REPORT ON THE PROPERTY OF
AGNEW LAKE URANIUM MINES LIMITED
PORTER AND HYMAN TOWNSHIPS
SUDBURY MINING DIVISION

A geological survey of the Agnew Lake Uranium Mines' property was carried out during the period April to August 1955. Results of this survey are herewith presented.

PROPERTY EXTENT, LOCATION and ACCESS

The property consists of 31 contiguous claims numbered 570704 to 70709, 70713, 70714, 70717 to 70721, and 70757 to 70774 inclusive. They are located in the north-west portion of Hyman and the north-east portion of Porter Townships, Sudbury Mining Division. They comprise in all approximately 1,200 acres.

The claims lie some three miles north of Agnew Lake. A fair jeep road extends from the north shore of the lake through the property. The south shore of Agnew Lake may be reached by good all-weather road from either McKerrow or Nairn on Highway #17 and on the C.P.R. Alternatively an old logging road, passable by jeep in winter, links the property with a gravel road extending north from Worthington.

WORK PERFORMED

The property adjoins New Thurbois Mines to the west; the grid system in existence on the latter property was extended to cover the Agnew Lake claims. This grid consists of an east-west base line with north-south picket lines at 400 foot intervals. Stations were established on the picket lines at 100 foot intervals.

From this grid the geology was mapped by pace and compass. All picket lines were traversed, and, in outcrop areas cross traverses were run between

lines. Geological maps were prepared on a scale of 200 feet to the inch.

An itemized account of personnel employed and mandays expended is attached as appendix "A".

TOPOGRAPHY

The topography is rugged, and typical of the north shore of Lake Huron. A series of east-west rocky ridges are separated by swampy valleys. The maximum variation in elevation is estimated at 600 feet.

Forest cover consists of mixed hardwoods and conifers. Birch, maple, pine and balsam are the principal types of trees.

GENERAL GEOLOGY

All consolidated rocks of the area are late Precambrian in age. Collins, Qurke and Thompson have all mapped portions of the area. There are some variations in the ages and names assigned to the rocks. Two alternative tables of formations are shown below:

AFTER COLLINS	AFTER THOMPSON
Recent & Pleistocene; Sand, gravel, clay	Recent & Pleistocene; Sand, gravel, clay
Post-Keweenawan?; Olivene & Quartz diabase	Keweenawan?; Olivene diabase
Killarneyan; Granite, gabbro, diabase	Post-Sedimentary Intrusives; Granite, gabbro, diabase
Huronian; Serpent Quartzite Espanola Fmn. - calcareous lilt & limestone Bruce Conglomerate Mississagi Fmn. - quartzite & argillite	Sedimentary Series; Argillite, slate, Limestone, quartzite Conglomerate

As can be seen, the only essential difference so far as this area is concerned, is in the ages of the various rocks.

BASIC INTRUSIVES These rocks occur as diabase dikes cutting granite and sediments, and as a range of hills which appear to be an irregular gabbro stock.

The dikes are medium to coarse grained and have a typical diabase texture. Neither olivene nor quartz were identified as component minerals in the dikes.

The large basic intrusive masses are generally coarse grained and gabbroic, with finer grained diabasic textures occasionally developed near their contacts. They are composed essentially of large well-developed pyroxene crystals in a white feldspar groundmoss. Quartz grains were noted in the gabbro, but appear to make up a very minor proportion of the rock.

According to both Collins and Thompson there are two ages of basic intrusives in the district. There is no definite evidence, on the Agnew Lake claims, as to whether the dikes and gabbro bosses are related or are two distinct ages. Certain dikes are definitely younger than both granite and sediments, while at one point in claim #70771 a diabasic portion of the gabbro appears to intrude granite. East of the Agnew Lake property, an olivene diabase dike was found which is quite distinctive in appearance. If this represents the later age of intrusives, then presumably all the above-described basic intrusives belong to the older period of intrusion.

GRANITE Granites are found in the northwestern part of the property, south of Porter Lake, and in a range of hills just north of the property boundary.

The granites quite definitely intrude and are younger than the sediments. Many remnants and ghosts of sediments are found throughout the granite, while near the contacts large bodies of quartzite can be observed completely surrounded and partially assimilated by the granite.

The granite is pink, medium grained, and is composed almost entirely of quartz and feldspar. Hornblende and other ferromagnesions make up only an estimated 1% to 3% of the rock.

LIMESTONE Limestone is found outcropping at 18150W-1900N, 20100W on the base line, 18050W-700N, and at 21200W-400N. In each case the limestone is impure, dark grey, fine grained, and thinly ($\frac{1}{2}$" to 1") bedded. Wherever found it is

either an isolated outcrop or in contact with basic intrusives only, so its relationship to the other sediments is not known. It probably corresponds to Collins' calcareous silt of the Espanola Formation.

Tight repeated crumpling and folding is exhibited where the limestone is in contact with gabbro. These folds have an amplitude of 6 inches to 12 feet, and appear to represent drag folding brought about by movement in the intrusive as it was injected into its present position.

CONGLOMERATE Conglomerates outcrop at several points on the property. While there is little to distinguish one bed from another these beds apparently represent two or more sedimentary horizons.

East and south of Porter Lake there is a broad arc of conglomerates with interbedded quartzites. These are believed to be part of the conglomerate grey wacke series termed Bruce Conglomerate. South and east of these there are other conglomerate beds that make up part of the Mississagi Quartzite series. These latter beds are much less continuous than the former; they occur as isolated lenses that can seldom be traced for any distance along strike.

All the conglomerates are similar in appearance. They contain material ranging from ½ inch pebbles up to 5 inch cobbles in a matrix varying from quartzite to a siliceous argillite. The pebbles and boulders are principally granite, with a high proportion of quartzite and lesser amounts of grey wacke, jasper, and greenstones.

QUARTZITE Quartzite is the commonest rock found on the property, outcropping on all but the northwesterly claims. Lack of good horizon-markers prevents an accurate determination of structures or measurement of thickness, but there appears to be upwards of 2,000 feet of quartzite beneath the Bruce Conglomerate, and more above.

For mapping purposes the quartzite was subdivided into a coarse and a

fine-grained member, but these types were found to be repeated several times and to grade into one another along strike. The coarse-grained quartzite is better termed an arkosic grit. It contains a high but variable proportion of feldspar, and commonly much sericite. Colour varies from pink to green to white depending on the proportions of feldspar, sericite, and quartz. Bedding is thick and the rock generally is quite massive.

The fine-grained quartzite is generally dense, white and thinner bedded. Variable amounts of clay and other minerals produce grey phases approaching greywacke and argillite.

STRUCTURAL GEOLOGY

Lack of good horizon markers makes difficulty the recognition of details of structures. In general the sediments have an east-west trend and vertical dips.

Locally dips vary from 70°S to 85°N. In addition to the crumpling and drag folding in the limestone, a broad fold open to the west is observed east and south of Porter Lake, with numerous minor flexures on its flanks. The south limb of the fold strikes southwest while the north limb strikes northwest. The plunge of the fold is vertical or near-vertical.

Minor north, northwest, and northeast striking faults were observed and are shown in the southern most claims. Minor displacements - both left-hand and right-hand - were noted. Schistosity is developed parallel to the bedding in numberous locations.

Elsewhere various horizons, particularly the conglomerate beds, disappear along strike, and it is possible to postulate numerous combinations of faults coinciding with topographic lineare. The writer is inclinded to believe that most of these beds merely lense out. Lacking more concrete evidence, none of these postulated faults are shown.

ECONOMIC GEOLOGY

In the vicinity of the Agnew Lake claims there have been a large number of radioactive discoveries, notably New Thurbois Mines. All these finds are the Blind River type -- pebble conglomerate beds, containing pyrite and pyrrhotite in the matrix. They differ from the Blind River ore bodies in that they occur all through rather than at the base of the Mississage quartzite, they contain a high percentage of thorium, and in that sulfides are not as abundant.

Geiger counters and scintelometers were carried at all times by the men employed in carrying out the geological survey, and all conglomerate beds were checked. No appreciable radioactivity was detected.

CONCLUSIONS AND RECOMMENDATIONS

The property was mapped, but not prospected in detail, and it is possible that uranium-bearing beds were missed. Since the claims adjoin the New Thurbois property to the west, and discoveries on the Chemical Research Corp. ground lie immediately south, the property has merit insofar as location is concerned. Also a large part of the property is underlain by the favorable Mississagi quartzite.

It is recommended that the quartzite areas southeast of Porter Lake, particularly the southern most claims, be closely prospected with Geiger Counters.

REGISTERED PROFESSIONAL ENGINEER
L. G. PHELAN
PROVINCE OF ONTARIO

Respectfully submitted,

L. G. Phelan, M.A.Sc., P. Eng.

Dated at Toronto,
13th November, 1955.

APPENDIX "A"

Assessment Details

Line Cutting & Chaining

J. A. Stocking - Toronto	- 15 April to 2 June, 1955	- 20 mandays
W. Yau - Massey, Ontario	- " " " " "	- 20 mandays
R. Hobden - " "	- " " " " "	- 18 mandays
P. Ritchie - " "	- 11 May to 31 May, 1955	- 18 mandays
E. McKie - " "	- 12 May to 14 May, 1955	- 4 mandays
G. Massey - Toronto, Ontario,	21 April to 4 May, 1955	- 7 mandays
L. Besaw - Spanish, Ontario,	26 April to 2 June, 1955	- 12 mandays
S. Bowes - Little Current, Ontario,	15 April to 2 June,	- 20 mandays
		119 mandays

Geological Mapping

Velasquez Spring - Toronto, Ontario,	20 May to 12 Aug.	- 34 mandays
Robert Gray - Stratford, Ontario,	" " " " "	- 33 mandays
Pau Van Loan - Toronto, Ontario,	" " " " "	- 30 mandays
G. L. Hammond - North Bay, Ontario,	" " " " "	- 15 mandays
L. G. Phelan - Toronto, Ontario,	" " " " "	- 3 mandays
		115 mandays

Total field work = 234 mandays. These are 10 hour days, therefore $\frac{10}{8}$ x 234 = 292 days credit are requested.

Drafting, Interpretation, Report

V. Spring - 40 hours
R. Gray - 40 hours
G. Hammond - 70 hours
L.G.Phelan - 16 hours

Total 166 hours or 21 days.

Total assessment credit requested = 4 x (292 + 21) = 1252 days.

This work is to be distributed as $\frac{1252}{31}$ = 40.4 or 40 days on each of the following claims:- #870704 to 70709, 70713, 70714, 70717 to 70721, and 70757 to 70774 inclusive.

LEGEND SHEET - PORTER AND VERNON TOWNSHIPS

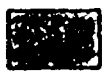
16F  Olivine Diabase

16E  Porphyroblastic metagabbro.
Diorite, Gabbro

11  Coarse to medium grained feldspathic quartzite.
Quartzite lacking feldspar.

7  Porphyritic granite. Felsite. Albitite.
Equigranular medium grained granite.

4  Hornfels, Argillaceous limestone.
Sericite schist, Sericite-chlorite schist.
Greywacke, Argillite, Siltstone.

3  Oligomictic quartz pebble conglomerate.
Polymictic boulder conglomerate, Greywacke matrix.
Polymictic boulder & cobble cong., gritty quartzite matrix.
Conglomerate, pebbles and cobbles of basic igneous rocks dominant.

1  Volcanic tuff.
Amygdaloidal basic lava.

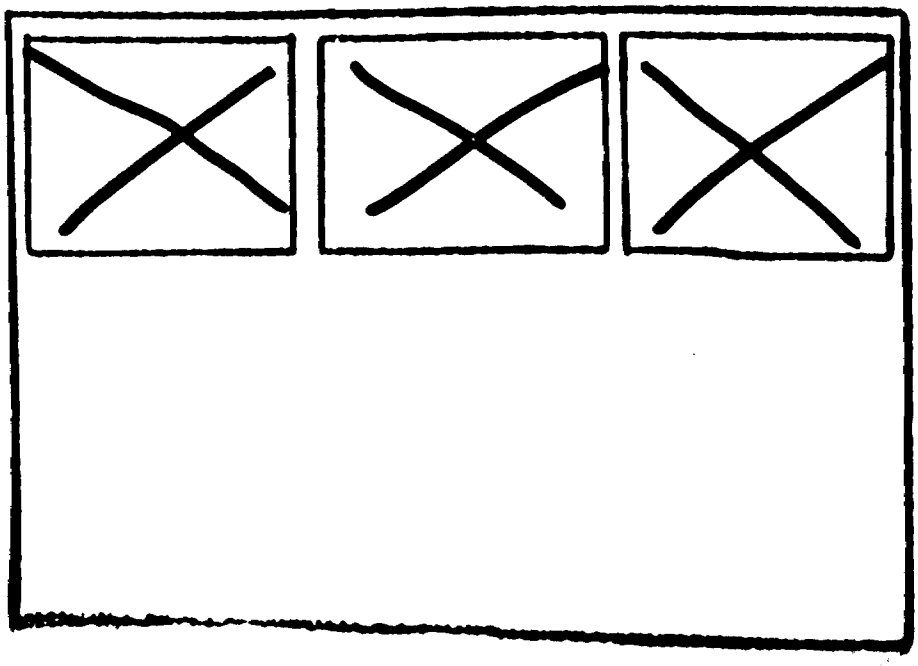
SEE ACCOMPANYING MAP(S) IDENTIFIED AS

HYMAN-0024-A1-1

HYMAN-0024-A1 #1

HYMAN-0024-A1-2

LOCATED IN THE MAP CHANNEL IN THE FOLLOWING SEQUENCE (X)



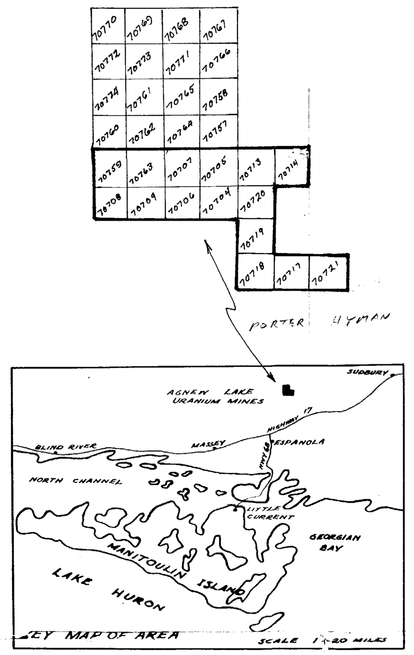
B-1

S-70759
S-70763
S-70707
S-70705
S-70713
S-70714
S-70725
S-70726
S-70724
S-70730
S-70708
S-70709
S-70706
S-70704
S-70720
S-70715
S-70728
S-70729
S-70716
S-70719
S-70721
S-70717
S-70718

NEW THURBOIS MINES

Beaver Pond

PORTER HYMAN TWP



SYMBOLS

- SWAMP
- BOUNDARY OF OUTCROP
- GEOLOGICAL CONTACT
- CLAIM LINES
- PICKET LINES
- STRIKE & DIP
- STRIKE & DIP OF SCHISTOSITY
- FAULT DEFINED
- FAULT ASSUMED
- ZONE OF SHEARING
- ROAD

LEGEND

- 1 CONGLOMERATE
- 2a FINE GRAINED QUARTZITE
- 2b COARSE GRAINED QUARTZITE
- 3a DIABASE
- 3b GABBRO
- 4 GRANITE
- 5 LIMESTONE
- 6 SLATE
- 7 ARGILLITE

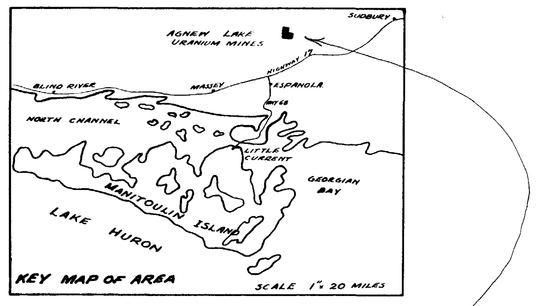
AGNEW LAKE URANIUM MINES LTD.
PORTER & HYMAN TWPS.
SUDBURY MINING DIVISION

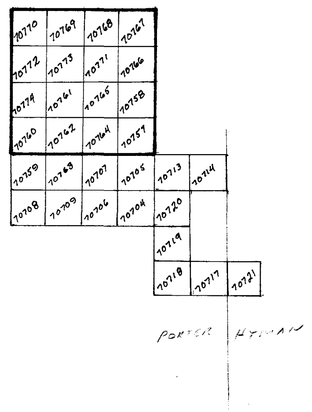
DWN. V.S.
TCD.
CKD.

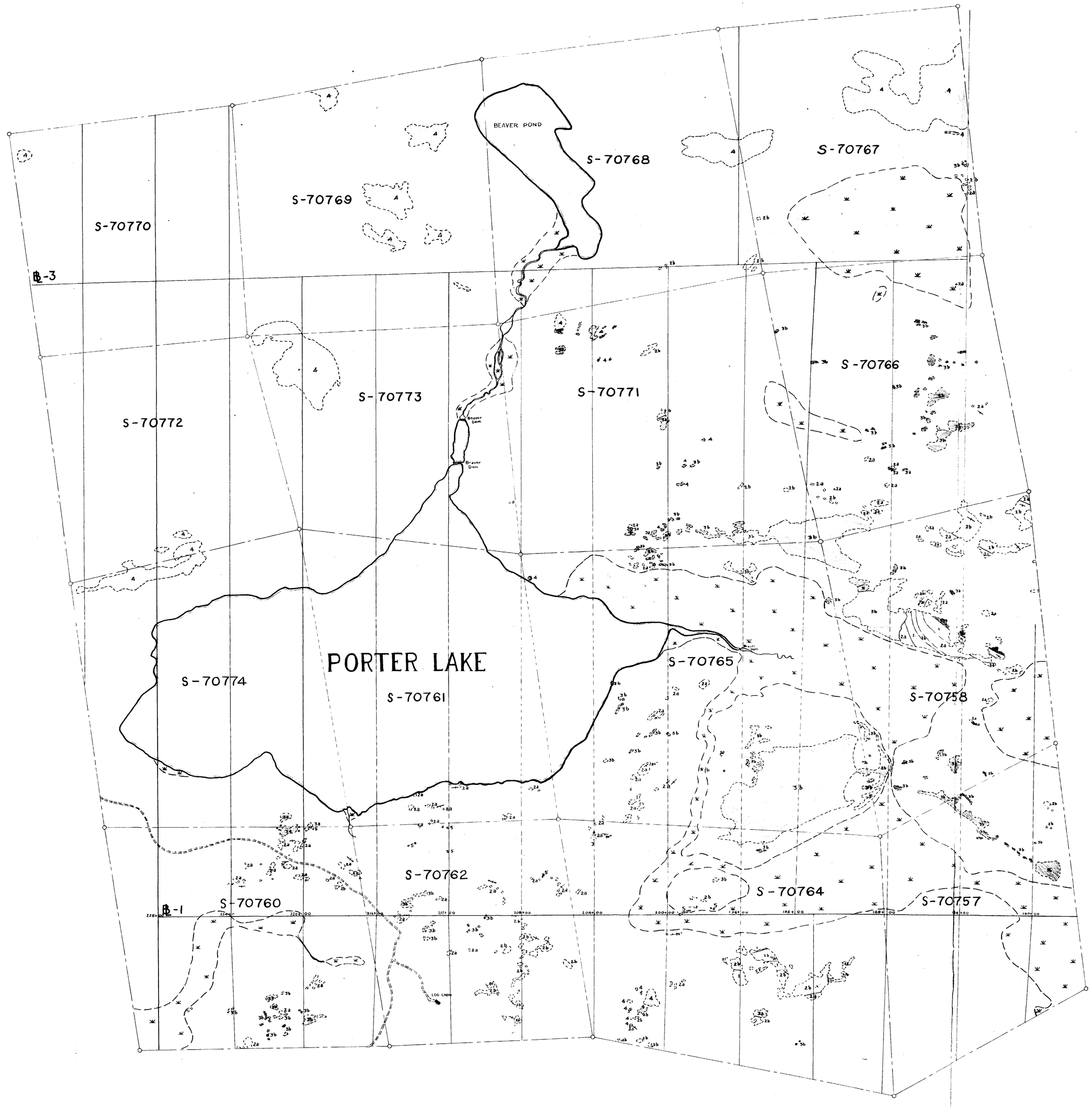
SCALE 1" = 200'
DATE Aug. 1955
MAP NO. 1 of 2

HYMAN-0024-A1-#1

200







SYMBOLS

- SWAMP
- BOUNDARY OF OUTCROP
- GEOLOGICAL CONTACT
- CLAIM LINES
- PICKET LINES
- STRIKE & DIP
- STRIKE & DIP OF SCHISTOSITY
- FAULT DEFINED
- FAULT ASSUMED
- ZONE OF SHEARING
- ROAD

LEGEND

- 1 CONGLOMERATE
- 2a FINE GRAINED QUARTZITE
- 2b COARSE GRAINED QUARTZITE
- 3a DIABASE
- 3b GABBRO
- 4 GRANITE
- 5 LIMESTONE
- 6 SLATE
- 7 ARGILLITE

AGNEW LAKE URANIUM MINES LTD.
PORTER TWP.
SUDBURY MINING DIVISION

DWN. V.S.
TCD.
CKD. G.

SCALE 1" = 200'
DATE Aug. 1955
MAP NO. 2 of 2

HYMAN-0024-A1-#2

210