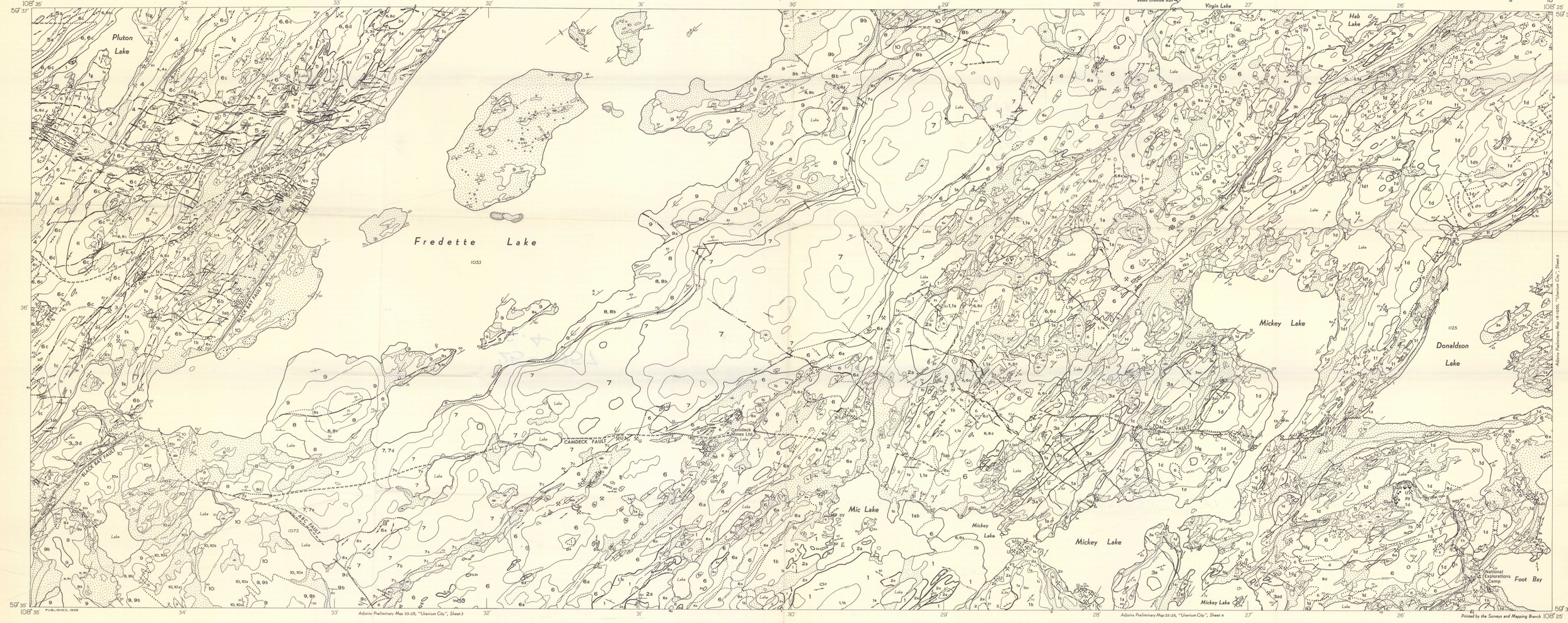
CANADA
DEPARTMENT
OF
MINES AND TECHNICAL SURVEYS
GEOLOGICAL SURVEY OF CANADA

PRELIMINARY SERIES

PART OF SHEETS 74 N/9 AND 74 N/10



LEGEND

PROTEROZOIC

11 Gabbro, diabasic gabbro; basalt dykes and sills; 11a, assemblage of several narrow dykes

ATHABASCA GROUP (7-10)

10 Conglomerate, round to subangular fragments, includes some arkose and siltstone fragments, arkosic matrix; 10a, includes some arkose; 10b, includes some siltstone; 10c, brecciated

9 Arkose, orange-red, medium-grained; 9a, includes siltstone beds; 9b, includes some conglomerate; 9c, brecciated

8 Siltstone, chocolate-red, fine-grained, 8a, includes some conglomerate; 8b, includes some arkose; 8c, includes some green shale; 8d, brecciated

7 Basal conglomerate, angular to subangular fragments, abundant fragments of 1, 3, 5 and 6; 7a, abundant fragments of granitic rocks (5 and 6); 7b, abundant fragments of quartzite rocks (1); 7c, abundant fragments of chlorite-bearing rock or chlorite-rich matrix; 7d, includes beds of siltstone; 7e, brecciated

ARCHAEAN (?)

TAZIN GROUP (1-6)

6 Metasomatic granite, red, massive, low mafic content; 6a, brecciated; 6b, mylonitic, finely gneissic, low mafic content; 6c, coarsely to roughly gneissic, somewhat high mafic content; 6d, includes white granitized quartzitic rocks; 6e, hybrid appearance, high mafic content

5 Granitic, banded gneiss, generally reddish, high mafic content; 5a, includes some granitic rock

4 Interbedded mixture of grey quartzite and quartz-feldspar-chlorite-sericite schist and gneiss, augen structure, minor granitic rocks; 4a, locally biotite-bearing

3 Amphibolite, hornblende-feldspar gneiss and schist, in part chlorite-bearing; 3a, hornblende schist and gneiss; 3b, chlorite schist; 3c, includes some quartzitic beds; 3d, includes some granitic masses; 3e, granitized amphibolite

2 Argillite, grey to black, locally slaty, in part tuffaceous; 2a, altered to chlorite-epidote rock, green, massive to schistose; 2b, includes granitic material, granitized

1 Quartzitic rocks, generally white and massive, low mafic content, locally feldspathized; 1a, includes much granitic material; 1b, brecciated; 1c, thinly bedded and interbedded with chlorite-sericite schist; 1d, coarse, rusty white, granite-like, generally roughly banded and massive, biotite-bearing; 1e, similar to 1d, in part schistose; 1f, similar to 1d, includes a few beds of massive, dense, white quartzite; 1g, quartz-feldspar banded gneiss, quartzite-like; thinner areas of granitic rocks; 1h, similar to 1d, includes much hornblende schist; 1k, somewhat schistose and interbedded with abundant chlorite-sericite schist and granitic rocks

Drift-covered area
Area of gravel and sand
Rock outcrop, area of outcrop
Geological boundary (defined, assumed)
Bedding (inclined, vertical, dip unknown)
Schistosity (inclined, dip unknown)
Foliation (inclined, vertical, dip unknown)
Lineation (plunge)
Minor fold (dip as indicated)

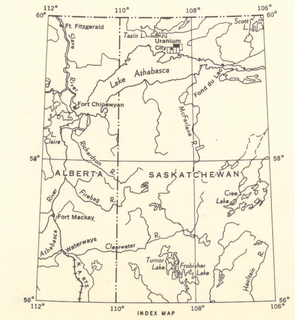
Drag-fold
Fault (defined, assumed)
Anticline (position approximate)
Syncline (position approximate)
Glacial striae
Rock trench and stripped area (radioactive)
Radioactive occurrence
Mineral occurrence

MINERAL SYMBOLS

Garnet.....gt Pyrite.....py
Pitchblende....U Umangite.....m

Geology by L. P. Tremblay, 1955, 1956

Road
Building
Stream (position approximate)
Marsh
Foreshore flats
Contours (interval 50 feet)
Sunken rock
Height in feet above mean sea-level



MAP 25-1957

URANIUM CITY

SHEET 6

SASKATCHEWAN

Scale: One Inch to 800 Feet = 1/9,600

Feet
800 0 800 1600 2400

Approximate magnetic declination, 25° 25' East

Cartography by the Geological Cartography Unit, 1958

Air photographs covering this area may be obtained through the National Air Photographic Library, Topographical Survey, Ottawa, Ontario

In response to public demand for earlier publication, Preliminary Series maps are now being issued in this simplified form, thereby effecting a substantial saving in time. There is no loss of information, but the maps will be easier to read if all or some of the map-units are hand-coloured.

DESCRIPTIVE NOTES

The centre of the area is about 4 miles northeast of Uranium City and at the time of mapping was best reached by aircraft. A road built in the autumn of 1956 reaches the south end of Fredette Lake, making access easy to the west half of the area. Good and short portages either from Donaldson Lake near the east boundary of the area or from Ace Lake south of the east half lead to Mickey Lake.

The area is rugged. It is dissected into a few broad northeasterly trending ridges separated by deep valleys. The main ridges are further dissected into several narrow minor ridges. The relief is around 350 feet above the lakes in the north half of the area but is from 100 to 250 feet near the southern boundary. All drainage is to the south.

The relative ages of the various rock types of the Tazin group (1-6) as shown in the legend are based on an anticlinal structure east of Donaldson Lake and outside the map-area. The stratigraphic succession west from Donaldson Lake inside the area is from the earliest to the latest rocks, although near the lake some formations are repeated by folding.

The quartzitic rocks (1) pass westerly from a white and rusty brown weathering, coarse-grained, granite-like rock (1d) near Donaldson Lake to a narrow zone of thinly bedded, buff coloured, dense massive quartzite (1c), and then to a zone of coarse-grained red granite (6). This granite zone includes numerous remnants and a few somewhat larger masses of unrecognized massive or brecciated, buff and white, glassy quartzite, all with gradational contacts. The stratigraphic position of the granitic rocks west of the Black Bay fault relative to those east of the fault is unknown, but in general the rocks appear similar. Thus, near the fault, they are white and glassy, and massive or locally coarsely brecciated whereas farther west they are somewhat schistose (1k) and are thinly interbedded with chlorite-bearing quartzite and chlorite schist beds, even locally with a few beds of black massive argillite.

The argillite (2), together with its derived metamorphic equivalents (2a), occurs mainly in the east half of the area. It overlies the quartzite (1) and locally is interbedded with it as narrow beds and lenses. Where the argillite is relatively fresh, it is grey to black and thinly bedded, but where slightly more metamorphosed it is green, massive to schistose, chlorite-epidote-bearing rock (2a). Field relations suggest that this chlorite-epidote rock becomes a hornblende schist (3a) in a zone of higher metamorphism.

The amphibolite (3) is a medium- to coarse-grained, dark green rock composed mainly of hornblende and feldspar. It may be massive but is generally gneissic or finely banded. Acicular hornblende crystals, all oriented nearly parallel in a common plane, normally define the gneissic structure. The banding, however, is probably relict bedded structure as an alternation of light coloured, feldspar-quartz-rich bands and dark coloured hornblende-bearing bands. Hornblende schist near the southwestern end of Mickey Lake seems to pass to the south across the lake into the chlorite-epidote rock (2a) described above. The amphibolite and the hornblende schist overlie the quartzite and are interbedded with it in the same way as the argillite and the chlorite-epidote rock.

In the area around Pluton Lake, in the northwestern corner of the map-area, grey, fine-grained chlorite- and/or biotite-bearing quartzites (1a) are finely to coarsely interbedded with quartz-feldspar-chlorite-sericite schist and gneiss. This interbedded mixture forms a belt a few miles wide. The schist and the gneiss have characteristic yellowish green mica streaks and lines, and generally exhibit an augen structure. The augen are made up of red feldspar or of a mixture of white quartz and red feldspar, and locally are lenses or small masses of granitic material.

The granitic banded gneiss (5) is generally red with an obscure, granitic appearance. It is composed mainly of quartz, feldspar, and chlorite but biotite or hornblende may be present locally. The mafic minerals are concentrated in bands. The alternation of dark and light coloured bands produces the banding characteristic of this rock. The granitic appearance is due to the great abundance of the light coloured bands which are composed mainly of quartz and feldspars. This banded gneiss occurs as irregular masses throughout the other rocks and is believed to indicate variations in the original composition of the rock.

The metasomatic granite (6) is a coarse-grained, massive, red rock, composed mainly of quartz and feldspar. Chlorite is the common mafic mineral and accounts for less than 5 per cent of the rock. Locally the granite may be gneissic, and there the chlorite content is somewhat higher and accounts for the gneissosity of the rock. Remnants of all the other Tazin rock types are found throughout the granite and show gradational contacts with it.

The rocks of the Tazin group are overlain unconformably by those of the Athabasca group (7-10). The unconformity is a marked feature but is not everywhere easily determined as the rocks underneath are locally brecciated. Its trace is somewhat irregular and wavy. The Athabasca formations normally follow one another in stratigraphic succession westerly from the unconformity. This is suggested by the dip of the plane of unconformity and by the dips of beds. The apparent thickness of this succession is at least 5,000 feet.

The basal conglomerate (7) is a hard reddish rock made up of angular to subangular fragments of quartzitic rocks, coarse red granite, and gneiss, all unsorted as to size and kind and generally closely packed in an arkosic matrix. Near the unconformity the fragments are somewhat sorted as to kind as they are mainly of local origin, and the matrix is in places dark coloured and chlorite-rich. Near the overlying siltstone band (8), however, the fragments are unsorted and the matrix resembles siltstone.

The siltstone (8) is a chocolate-red, fine-grained rock, generally thin bedded, but locally massive. It lies immediately above the basal conglomerate and forms a band 800 feet wide that bifurcates to the northeast to enclose a lens of conglomerate (10).

The arkose (9) is orange-red to reddish brown. It grades from a fine-grained rock near the siltstone band to a coarse-grained arkose away from it. Locally, however, the grain size is highly variable laterally. The arkose is generally massive and coarsely bedded. It is composed of grains of feldspars and quartz with some interstitial iron oxide. Cross bedding was noted very rarely and where observed was of micro type.

The conglomerate (10) forms lenses interstratified with the arkose (9) and siltstone (8). It is characterized by rounded to subangular fragments fairly well sorted as to size, being generally less than 3 inches in diameter, and resting in an abundant arkosic matrix. Some of the fragments are derived from the arkose and siltstone beds lying below and interstratified with the conglomerate.

The gabbro and basalt (11) is dark green, black, and reddish brown. It is a massive, coarse- to fine-grained rock that occurs mainly as dykes and sills generally less than 15 feet wide. The dykes and sills are sparsely distributed over a wide area east of Fredette Lake but west of the lake their main occurrence is in a swarm less than half a mile wide. They occur mainly in areas underlain by Tazin rocks but a few cut the basal Athabasca conglomerate and the arkose directly above it. The dykes trend westerly to northwesterly and are believed to be cut by faults, such as the Black Bay and Pinky faults. However, they traverse brecciated rock near the faults, suggesting that the brecciation occurred earlier than the fault as mapped.

The rocks of the Tazin group have been much folded and faulted. East of Fredette Lake the folds are rather open whereas west of the lake they are closes, tight, and probably overturned to the northwest. All fold axes strike northeasterly and their mapped position is only approximate. East of Fredette Lake, folds in the hornblende schist are close and disharmonious in relation to broader and more open folds in the underlying quartzite rocks.

The Athabasca formations north of the A B C fault form the east limb of a broad basin that plunges gently northeasterly. The axis of this basin is in Fredette Lake about 1,500 feet east of the Black Bay fault, which cuts out most of the west limb. South of the A B C fault, the Athabasca formations are on the west limb of another broad basin, the Martin Lake basin, near its northern apex. This also is truncated on the west by the Black Bay fault and on the north by the A B C fault.

Faults were seen in rocks of both the Tazin and Athabasca groups. They strike mainly northeasterly to easterly, but some strike northwesterly. Their dip is not known but is held to be generally southerly. Some indicate large apparent offsets. The A B C fault, which may be the extension of the St. Louis fault, and the Camdeck fault, which is possibly the Tom fault, join near the south end of Fredette Lake and the combined fault seems to converge northwesterly into the Black Bay fault.

Uranium is the only metal of known economic interest in the area and occurs as pitchblende along narrow shears and clean-cut fractures. The pitchblende forms lenses generally less than 2 inches wide along these fractures. The shears and fractures strike northwesterly and northeasterly to easterly and dip gently to steeply south. It is believed that these fractures correspond to a system of joints in the area.

Pitchblende is now mined at National Explorations Ltd., on Donaldson Lake in the southeastern corner of the map-area at a rate that varies from time to time but is generally less than 75 tons a day. Baska Uranium has an adit on the west shore of Virgin Lake near its south end. This adit was driven to test some ore zones a few hundred feet north of the northern boundary of the area. Another small orebody was apparently outlined near Pistol Lake, on Eldorado ground a short distance north of Hab Lake beyond the northeastern corner of the map-area.

MAP 25-1957
URANIUM CITY
SHEET 6
SASKATCHEWAN

5.1.10 Uranium City, Sask.
A, Geol.
25-1957.

This map has been produced from a scanned version of the original map
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