GEOLOGY OF CLAIMS 52625-37, TOWNSHIPS OF YEO AND POTIER, DISTRICT OF SUDBURY, ONTARIO.

Reference

Ontario Department of Mines Volume XLI, Part III, 1932, Geology of the Three Duck Lakes Area, by H. C. Laird.

Introduction

Following some correspondence and personal discussion the writer received instructions from Mr. W. Hurst and Mr. B. M. Arnott to make a detailed geological map of a group of thirteen claims which had been staked in 1949 at Schist Lake, Three Duck Lakes area.

The claims contained the Russell Cryderman showings south of Cryderman Bay, which included a main showing in a shear zone and three groups of scattered showings in a band of iron formation about a claim south of the main showing.

Since the assessment work for the first year was due and the problem of future development had to be considered, it was deemed advisable to make a detailed map of the property for assessment work purposes and at the same time to acquire a geological picture that would be useful for further operations and consultation. It was agreed that emphasis should be placed on finding an extension of the main showing and on uncovering new leads in other parts of the property.

The field work was performed in two periods from May 30th to July 9th and from July 19th to August 5th. The writer had the help of three assistants to do the line-cutting, the surveying and a limited amount of mapping in the first period and the help of one assistant to complete the mapping in the second period. In conjunction with the mapping programme Mr. Arnott sampled the pits on the main showing while the writer took samples of other showings. A tabulation of man-days spent on various aspects of the work is contained in Appendix A.

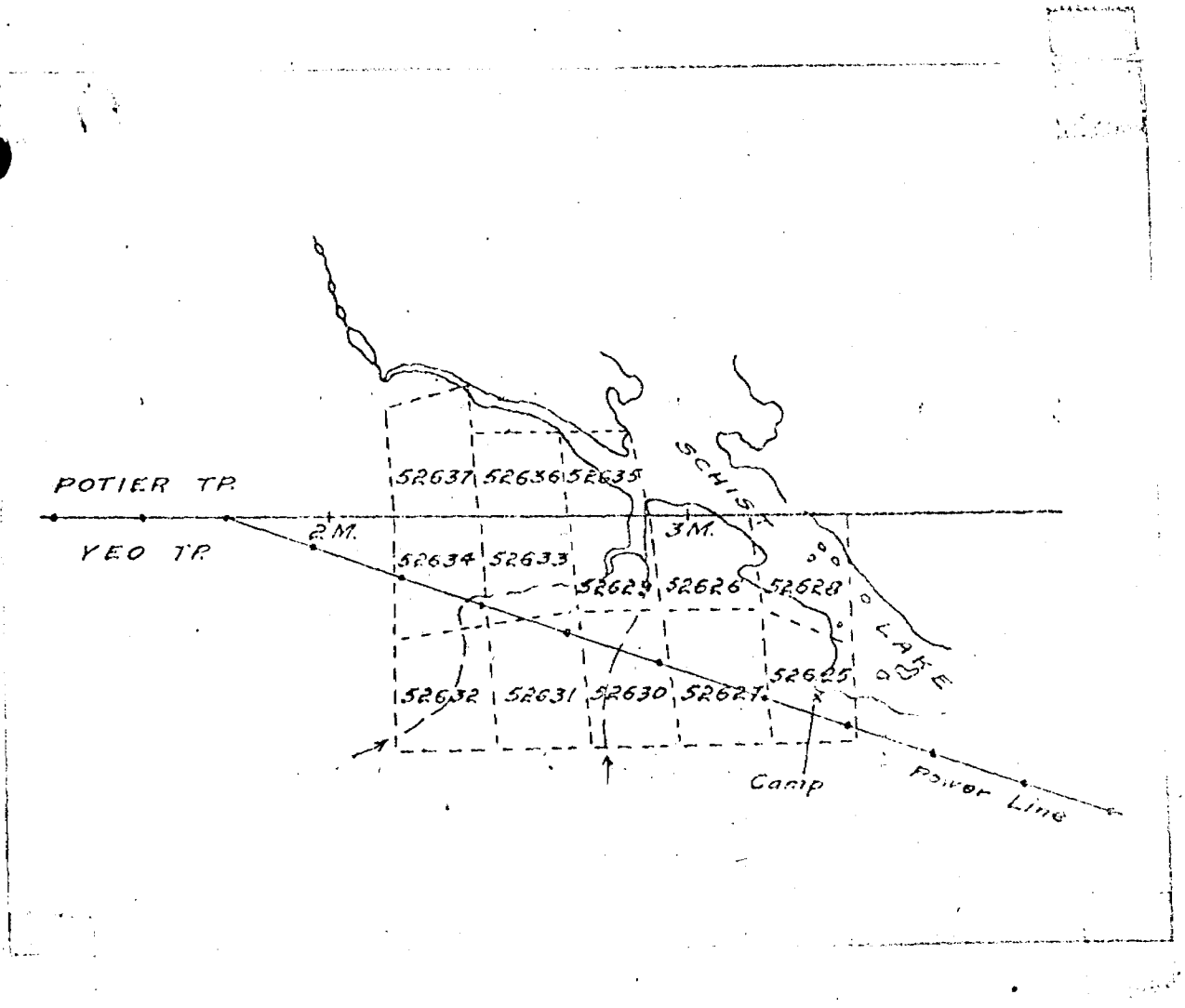
The following map sheets are submitted with this report :-

(1) One set of linen base map sheets on a scale of 100 feet to the inch.
(2) Two sets of coloured prints of (1).
(1) One set of uncoloured prints of (1).

Location of Property and Means of Access

The property consists of a well arranged group of 13 claims adjoining the west side of Schist Lake and straddling the boundary between Yeo and Potier townships, District of Sudbury. The sketch on the next page shows the disposition of the group, also the claim numbers and the location of the Hydro line and of the camps.

Schist Lake lies near the height of land between the C.P.R. and C.N.R. lines and about 100 miles north-west of Sudbury. Gogama on the C.N.R. is the nearest village of any size and most prospectors have favoured coming in by Gogama because it offers outfitting facilities and a choice of travel by plane, canoe or road.



Air travel is by far the most expeditious method of reaching Schist Lake and the air distance south-west from Gogama is only 16 miles. However, since no commercial plane is now based at Gogama, one is forced to hire a plane from South Porcupine or Sudbury, which makes the cost of a return trip fairly costly.

The canoe routes are longer and are described on page 2 of Laird's report. Shortly after the publication of this report a wagon road was built as a relief project from Gogama to Three Duck Lakes via the narrows at Beaver Lake, a distance of 23 miles, then extended to Schist Lake a further distance of 10 miles. The extension is not usable by team any longer but it is still possible to drive a light load to the Young-Shannon property on Three Duck Lake, whence one can follow the canoe route to Schist Lake via Bagsverd Lake and Schist Creek. The whole journey can be completed in one day with a light load and favourable weather.

An alternate route is available via the Jerome mine on Opeepeesway Lake which is 10 miles west by a canoe route that is more difficult than the one above. However, the mine itself is connected southwards to Ramsay on the C.P.R. by a good motor road 16 miles long.

In emergencies one can use a telephone by going either to the Hydro camp at the Beaver Lake bridge or to the Jerome mine.

Surveying and Mapping

To prepare the property for mapping it was necessary to survey the outside boundaries and to establish a grid of north-south picket lines. Although the claims had never been surveyed, the problem of surveying was helped considerably by the presence of the Yeo-Potier boundary line and of the Hydro power line to the Jerome mine. The township line provided mile post ties and a reference for azimuth; it was also used as a base line for turning off picket lines. The power line served as a secondary base line for adjusting picket lines.

Surveying was done by transit and steel chain wherever feasible. The small water gap on the township line across Cryderman Bay was measured by triangulation but all others were measured by stadia rod. Picket lines for mapping were measured off north and south with a metallic linen tape.

After lining in the township line by means of stations 1, 3, 5, 7, etc. and running a try line to the south boundary, it was obvious that two map sheets would have to be constructed. Consequently, a sheet for the three Potier claims was constructed on the basis of a traverse of stations 3, 47, 50, 52, etc. and a sheet for the ten Yeo claims on the basis of a traverse of stations 3, 17, 18, --42, 78, 72, 10 and stations 10, 78, 72, 78, etc. The adjustment and the plotting of these traverses was done by the method of co-ordinates using station 3 as a key point.

The picket lines were turned off the township line at 200 foot intervals eastward from station 3. Where the lake interfered on the east end of the Yeo sheet, the power line was used for turning off lines and a similar pattern was maintained. South of the power line the picket lines were run at 400 foot intervals only. All lines were picketed every 100' with sticks marked with two numbers, one designating the line and the other giving the chainage from the base line. The arrangement of co-ordinate, traverse and picket lines, also of stations and picket points is readily seen on the map sheets.

Mapping was carried out on a scale of 100 feet to the inch by traversing along the lines and between the pickets of adjacent lines with pace and compass. Because of moss and green bush conditions a grub hammer was found more useful on this property than the ordinary pick hammer. So far as possible all outcrops have been sketched and all features of interest recorded. As will be noted on the coloured map sheets, the contacts between certain bands of sediments were not drawn in with exactness due to the work involved and a shortage of time. Otherwise, it is believed that the picture on the map sheets is fairly complete.

Topography.

The topography around Schist Lake is of the dissected ridge type with a moderate relief. The main ridges and depressions are east-west conforming to the bedding and schistosity of the sediments. The largest ridge occupies the south portion of the Yeo claims and reaches a height of 200' above the waters of Schist Lake at a point on line 46 near the south boundary. Cross-fracturing of the sediments coupled with glacial action has produced many abrupt ravines and hollows which dissect the ridges in a north-south direction. Even on the flat tops of the larger

ridges the small outcrops have a trend in the same direction.

The average overburden is light and consequently outcrops are numerous. Most of them are covered with moss and small trees which have accumulated without interruption since the great fire of 1885. In general tree growth is prolific and shows the usual variation from jackpine on the rocky areas to poplar on the flats with other varieties intermingled on the slopes. Although large trees are scarce, it is noticeable that many jackpines are mature and are dying or falling on the outcrops. However, the bush is clean on the whole and travel is not difficult as this type of country goes.

The activities of beaver have produced varying conditions in the swamps along the two creeks on the property. The small lake which is shown on Laird's map has become a meadow and new lakes are in the making farther up the creek. The road into Cryderman's old camp is now blocked by a beaver pond which is in the process of becoming larger.

Geology and Structure

The regional geology is described on pages 7-22 of Laird's report and is illustrated on the map which accompanies it. At the west end of Schist Lake we have a picture of a lineal belt of sediments with a width of 1½ miles and a strike of S.70° E., flanked on each side by a belt of greenstone of similar width, the whole being contained between large areas of granite and gneiss. It is now generally accepted that the sedimentary belt, originally described as Keewatin under the name of the Ridout series, is a synclinal trough tightly folded into a vertical position and squeezed between the old basement rocks, the Keewatin volcanics.

Some justification for including the sediments with the Keewatin series is to be found in the presence of bands of greenstone-like lavas within the sediments. Several of these bands occur on the property and from them one would judge that normal sedimentation was interupted periodically by outbursts of vulcanism. Structure data from these same bands suggests that a synclinal axis lies close to the south boundary and crosses it at the south end of line 50. Thus the property embraces the north half of the syncline and portions of the north contact between sediments and greenstone.

The geological succession is indicated on the legend which is part of the Potier map sheet and will not be repeated here. The following descriptions of rocks are given in legend order beginning with the oldest, namely, the Keewatin greenstones,

Greenstone exposures are restricted to a few outcrops in the north-east corner of both map sheets. The rocks appear to be chloritized andesitic lavas and breccias. The greenstones on the islands in the Yeo sheet are believed to be part of the main belt while the sediments on the mainland to the north are considered to be a separate trough outside of the main syncline to the south.

As disclosed by mapping the sediments on the property can be divided into four main bands thus :-

(1) A lower band composed of conglomerate grading upwards into pebbly greywacke and greywacke and containing two lenses of reddish arkose;

(2) A middle band composed of chert breccias, tuffaceous conglomerate and gritstones grading upwards into cherts and cherty greywackes and containing beds of greenstone-like lava;

(3) Iron formation;

(4) An upper band of greywacke and pebbly greywacke containing some tuffaceous material and at least one band of lava.

The widths and dispositions of these bands can be readily followed on the coloured map sheets.

The rocks in band (1) are conglomerate and greywacke of the mudstone type and have many interesting features of weathering, alteration and minor folding. As a result of regional shearing the greywacke is really a phyllite and sometimes approaches the condition of a biotite schist. The pebbles of the conglomerate are flattened also, and the matrix is in the same shape as the greywacke to which it is akin. The two lenses of arkose form competent beds in the soft greywackes and as a result the rocks are more fractured than foliated. The north lens is very feldspathic and closely resembles a feldppar porphyry.

In band (2) there is a variety of rocks in which cherts and volcanic sediments predominate. North of the beaver meadows at the west side of the Yeo sheet there is a conspicuous breccia of chert fragments showing sericite alteration. This is followed southwards by a band of pillowed andesite, a lens of tuffaceous conglomerate, a broad band of cherty greywacke and finally a bed of altered green lava next to the iron formation. Eastwards the breccia and conglomerate fade into gritstones and cherty greywacke. Good exposures of cherts and cherty greywackes can be seen along the pole line between poles 446 and 453.

The iron formation (3) is fairly well banded in places. It is usually rusty weathering and is composed of alternating bands of grey to vitreous chert and limonitic material. A little jaspylite is seen occasionally. On the north side of the band cherts predominate while on the south side there is more ferruginous material which grades into argillite and greywacke. Thus the south contact is not easily defined and the one shown on the map sheet is somewhat arbitrary. Only one zone of magnetic attraction was found but the material causing the attraction was not well exposed. The sedimentary status of the iron formation is a point of doubt. After studying the break in the band east of Trail Creek without finding any evidence of faulting, drag-folding or abnormal elongation of the beds, the writer is inclined to adopt the modern theory that iron formation is igneous in origin. In this particular case the source material was probably injected along a shear rupture which tended to wander across the bedding planes in 'echelon' fashion, thus leaving gaps here and there in an otherwise continuous band. According to the regional map the Schist Lake band of iron formation, starting at a point two miles west of the property, works its way across the sedimentary beds and intrudes the greenstone

to the south. If this is so, it is difficult to argue for a sedimentary origin. However, for present purposes the iron formation has been left as part of the sedimentary sequence.

In band (4) the sediments revert to a mudstone type of greywacke with more and more pebbles showing as one approaches the south boundary. Most of the rock is a soft weathering, chloritic phyllite and resembles a sheared greenstone. There are two bands of lava indicated along the south boundary but it is believed that a synclinal axis passes between them and that each exposure is a segment of the same bed, one belonging to the north limb of the syncline the other to the south limb. At this point it should be observed that all beds to the south of the axis dip southward thus indicating an overturned attitude for the south limb of the syncline.

Apart from several diabase dikes which belong to a separate and later period of regional disturbance, intrusive rocks of the so-called Algoman period are conspicuous by their scarcity. The simplest explanation for their absence seems to be that after initial folding the sedimentary trough formed a plastic impenetrable mass that yielded easily to shearing but would not rupture to provide openings for intrusives and later 'breaks' for ore solutions. Only two types of intrusives are represented on the property, namely, diorite and granite porphyry.

Three disconnected fingers of diorite lie in the south part of the Yeo sheet. They trend south-east and the largest body is in line with the west segment of the iron formation band as if it had followed the same line of weakness. It is believed that these small diorite bodies are extensions of a large mass that occupies the north end of Moore Lake less than a mile to the south-east. The rock itself varies from a dark coarse gabbro to a gray quartz diorite.

A late phase of Algoman activity produced granite porphyry dikes parallel to the regional shearing. Unfortunately, these dikes are restricted to the greenstone with the exception of one which is close to the contact near the north-east corner post of the Yeo group. The main belt of sediments is devoid of a single dike. The rock is a hard pink porphyry, composed of crushed feldspar, large quartz eyes and very few dark minerals.

Apparently the sedimentary belt was more amenable to cross-fracturing than to strike rupture and a final period of disturbance produced vertical tension cracks across the strike of the sediments. Many of them opened sufficiently to let in diabase dikes that vary in width from 1 inch to 70 feet. The dikes exhibit the usual vagaries of their kind, such as splitting up and disappearing unexpectedly, and two of the large dikes show pseudo-faulting along an old shear plane. In contrast to the sheared material in which they lie the diabase rocks are fresh and massive. In spite of this most of the dikes lie in depressions and exposures are not as plentiful as one might expect.

Shearing

As a result of long continued folding and shearing movements all the rocks on the property are schistose in a greater or lesser degree, the plane of schistosity coinciding with the bedding of the sediments. The plastic mudstones of the lower and upper bands of the sedimentary series, which cover about threequarters of the area of the property,

have yielded gradually to shearing stresses and consequently heavy 'breaks' and crushed zones favourable for ore deposition are absent.

In the middle band the rocks are harder and more variegated with the result that some sharper shears are present along the contacts of the more competent beds. The best examples are to be seen along the north margin of the band where a cherty breccia is in contact with greywacke of the lower band. Here prospecting has uncovered a series of mineralized shears which have provided some gold values.

In the bed of Cryderman creek between the beaver meadows there is some heavy shearing and alteration against the band of pillow lava but it is difficult to pick out a single line of weakness.

North of the iron formation a sharp valley runs from picket 18+50 on line 10 to picket 21 on line 30. The presence of fissile material along the walls suggests that a strong shear is there but no sign of veining or mineralization can be seen. Another depression in line with the above one runs from picket 22 on line 38 to picket 24 on line 62 but the two are separated by a bridge of normally sheared outcrops.

North and south of the west band of iron formation there is some sharp shearing that may have had an influence on the veining and mineralization which is scattered here and there along the length of the band.

Other shears of smaller magnitude have been recordd by mapping and sampling and will not require further description.

In connection with shearing it should be noted that minor dragfolding is common. One of the best examples occurs on the power line at the west boundary where an axis of dragfolding can be followed for 200 feet in a south-east direction.

Cross-faulting

As pointed out earlier a late disturbance of the rock structure produced a pattern of vertical cracks across the planes of bedding and schistosity. East of the property at least three sizeable faults are reported to belong to this period of north-south fracturing. Our mapping on the other hand has shown that there is no appreciable amount of cross-faulting on the property. Particular attention was paid to the depression formed by Cryderman Bay and Trail Creek valley since Laird had shown a right hand fault there. The actual dislocation of the band is left-handed and is due to a cause other than simple faulting.

Description of Showings

Previous work on the property has been concentrated on four groups of showings as follows :-

(1) A mineralized shear zone exposed in seven pits on each side of a trench-like inlet of Cryderman Bay;

(2) Mineralized veins in the iron formation east of Trail Creek;

(3) Veined material in the iron formation west of line 14;

(4) Vein material in the iron formation east of (2).

These showings are fairly well illustrated on the Neo map sheet and a few notes only on the structure and mineralogy will be added.

Group (1) constitutes the main showing of the property and a reference was made to it under the heading of 'Shearing'. The pits and trenches show that we are dealing with a silicified and mineralized lens of schist that contains a series of sharp shears. The lens reaches a maximum width of 30 feet at pit 1-W and splits up to the east and west as the shears spread apart or weaken. Some of the shears are not shown on the map sheet due to lack of exposures, for example, in the trench southward from pit 4-W and in the ground north of pit 2-E. Dips of the shears vary from 75 to 90 degrees south. There may be a small amount of left hand faulting between pits 1-E and 1-W but, if there is, the displacement is less than 20 feet. A diabase dike occupies the trench-like bay and another lies to the west of pit 4-W, and whatever the significance may be, the mineralization and alteration are much heavier in this section than in the one east of the bay.

The rocky matter in the lens is mostly sericite schist impregnated with silica and carbonate. In the heavy shears the material becomes fissile and develops rusty gouge in seams. A black cherty schist is a feature of the west pits and seems to be associated with the heavy mineralization in pits 2-W and 4-W. A little of it also appears in pit 2-E.

Mineralization consists of finely disseminated pyrite and pyrrhotite with occasional mattings of arsenopyrite needles. Massive streaks of pyrrhotite occur in 1-W and of pyrite in 2-W and 4-W. Quartz is present with some of the heavy mineralization and occurs as veinlets throughout the zone of alteration.

In the description on page 31 of Laird's report gold values up to $4.00 per ton are quoted, presumably at the old price of gold. The writer has not seen the results of recent sampling but Mr. Arnott has reported that values are low and are restricted to the sections carrying arsenopyrite.

Showing (2) consists of three mineralized quartz veins exposed in four trenches on an outcrop of iron formation east of Trail Creek. The vein on the south side of the outcrop and the one on the west side of the outcrop are the more promising. They contain a heavy mineralization of pyrite and arsenopyrite but the best sample yielded only 0.13 ozs. in gold per ton. No information is available concerning the X-ray drill hole that was pointed to cut the two veins just described.

West of line 14 there are four rock trenches and an X-ray drill hole on an outcrop of siliceous iron formation. These belong to showing (3). The iron formation is well banded and contains vein quartz but the mineralization is sparse and not very interesting.

East of showing (2) a series of ten trenches has been dug at intervals along the east band of iron formation. The most westerly trench near line 38 contains the most promising material. Some quartz veins cut the chert and jaspylite of the iron formation and are well mineralized with coarse pyrite and arsenopyrite. Values apparently are low.

In addition to these showings a few rusty shears and some quartz veins have been indicated on the map sheets. In point of size the large vein in the north-west corner of the Potier claims is the most important. The vein matter is glassy quartz with small amounts of chlorite and gold values are reported to be negligible. Little veins of glassy quartz can be found over many of the outcrops. Some are in the bedding planes and some lie obliquely to the beds, while some are connected with small dragfolds. The norun band of arkose contains a great number of small veinlets with a south-east orientation that is probably due to some east-west shearing. None of these small veins seem to be of economic interest.

Sŏastika, Ont., Nov. 10th, 1950.

W. Gerrie.

W. Gerrie.

Schist Lake, Potier Sheet
Claims 52635-37
W. Gerrie, Sept. 1960

SURFACE PLAN AND GEOLOGY

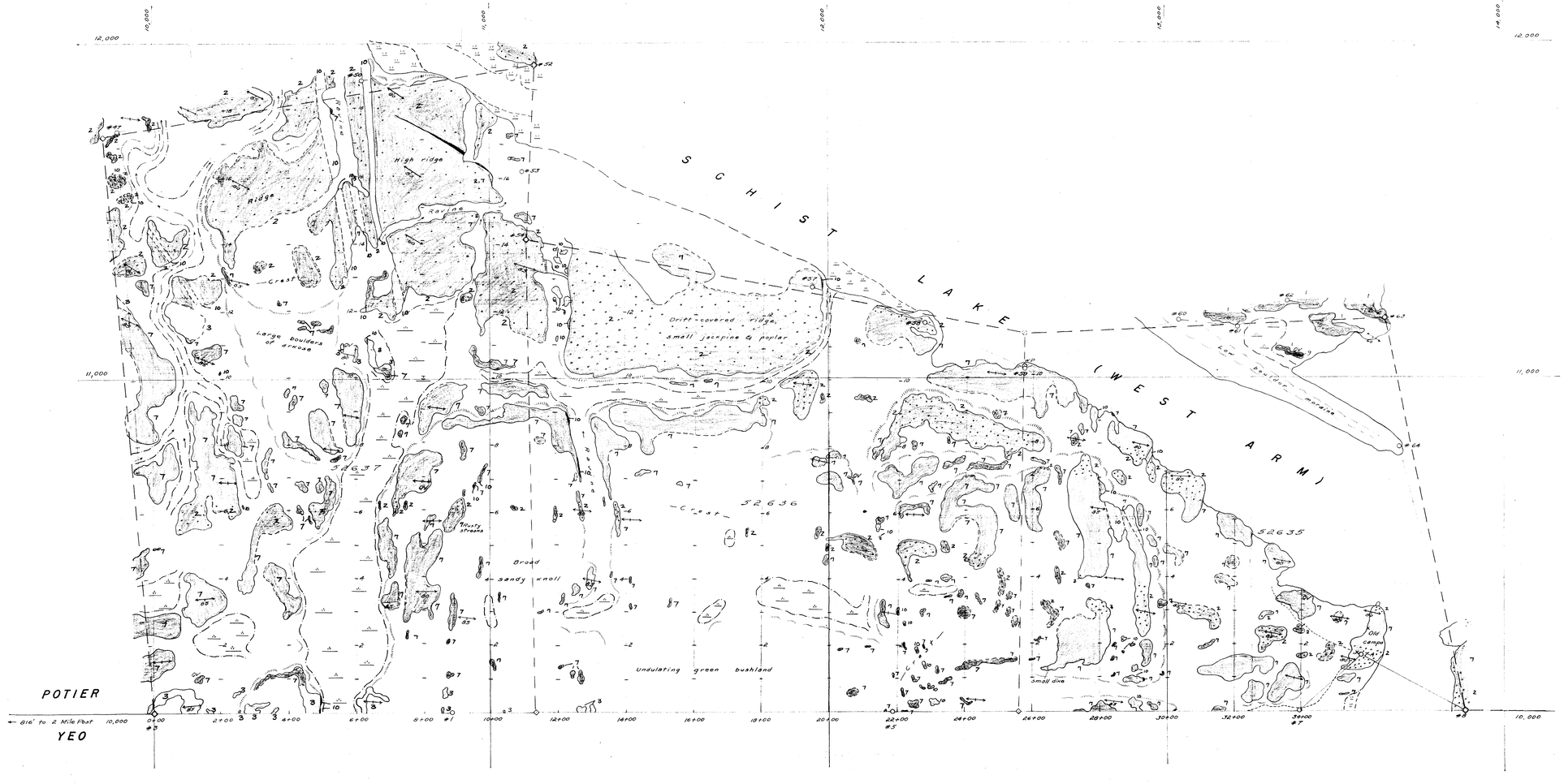
CLAIMS 52625-37

YEO AND POTIER TOWNSHIPS

DISTRICT OF SUDBURY, ONTARIO

SCALE IN FEET

0 100 200 300



LEGEND

10	10	Diabase
9		Granite porphyry
8		Diorite and gabbro
7		Greywacke with minor amounts of conglomerate
6		Iron formation
5 Ridout		Andesite interbanded with 4 and 7
Series 4		Tuffaceous conglomerate, breccia & grit, chert & cherty greywacke, etc.
3	3	Arkose interbanded with 2
2		Conglomerate, pebbly & argillaceous greywacke
Keewatin Series?		Andesite & related greenstone

- Property boundary
- Surveyed or picketed line
- 8,000 Co-ordinate line
- 431 Power line
- ⊕#5 Transit station
- ◇ Claim post
- Bush road
- Trail
- Streams
- Base of slope
- Boundary of low ground
- Swamp; beaver flooding; sedge.
- Pits, trench, stripping
- Outcrop boundary, contact or shore line
- 60 Strike & dip of beds
- 70 Strike & dip of schistosity
- Heavy localized shear
- Lava flow faces north; ditto south
- QV Quartz vein or veinlets
- Min Pyritic mineralization
- As Arsenopyrite
- P Pillows in lava
- Gr Grained lava
- 4W Trench No.

63A.95


POTIER
YEO
SCHIST LAKE
CRYDERMAN BAY
52626
52628
52625
52627
52630
52631
52632
52633
52634
Sandy moraine covered with jackpine
Old beaver meadow
Balsam creek
Flat-topped hill poplar bush
undulating bushland, poplar mostly
High undulating bushland sloping northwards
Schist Lake, Yeo Sheet
Claims 52625-34
W. Gerrie, Sept. 1930