist*

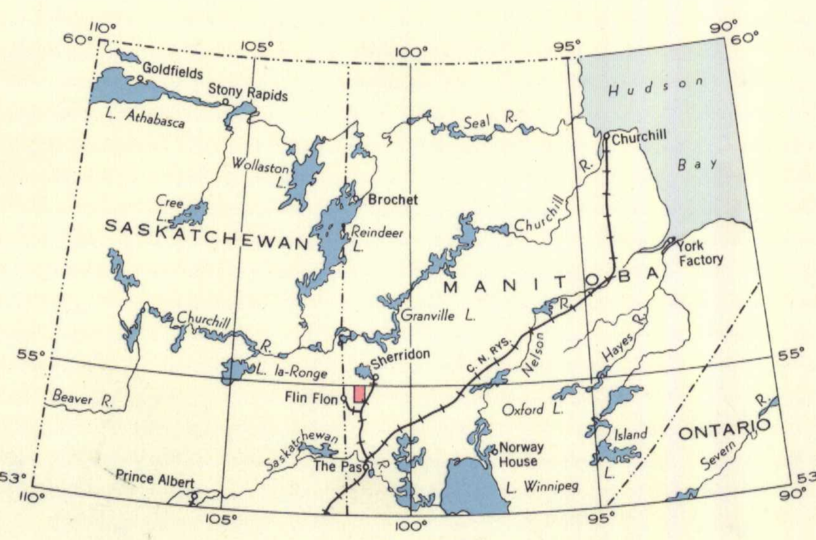
Drift-covered area
Bedding (inclined, overturned)
Bedding (direction of dip known, upper side of bed unknown)
Foliation (inclined, vertical, dip unknown)
Lineation (arrow indicates direction of plunge)
Shape and plunge of drag-fold
Fault
Anticline (arrow indicates direction of plunge)
Syncline (arrow indicates direction of plunge)
Glacial striæ
Prospect, mineral occurrence
Occurrence of tourmaline, garnet, sillimanite, or mylonite ...... T, Gt, S, M
Lineament

Geology by J. Kalliokoski, 1948, 1949

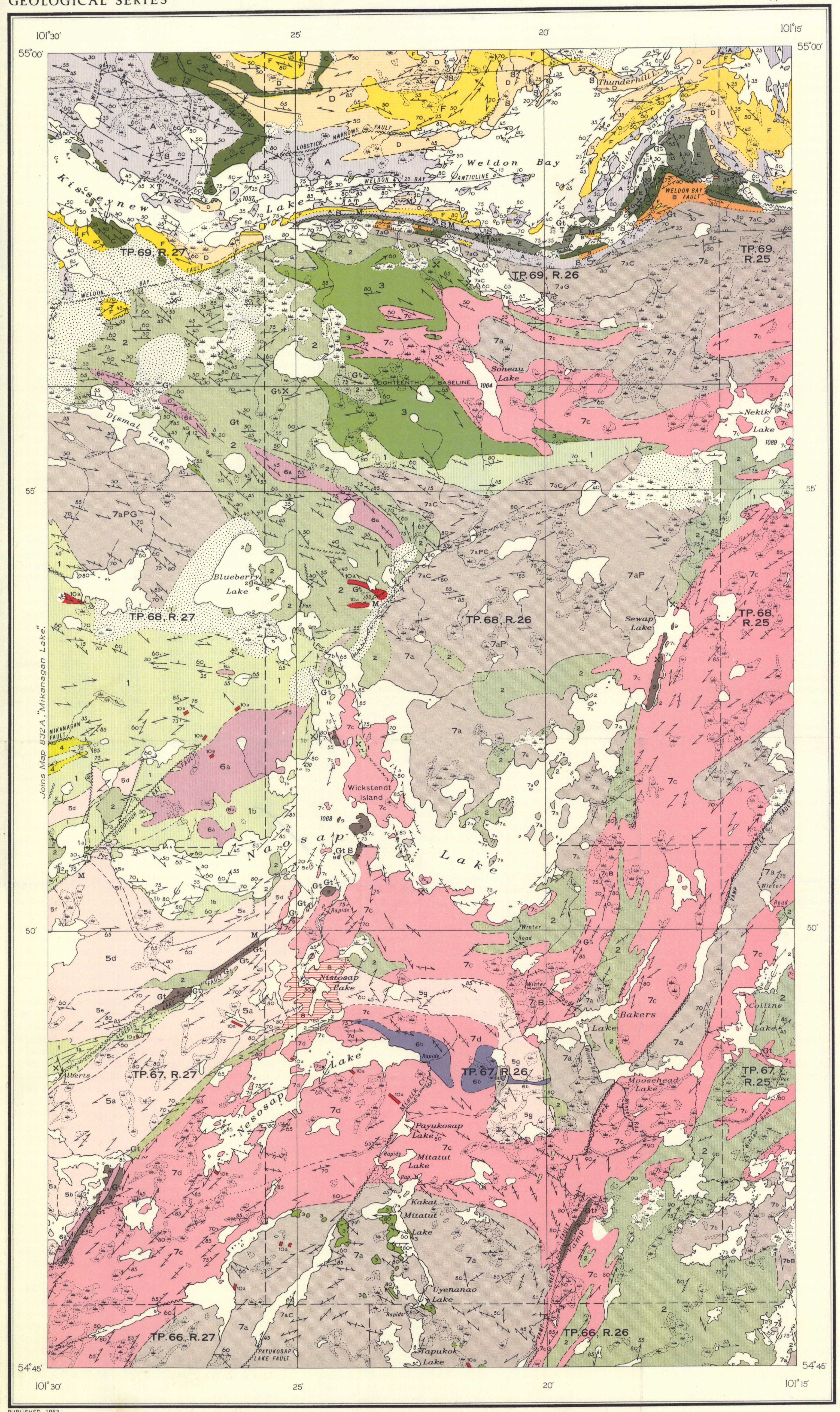
Building
Portage, trail or winter road
Township boundary (surveyed)
Township boundary (unsurveyed)
Power transmission line
Marsh
Fall and rapid
Intermittent stream
Reef or small island
Height in feet above mean sea-level 1068

Base-map compiled in 1945 from surveys by the Topographical Survey and from air photographs taken by the Royal Canadian Air Force in 1928 and 1929. Cartography by the Geological Cartography Division, 1952

Approximate magnetic declination, 16° 13' East



INDEX MAP



PUBLISHED, 1953

DESCRIPTIVE NOTES

The main body of Amisk lavas (1), northwest of Naosap Lake, comprises altered basic flows, with pillows evident in only a few places. Several small mafic intrusions are mapped with the flows, but pyroclastic rocks are rare, except north of Alberts Lake. On the western shores of Naosap Lake, volcanic rocks (1b) that weather dark green, with lighter green or yellowish green, epidotic layers, have the appearance of tuffs, but may be metamorphosed, sheared lavas. Chloritic and moderately sheared rhyolite (4) occurs in two small areas in the west-central part of tp. 68, rge. 27.

East and north of Blueberry Lake the volcanic rocks are altered to dark green or greenish black amphibolite (2), which contains sporadic garnets and in which primary structures are rare. In the larger mass of amphibolite in the southeast corner of the map-area, the grain size varies from fine to coarse and the structure from foliated to massive in short distances. Primary structures are uncommon, but small intrusions are relatively abundant. Several miles north of Blueberry Lake, and also east of Vamp Creek, the volcanic rocks have been altered by granitic intrusions into a heterogeneous mixture of medium-and coarse-grained pseudo-diorite and pseudo-gabbro, commonly with an allotriomorphic-granular texture and a composition and appearance resembling that of intrusive diorite or gabbro.

The rocks intrusive into the Amisk series can be separated into three broad categories on the basis of their composition and relative age. The oldest intrusions consist of 'quartz-eye' granite (5a), 'Fine-grained granodiorite' (5d), and contorted 'Quartz diorite-gneiss' (5g). The 'quartz-eye' granite, comprising part of the Alberts Lake granodiorite body, is faintly gneissic, and is porphyritic in the central part of this body, with characteristic lavender-coloured phenocrysts of quartz, but in the southwestern part it grades to more massive, equigranular hornblende granodiorite (5b). The 'Fine-grained granodiorite' is commonly alaskitic, and grades to a porphyritic quartz-latite facies (5e) near its margins.

The intrusions of intermediate age consist of gabbro and diorite (6a), and of 'Porphyritic latite' (6b). The latter is characterized by small, randomly oriented phenocrysts of plagioclase in a dark grey, fine-grained groundmass, which impart a felty texture to the rock.

The youngest intrusions (7) range in composition from alaskitic granodiorite to diorite and pyroxene-bearing gabbro. Rocks with sufficient potash feldspar to permit their classification as granite are rare. The two most common rock types are a pink weathering, massive, biotite granodiorite (7a) with about 10 per cent biotite, in which the feldspar is predominantly oligoclase, and a pinkish or greyish weathering hornblende granodiorite (7c) in which the hornblende content varies from about 10 to 40 per cent, and which grades to the biotitic variety. These rocks comprise five main bodies, named the Tapukok, Vamp Creek, Naosap, Nekik, and Dismal Lake granodiorites, whose relative sequence of emplacement is unknown. Within these bodies, the more mafic types are near the contacts, and the alaskitic or biotitic facies outcrop invariably in the core and are relatively younger. Varieties of particular interest are granoblastic hornblende granodiorite (7cB) southeast of Naosap Lake, which is interpreted to have been derived dynamothermally from massive granodiorite, and schistose biotite granodiorite (7aC), outcropping along the north flank of the Naosap granodiorite, which has been derived by cataclasis from the massive biotite granodiorite. Around Nistosap Lake an area of granitic rock (8) has features that are intermediate to those of the adjoining bodies, but cannot be assigned to any of them.

The Kisseynew complex (A-G) comprises stratified rocks (A, C) that have been altered to mixed gneisses (D) consequent on their intrusion by granodiorite (F). Primary textures in the stratified rocks are rare, and a foliation has been developed that is parallel with the bedding at least locally. The granodiorite (F) is fine grained, either alaskitic or with biotite as the only ferromagnesian mineral, and exhibits a colour banding in many outcrops. The fine grain and banding may have been produced by tectonic deformation of the granodiorite after it had solidified.

The rocks of the Amisk terrain (1-10) to the south are separated from the Kisseynew complex to the north along the Weldon Bay thrust fault, and, consequently, the relative ages of these rocks cannot be determined by the usual stratigraphic methods. However, from regional considerations, it appears that the Kisseynew rocks were folded at a later period than that during which the Amisk series was first deformed, and that, consequently, the Kisseynew gneisses are the younger.

All the folds in the Kisseynew gneisses in the Weldon Bay map-area have an easterly trend. East of Weldon Bay they are recumbent, and as they plunge about 30 degrees east, they have a northeasterly trend at the surface, as indicated on the map.

The Weldon Bay thrust fault is the most significant fault structure in the map-area. It consists of a continuous succession of shear zones, not all of which are indicated on the map. These zones are parallel with the foliation in the nearby gneisses, and although some of them dip south in the area southeast of Weldon Bay, their dips in most places suggest that the Weldon Bay fault is inclined about 75 to 85 degrees to the north. Small crenulations in the foliation along the shear zones indicate that the strata on the north side of the fault have moved mainly up and to the southeast in relation to those on the south side. The Sourdough Bay fault may be transcurrent, and has two splays diverging from it to the north; total displacement along it is about 1½ miles, with the formations on the northwest side moving northeasterly and down in relation to those on the southeast side. The distribution of garnets and the occurrence of fine-grained, siliceous rocks (9) suggest that the Alberts Lake fault swings north on entering Naosap Lake. The Payukosap Lake fault may be a normal fault, with the west side dropping at least 2,000 feet.

Several small showings of pyrrhotite and pyrite, with some chalcopyrite and sphalerite, occur along the Weldon Bay fault zone. Pyrrhotite has also been found with chalcopyrite and sphalerite on the east shore of Blueberry Lake. Pyrrhotite and pyrite occur at a few places around Naosap Lake and in massive replacement deposits on Sewap Lake, and pyrite, with minor chalcopyrite, occurs in a shear zone in greenstones on Wickstendt Island. About 500 feet north of Alberts Lake, pyrite and minor hematite were noted in diamond drill-core from a quartz vein in a quartz porphyry dyke that lies along a shear zone.

The most favourable prospecting areas should be along the Weldon Bay thrust fault; in the volcanic rocks north of Naosap Lake, especially near the Sourdough Bay and associated faults; and along the band of metamorphosed volcanic rocks extending northward from Sewap Lake.

MAP 1020A

WELDON BAY

WEST OF PRINCIPAL MERIDIAN
MANITOBA

Scale: One Inch to One Mile = 1/63,360
Miles