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By

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TABLE OF CONTENTS

Page No.

LIST OF FIGURES

LIST OF TABLES

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1. INTRODUCTION

The Historical Research Project is a special project funded by COMDA, the Canadian-Ontario (1985) Mineral Development Agreement for the period January 1987 to March 1990. This unique project involves the retrieval and utilization of historical information to deepen the mineral occurrence data base of the Beardmore-Geraldton Resident Geologist District. The three main objectives of the project are:

1) to document old/forgotten mineral occurrences
2) attempt to locate the missing occurrences in the field
3) provide the gathered information to prospective clients in readily researchable file/data base format.

This project has developed from research of historical newspapers, mining journals and geological reports, initiated in the early 1980's by Ken Fenwick, Manager, Northwestern Region, Mines and Minerals Division. Through similar research a comprehensive set of files have been established. Prospectors and companies may utilize information within the files to research a specific area of interest, or to help evaluate a property already held. The files may indicate forgotten occurrences located within these areas of interest. Secondly, the files may be used to follow up a discovery of old workings that you found in the field.

Increasing the mineral occurrence data base with information generated through the Historical Research Project will stimulate exploration in the Beardmore-Geraldton District.

Manuscript approved for publication by K. Fenwick, Manager, Northwest Section, Mineral Resources Section.

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2. GENERAL GEOLOGY AND MINERALIZATION

A. GENERAL GEOLOGY

In the earliest geological and reconnaissance reports by Bell (1869), McInnes (1894), Dowling (1898), Neelands (1900) and Parks (1902), the Archean rocks in the Beardmore-Geraldton-Longlac area were assigned to one group termed the Huronian and the granitic rocks were grouped as the second group namely the Laurentian. A more detailed examination of these rocks was made by Coleman (1907, 1909) and Moore (1907) which focussed on the iron deposits of the region. The iron deposits, at that time, were regarded as the most important mineral deposits of economic interest. The Archean rocks were classified into the two major groups on the basis of a recognized unconformity.

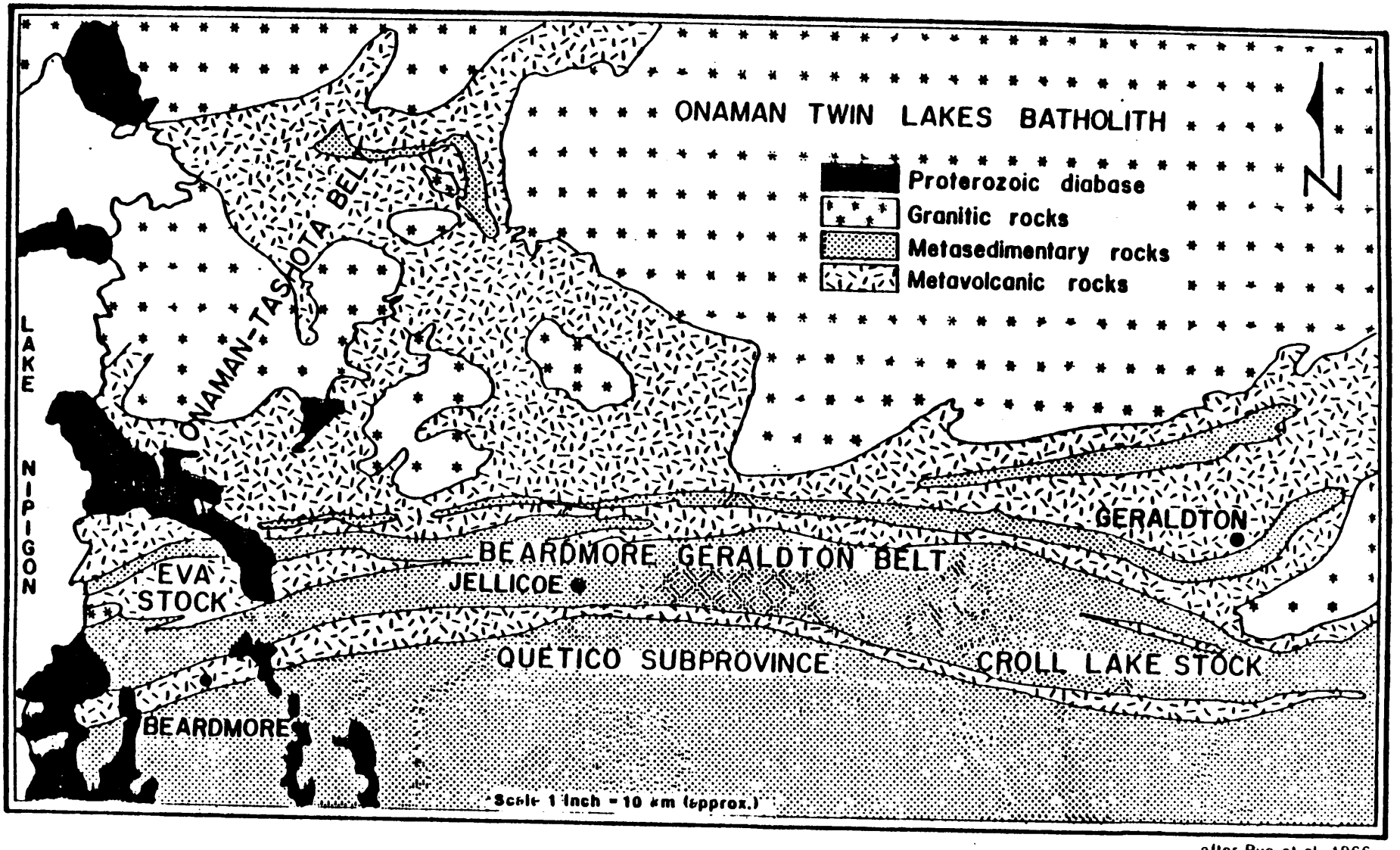
In the Sturgeon River area and vicinity, lithologies are described in published reports and maps by Wilson (1910), Burrows (1917), Tanton (1918, 1935), Langford (1929) and Bruce (1937a), in similar classifications, although the terms applied to the groups are not always the same.

The geology of the Beardmore-Geraldton area (Figure 1) has been described in detail by Mason and White (1986) so that only a brief résumé of the general geology will be given in this report.

The Beardmore-Geraldton-Longlac area is underlain by metasedimentary and metavolcanic rocks belonging to the southern portion of the Wabigoon Subprovince. The lithologies have been further subdivided into two belts: the Beardmore-Geraldton belt and the Onaman-Tashota metavolcanic belt. These two belts are separated by an east-west trending dextral transcurrent fault termed the Paint Lake Fault.

The Beardmore-Geraldton belt is situated within an east-trending isoclinally folded metavolcanic-metasedimentary sequence. Lithologic units have been tectonically transposed into a series of alternating slices of metavolcanics and metasediments within a wrench or mega-shear zone. The Beardmore-Geraldton belt has been divided lithologically into the: (1) Southern metavolcanic sub-belt and (2) Southern metasedimentary sub-belt.

The Southern metavolcanic sub-belt is composed of magnesium to iron tholeiites forming an east-trending narrow unit. The metavolcanics consist of massive, pillowed, amygdaloidal and rarely variolitic flows. Iron tholeiite flows are 15 m to 25 m thick consisting of a massive, medium-grained basal part, crudely fining upward, becoming aphanitic and commonly pillowed. Intermediate to mafic tuffs are medium- to fine-grained light green rocks which display a weak foliation due to the alignment of metamorphic biotite and other mineral and rock fragments. Chemical metasediments including iron formation are common and occasionally occur with rare thin beds of clastic sediment. Beds trend 70° to 85° and generally are 1 to 2 m wide. The chemical metasediments form continuous regional features, 100 m to 1 km in strike length.



after Pye et al, 1966

Figure 1: **A generalized geological map of the Beardmore Geraldton Area.**

The Southern metasedimentary sub-belt hosts 11 past-producing gold mines. Metasedimentary rocks consist of wacke, conglomerate, siltstone, and magnetite-hematite-chert (± jasper) iron formation. Isoclinal folding and tight drag-folding occur both in the Beardmore and Geraldton areas. Drag-folds and ore-bearing structures in the Beardmore-Geraldton region plunge typically westward at 25° to 40°. In the Geraldton camp, most gold production has come from the rocks adjacent to, and north of, the Bankfield-Tombill Fault and south of the Portage Shear Zone-Little Longlac Fault within the Barton Bay Lithotectonic Zone (Macdonald 1988).

Property visits under the Historical Research Project have led to reinterpretation of the geology of the Adel Lake area at the eastern extension of the Beardmore Geraldton belt. Amukun (1984) mapped the rocks as foliated to cataclastic pegmatites, but more detailed mapping by Atkinson (1985b), confirmed by field visits by the authors, reinterprets the sequence as mafic to felsic metavolcanics. The metavolcanics and contact area with granitic rocks are high mineral potential areas.

The Onaman-Tashota metavolcanic belt is a felsic to mafic metavolcanic (calc-alkaline and tholeiitic) sequence bounded to the south by the Beardmore-Geraldton belt's northern contact, the Paint Lake Fault. Metavolcanic rocks of the Onaman-Tashota terrain are deformed into arcuate shapes by the emplacement of intervening granitic intrusions. Regional lineaments or faults trend north and northeasterly.

Mafic metavolcanics in the Onaman-Tashota metavolcanic belt are intercalated with felsic pyroclastic rocks with minor quartz porphyry and rhyolitic flows. The mafic metavolcanics consist of massive to foliated, pillowed, porphyritic and amygdaloidal flows, chlorite schist, tuff, lapillistone, tuff breccia and agglomerate. Felsic metavolcanics consist of rhyolite to rhyodacite, rhyolite porphyry, crystal tuff, lapilli-tuff, tuff breccia, rhyolitic quartz feldspar porphyry and pyroclastic breccia. Metasediments are also present as argillite, arkose, wacke, sandstone, conglomerate and minor chemical metasediments.

Late intrusive rocks including gabbro, diorite, granodiorite, quartz-diorite, monzonite, feldspar porphyry and quartz-feldspar porphyry have intruded rocks of the Beardmore-Geraldton belt and the Onaman-Tashota belt. Late felsic intrusions include pegmatite and felsite. Late Precambrian (Proterozoic) diabase intrudes all rock types. Metamorphic grade is commonly greenschist but ranges to amphibolite grade.

B. MINERALIZATION

The Beardmore-Geraldton-Longlac area contains occurrences and deposits of asbestos, beryl, cesium, copper, gold, iron, lead, lithium, molybdenum, nickel, palladium, platinum, silver, tantalum, tin, tungsten and zinc.

Iron was the main commodity sought for in the early 1900's, however, the search for gold took precedence in the middle 1910's and early 1930's.

Gold

i) Beardmore-Geraldton Belt:

Relative to other gold producing regions in the province, Beardmore-Geraldton is a young camp having commenced production in the mid-1930's. The Beardmore-Geraldton-Longlac-Tashota-Onaman gold area has produced an estimated 4 373 300 ounces of gold from at least 24 operations in the district (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

Gold mineralization within the belt occurs primarily as fracture filling quartz veins and pyritic replacement in iron formation. Gold occurs in quartz (carbonate) veins as coarse free gold or as fine microinclusions associated with arsenopyrite, pyrite, pyrrhotite and scheelite. Sulphides, including arsenopyrite, pyrite, pyrrhotite and chalcopyrite, occur as vein-related replacement minerals within quartz veins or within bedded chert-magnetite iron formation hosted in wacke-siltstone-argillite sequences of the Southern metasedimentary sub-belt.

Structurally, favourable areas in the Beardmore-Geraldton belt are fracture zones, fold noses, contacts between rock type and axial planes.

ii) Onaman-Tashota Belt:

Gold is hosted in three environments (Patterson et al., 1987): (1) vein type deposits; (2) chemical metasedimentary type deposits; and (3) shear disseminated type deposits.

Within vein type deposits, gold is associated with quartz (carbonate) veins hosted by felsic to intermediate metavolcanics and often located marginal to felsic intrusions (dikes or stocks). In chemical metasedimentary type deposits, gold is hosted within the chemical metasediments (chert, iron formation). Shear disseminated type deposits represent shear zones which contain disseminated pyrite, pyrrhotite and/or chalcopyrite with related gold mineralization. These shear zones are hosted by felsic metavolcanic rocks, mainly crystal tuffs, lapilli tuffs, volcanic breccias, rhyolite, dacite and/or feldspar/quartz porphyry.

Base Metals

i) Onaman-Tashota Belt:

Base metal deposits have been found in the Onaman-Tashota metavolcanic belt. The deposits are mainly restricted to Marshall-Gripp lakes and Onaman Lake areas.

N. W. T. Copper Mines Ltd. holds the largest base metal deposit at Marshall Lake. This deposit has drill-indicated reserves of 2 211 000 tons of ore averaging 1.22% copper, 4.20% zinc, 2.45 ounces Ag per ton and 0.012 ounce Au per ton (Canadian Mines Handbook, 1985-86).

TABLE 1 - PAST GOLD AND SILVER PRODUCTION IN THE BEARDMORE-GERALDTON AREA
(MODIFIED FROM MASON, WHITE & MCCONNELL, 1985)

MINE/PROSPECT	YEAR(S)	OUNCES GOLD	OUNCES SILVER	TONS OF ORE MILLED	AVERAGE GOLD GRADE - OZ/TON	AVERAGE SILVER GRADE - OZ/TON
Adair	1931	15	6	34	0.44	0.176
Bankfield	1937-42 1944-47	66 416	7590	231 009	0.29	0.03
Brenbar (Brengold) (Casey Contact)	1941, 1949	134	--	46	2.91	--
Consolidated Louanna (Lake Osu Mines)	1983-84	15 400[3]	--	70 000[3]	0.22	--
Crooked Green Creek	1980 1981 1982 1984[1]			200 350 750 540[1]	0.43 0.25 0.265 0.42[1]	
Dik-Dik (Orphan)	1934-35	2460	1558	3525	0.70	0.44
Greenoaks	1982	457	311	2448	0.34	0.13
Hard Rock	1938-51	269 081	9009	1 458 375	0.18	0.01
Hutchison Lake (Maylac)(Gulch)	1946-47	792	46	1518	0.52	0.03
Jellicoe	1939-41 1949	5675	515	14 722	0.40	0.03

Table 1 continued...

MINE/OCCURRENCE	YEAR(S)	OUNCES GOLD	OUNCES SILVER	TONS OF ORE MILLED	AVERAGE GOLD GRADE - OZ/TON	AVERAGE SILVER GRADE - OZ/TON
Leitch	1936-68	861 982	31 802	1 022 360	0.92	0.04
(Teck)	1980	N/A[4]		50 000[4]		
(Teck)	1984	5500[3,4]		50 000[3,4]	0.11[4]	
(Ateba)	1987-88	1485		14 846	0.1[3,4]	
Little Long Lac	1934-54 1956	605 499	52 750	1 780 516	0.34	0.03
MacLeod-Cockshutt (MacLeod-Mosher)	1938-70	1 516 980	108 185	11 159 558[3]	0.14[3]	0.09[3]
Magnet Consolidated	1938-43 1946-52	152 089	16 879	359 912	0.42	0.05
Maloney Sturgeon	1937	73	16	1	73.00	16.00
Mosher Long Lac (Consolidated Mosher/MacLeod Mosher)	1962-66 1967-70	330 042 180 576	34 586 17 321	2 710 657	0.12	0.01
Northern Empire (Beardmore)	1934-41 1949, 1979,1982	149 493[2]	19 803[2]	425 866[2]	0.34	0.05
(Pan Empire: Ateba)	1987-88	1176.3[4]		16 336.9[4]	0.072[4]	
Sand River	1937-42	50 065	3628	157 870	0.28	0.02
Sturgeon River (Quebec Sturgeon River)	1936-42	73 438	15 922	145 123	0.51	0.11
Talmora Long Lac (Elmos Gold Mine)	1942 1947-48	1415	66	9570	0.16	0.01

Table 1 continued...

MINE/OCCURRENCE	YEAR(S)	OUNCES GOLD	OUNCES SILVER	TONS OF ORE MILLED	AVERAGE GOLD GRADE - OZ/TON	AVERAGE SILVER GRADE - OZ/TON
Tashota-Nipigon	1935-38	12 356	14 527	51 200	0.24	0.28
Theresa	1935-38 1941-43 1945 1950-53 1955	4717	198	26 120	0.18	0.01
Tombill	1938-42 1955	69 120	8595	190 622	0.36	0.05

[1]#2 Zone; production 1980 to 1982 from #1 Zone.
[2]Does not include 1979 production figures.
[3]Approximate production figures.
[4]Waste Dump
N/A - Not Available

3. EXPLORATION AND PRODUCTION HISTORY

A. EXPLORATION HISTORY

Iron first drew prospectors to the Beardmore-Geraldton-Longlac area in 1900 and 1901 when claims were staked around Lake Kenogamisis (Little Long Lac) and west of Beardmore, near what later became the Leitch gold mine.

In the Onaman-Tashota area, the first discovery of gold was made in a quartz vein at Howard Falls on the Kawashkagama River in 1915 and was known as the King-Dodds occurrence. The following year, 1916, discoveries of gold were made at a number of properties, including the Hendrickson and the Cline (Paulpic), the Hull (Kipper-Tashota), the Richardson-Loudon-Ogilvie, the Devanney (Edge Lake) and the Wells (Wascanna). A mining recorder's office was established to process applications for staking and recording of work during the "rush" that ensued.

In 1916, A.G. Burrows conducted reconnaissance geological mapping on behalf of the Ontario Bureau of Mines in the Beardmore-Jellicoe-Longlac area. He found visible gold associated with a quartz vein in a CNR railway cut near Jellicoe, which helped spark a gold rush to that area.

In the Geraldton area, gold was first discovered by Tony Oklend in 1917 just south of the Main Narrows of Kenogamisis Lake (Little Long Lac) in Ashmore Township. This discovery was made in a piece of boulder float, the source of which was never found. In the same year, T.L. Tanton of the Geological Survey of Canada verified the presence of gold at the Main Narrows.

In 1925, Powers and Silam made the first discovery of economic importance in the Beardmore area. This was to become the Northern Empire (Beardmore) Mine and later the Pan-Empire Mine. This mine started production in 1934.

The area east of Lake Nipigon became a target of an extensive search for gold in the 1930's. The exploration area extended from Lake Nipigon eastward to Long Lake and Nakina.

In the spring of 1931, a discovery of gold-bearing quartz stringers within a narrow shear zone in wacke was made by W. W. ("Hardrock") Smith and Stan Watson. The location was at the water's edge on the point approximately 0.3 km south of the West Narrows of Kenogamisis Lake on what is now the Hard Rock Gold Mines Limited property. Smith staked a group of 12 claims and optioned them to the Homestake Mining Company Limited. Homestake dropped the option in 1932 after encountering low gold values and the Hard Rock Gold Syndicate looked for other ways to finance exploration. However, a renewed interest in the area eventually led to a "staking rush" in the early and mid 1930's. In mid 1931, Tom Johnson and Robert Wells made a gold find on the shore of Magnet Lake, which became the Bankfield gold mine.

In July of 1932, T. A. Johnson and T. Oklend discovered narrow gold-bearing quartz veins along the south shore of Barton Bay, on Kenogamisis Lake, on what is now the Little Long Lac gold mine property. Results from diamond drilling the veins led to shaft-sinking and underground development, and resulted in the establishment of the first producing mine in the Little Long Lac (Geraldton) area.

After Smith made his discovery in 1931, a group of claims was staked along strike immediately west of Smith's property by Fred MacLeod and Arthur Cockshutt. This group of claims, along with five claims recorded by Mrs. Maude Gascon, formed the basis of the MacLeod-Cockshutt Gold Mines Limited in 1933.

The renewed interest in the Geraldton area spread to the west end of the belt, including the Beardmore area, and led to the development of a number of gold mines. The Northern Empire, Dik Dik and Little Long Lac Mines began production in 1934, followed by the Tashota-Nipigon and Theresa mines in 1935, and Leitch gold mine and Sturgeon River gold mine in 1936. Nineteen thirty-seven saw production begin in two additional mines, the Bankfield and the Sand River, while four mines began production in 1938. These were Hardrock, MacLeod-Cockshutt, Magnet and Tombill. The Jellicoe gold mine began producing in 1939. The high number (14) of mines which were producing in the 1930's, extended briefly into the 1940's, with the opening of the Brenbar in 1941, Talmora Long Lac in 1942, and Hutchison in 1946. The following text will outline the production history of mines of the Beardmore-Geraldton area.

B. PAST PRODUCTION

Twenty-one mines (defined as having extracted 100 ounces of gold or more) produced precious metals at various times and intervals from 1934 to 1968. Totals of approximately 4 115 000 ounces of gold and 318 500 ounces of silver were produced during the above period.

The last two mines to cease production were the Leitch Mine and the MacLeod-Cockshutt Mine. Each ended production in 1968. Production was 847 690 and 1 475 728 ounces of gold and 31 802 and 101 388 ounces of silver, respectively. Approximately 24 000 tons of waste dump material from the Leitch Mine were processed in 1984 with a recovery of approximately (2640) ounces of gold. Waste dump recovery was also undertaken on the Leitch Mine in 1980 and 1987/88.

Copper as well as gold and silver were produced at the Tashota-Nipigon Mine near Onaman Lake yielding 360 539 pounds of copper as well as 12 356 ounces of gold and 14 527 ounces of silver.

During 1942 and 1943, 9900 pounds of high and low grade concentrates of tungsten (WO_3) were processed by Little Long Lac Gold Mines Limited and 9800 pounds by Leitch Gold Mines Limited.

Gold has been, and continues to remain, the main metal explored for within the Beardmore-Geraldton belt. In contrast, exploration in the Onaman-Tashota belt has been concentrated in volcanogenic massive sulphide environments for base metals. Base metal prospects containing zinc and lead with precious metals, and copper with precious metals, occur west and northwest of Onaman Lake. Copper-lead-zinc deposits with gold and silver occur in the Marshall Lake-Gripp Lake area. Copper-nickel prospects occur in the Toronto-Juneau lakes and Elmhirst Township areas.

Pegmatite deposits containing beryl, cesium, lithium, molybdenum and tantalum mineralization occur mainly in the southwestern portion of the district in the vicinity of Georgia Lake, Lake Jean and Postagoni Lake.

Iron deposits occur throughout the district, notably in Irwin Township, near Beardmore; at Barton Bay, Kenogamisis Lake at Geraldton; at North Lamaune Lake northwest of Auden; at Briarcliffe Lake and Two Mile Lake north of Nakina; in Suni Township south of Kowkash; northeast and southeast of Summit Lake; and north of Stewart Lake, as well as elsewhere.

Gold and silver production for former mines in the Beardmore-Geraldton District are outlined in Table 1 on the following pages. The text following the table describes each deposit briefly.

ADAIR PROPERTY

In the mid-nineteen twenties, a shaft was sunk on K.K. 990 in the Tashota area, known as the Adair property. The only production figures available are from 1931 when it was reported that 15 ounces of gold and 6 ounces of silver were recovered after smelting at Noranda Raebec (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay). Kindle (1932 p. 94) describes the location and geology of the Adair property:

> "This property (claims K.K. 986, 989, 990, 996) lies 2 miles south of the station at Tashota. The shaft is on claim K.K. 990.
>
> The country rock is Keewatin greenstone. The eastern margin of the granite batholith reaches to within a few hundred yards of the vein showings and shaft. The rocks in the vicinity of the shaft are a succession of 200 feet of highly schisted and curly chlorite greenstone schist and rhyolite striking from due north to 25° and dipping generally 70° E. Quartz veins of a few inches in width permeate the rhyolite porphyry, some bands of which are 10 to 25 feet wide. The greenstone schist members are derivations from lava and early quartz diorite intrusive bodies. The latter shows on its surface numerous light-coloured spots of kaolinized feldspar. One quartz porphyry dike cuts the volcanics at 125° and in proximity to this, two Keweenawan diabase dikes.
>
> The shaft, which is vertical and about 70 feet deep, was sunk about five years ago several feet west of the high-grade discovery vein, which strikes 25° and dips 75° S.E. According to Ross Barnum, who helped to sink the shaft, there are no signs of the vein in its lower levels.
>
> Channel sampling, done under an option held by the Timmins interests, showed $225 in gold over a length of 4 feet 3 inches, but the samplings were of a low-grade average from the shear zone north of the vein. The high-grade vein was again sampled in October, 1930, by W.H. Hansen for the McVittie Graham Mines, Limited, from which Geo. Adair reports an assay value of $185 across 4 feet. Mr. Adair states that the discovery vein mentioned above also carries several ounces of silver to the ton, and it is his intention to follow this vein downwards, to sort the high-grade ore, and to ship a carload to the Noranda smelter."

ATEBA MINES INC.

In 1987-88 Ateba Mines, Inc. milled approximately 31 183 tons of gold ore at the Pan-Empire Mill facility. The total amount of ore milled is made up of 14 846 tons of Leitch gold mine waste dump material at 0.01 ounce Au per ton and 16 336.9 of Northern Empire (Pan Empire) gold mine waste dump material at a head grade of 0.072 ounce gold per ton (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

Refer to the write-ups on the Leitch Mine and Northern Empire Mine property in this volume for information on the geology and mineralization.

BANKFIELD MINE

The Bankfield Mine, located 8.25 km west of Geraldton, was found in 1931 by Tom Johnson and Robert Wells and became the second gold producer in the "Geraldton Camp" (Little Long Lac gold mine was the first). Shaft-sinking began in 1934 and in 1935 the shaft had reached a depth of 552 feet with levels at 150, 275 and 525 feet. In 1937, the Bankfield Mine poured its first gold brick. The Bankfield Mine produced in the years 1937 to 1942 and again in 1944 to 1947. Total production was 66 416 ounces of gold and 7590 ounces of silver (Ferguson et al., 1971).

The property is located in the west central part of Errington Township extending into Lindsley Township, enclosing the southwestern part of Magnet Lake.

The general geology of the Bankfield Mine is described by Ferguson et al. (1971):

> "Greywacke with bands of conglomerate, slate and iron formation strike N60°-70°W and dip 75°-80°S. They have been intruded by diorite, quartz porphyry and ultimately by a 200-foot wide diabase dike which runs parallel to a strike fault near the mine workings. The main ore horizon consisting of a sheared, brecciated and highly silicified zone occurs near a contact between the sediments and a porphyry-diorite mass. It strikes N72°-85°W, dips 70°-78°S, has an average width of 7 feet and is, including its extension into the adjacent Tombill property, 2,000 feet long. The main associated sulphides are pyrite, arsenopyrite and pyrrhotite. Recovery of gold average 0.29 ounces per ton of ore milled."

A more detailed description of the property can be found in Pye (1952), p. 70-82.

BRENBAR (BRENGOLD/CASEY CONTACT) MINE

The Brenbar Mine (also known as the Brengold, Casey Contact or the Brennan and Kenty property) was a small gold producer. In 1941 and again in 1949, small shipments of ore were sent to the Magnet Consolidated mill for treatment. Total production was 134 ounces of gold (Ferguson et al. 1971).

The property is located in the northeastern portion of Irwin Township, immediately south of the Sturgeon (Namewaminikan) River and immediately west of the Sturgeon River Mine.

The general geology of the property has been described by Mackasey (1975):

> . . . "The area is underlain by east-trending, deformed tuff-breccia, pyroclastic breccia, and fine-grained flows and tuffs of intermediate to felsic composition. . . .Tourmalinization has occurred in some of the volcanic rocks. Quartz feldspar porphyry outcrops in the northeastern part of the claim group. Units dip about 70° to the south."

A description of the gold occurrences is given in Laird (1937) as follows:

> "The more important showings are located along an east-west ridge that extends over parts of three claims, T. B. 13,563, 13,566 and 13,569. They occur in a highly chloritic tuff, which has been strongly sheared at N. 80° E. In places the rock becomes quite agglomeratic, but shearing commonly tends to destroy the usual fragmental appearance. The fine-grained tuff in places shows faint bedding parallel to the schistosity, and in one outcrop near the west boundary of claim T. B. 13,568, excellent bedding was observed. The veins are more or less parallel to the schisting, but in some cases they cut across it.

The discovery vein, No. 2, is located near the east boundary of claim T. B. 13,566 and is exposed for a length of 200 feet along the contact between a "green" dike and highly altered tuff. It is lens-like in character, ranging from 12 to 50 inches in width. It strikes in an easterly direction, but toward the east end it turns sharply southward, more or less folding back on itself. Rather severe faulting complicates the vein system. The quartz is rusty and much fractured, and it contains moderate quantities of pyrite, chalcopyrite, and visible gold, and a little carbonate.

About 60 feet southeast of the discovery vein is No. 7 vein, which is exposed in a cribbed trench and on surface for about 65 feet. It strikes N. 75° E. and dips 80° S. It has a maximum width of 30 inches, but the average width is probably not more than 10 inches. The quartz is moderately mineralized with pyrite, chalcopyrite, galena, zinc blende, and visible gold, and contains appreciable quantities of carbonate (ankerite) and sericite. The immediate wall rock is a rusty, bleached sericite schist carrying no gold values. As a result of the diamond-drilling of this vein, it was decided to proceed with underground development and a shaft was sunk 20 feet to the south.

Next in importance is No. 5 vein, which is located in the extreme northeast corner of claim T. B. 13,563 and is exposed over a length of 275 feet. It strikes N. 25° E., and dips steeply to the west. It has a maximum width of 33 inches, but narrows down in places to a mere stringer. The quartz is milky and well-fractured and carries moderate quantities of pyrite, chalcopyrite, and visible gold. In one place near the road, where the vein narrows to not more than an inch in width, specks of visible gold are plentiful. The country rock is a tuffaceous greenstone.

No. 6 vein, a little more than 200 feet southeast of the shaft, occurs in a highly sheared sericitic tuff, arkose-like in appearance. It strikes N. 75°, dips 80° S. and pinches and swells over an exposed distance of 225 feet. Its maximum width is 18 inches, but the average width is probably less than 6 inches. The quartz carries a little pyrite and visible gold.

No. 8 vein, 200 feet north of the cookery, has been uncovered for 200 feet. It strikes N. 60° W. and stands vertical. It pinches and swells in characteristic fashion, the width of quartz ranging from 2 to 24 inches. The mineralization consists of pyrite, ankerite, and visible gold. Visible gold was also observed in a similar vein, No. 17, about 100 feet east of the cookery.

Vein No. 15, on the boundary between claims T. B. 13,562 and 13,565 has been traced for 300 feet. It strikes N. 80° E. and stands vertical. In places it contains pyrite and sphalerite, but no gold was observed. Vein No. 14, on the same claim but east of No. 15 has been uncovered for nearly 500 feet. It has an average width of 12 inches and carries pyrite, chalcopyrite, and visible gold, as well as ankerite and sericite."

Laird (1937) also states that:

. . . "The mineralization is rather sparse and confined largely to the quartz. It consists of pyrite, galena, sphalerite, native gold, and a little chalcopyrite. The gold is a pale variety occurring as tiny specks, almost invisible without a lens, and also in coarse blobs of a spectacular nature. The gold is found in several associations. Galena and sphalerite appear to be favoured, since the presence of either of these minerals commonly indicates gold in greater quantities than ordinary. It has also been observed in tiny fractures in grains and cubes of pyrite, in association with chlorite and sericite in the fractures and various slip planes in the quartz, and far out into what appears to be otherwise barren and unfractured quartz."

CONSOLIDATED LOUANNA (LAKE OSU) MINE

The original mine claim group of the Lake-Osu Mines Limited was first staked on Osulake Peninsula of O' Sullivan Lake in 1935 by J. Miller and subsequently optioned to McIntyre Porcupine Mines Limited who performed diamond drilling in 1935 and 1936. In 1947 Osulake Mines Limited sunk a shaft on K.K. 3204.

During 1947 to 1983, a period of over 35 years, a number of companies did considerable work in the form of diamond drilling as well as underground development, but it was not until 1983-84 that gold estimated in the amount of 15 400 ounces was produced by Consolidated Louanna Mines Limited-Cumo Resources Ltd. (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

The property is located approximately 80 km (50 miles) north of Geraldton on Osulake Peninsula of O' Sullivan Lake.

The geology of the area is described by Moorhouse (1956):

> "Rocks exposed on the property are chiefly pillow lavas and metadiabases, which are cut by a variety of quartz porphyry dikes and several diabase dikes. Two narrow bands of highly sheared, more or less silicified, and mineralized tuffs occur interbedded with lavas east of the bay on claim K.K. 3334. The south band has also been traced for some distance west of the bay, and it is possible that it represents the sheared tuffaceous rocks in which the known mineralization occurs at the mine itself. .....These tuff bands thus appear to have been structures favourable to mineralization. On Osulake Peninsula they strike in a general east or east-southeast direction."

Mason and White (1986) describe the gold mineralization as follows:

> "Gold mineralization occurs in two parallel quartz veins hosted in a quartz-feldspar porphyry emplaced in sheared mafic tuffs. Veins are lenticular, laminated or brecciated and average <2 m in width: veins are of multiple generations. A white massive quartz intrudes the typically dark laminated and/or brecciated quartz (both generations of quartz are auriferous). A third generation barren quartz (carbonate) vein cuts the other veins. Mineralization consists of arsenopyrite, pyrite, pyrrhotite, sphalerite, galena, and gold."

DIK-DIK MINE

The Dik-Dik Mine was also known as the Orphan Mine, McMartin Mine, and the Sarmac and Craibbe properties. The mine operated in 1934 and 1935, producing 2460 ounces of gold and 1558 ounces of silver. The Dik-Dik Mine had one of the highest production grades in the Beardmore-Geraldton area, averaging 0.70 ounce Au per ton (Ferguson et al. 1971).

The property is located just north of Atigogama Lake in the northeast portion of Rickaby Township near the west boundary of Lapierre Township.

The geology of the property is described in Mason and White (1986):

> "The Dikdik Mine area is underlain by the Kaby Lake Stock which intrudes a felsic to intermediate metavolcanic unit, a portion of the Tashota-Onaman Belt. The Kaby Lake Stock is a 'massive to light grey granodiorite to trondhjemite with local occurrences of granite and quartz monzonite' (Mackasey and Wallace, 1978). Metavolcanics at the mine have been described by Mackasey and Wallace (1978) as crystal tuff and laminated tuff but as andesites by Bruce (1937a). The author feels felsic metavolcanics predominate throughout the immediate mine area."

Bruce (1937a) gives a more detailed description of the geology:

> "A large part of the block of nine claims of the Orphan Gold Mines is heavily drift covered; the scattered outcrops show that much of the consolidated rock on them is granite. Apparently lavas occur only on the southeastern claims, TB11070 and TB11071. Tongues of granite extend southwestward from the main mass into the greenstone.
>
> The lavas to the west of Atigogama Lake are fine-grained, dark green, massive rocks...Phenocrystal feldspars have the appearance of being recrystallized rather than original in character, but in other parts of this area, the feldspars are well formed. In any case, the lavas were probably andesites.

The granite is a grey, fairly coarse-grained type, which has been badly altered.

The contact between granite and andesite is remarkably sharp. There is no granodioritic contact phase such as that which borders the granite batholiths farther west. The attitude of the contact of the main mass is unknown. In the mine workings the granite tongue seems to plunge southward at a high angle. Clearly, the fracturing occurred after the granite had solidified sufficiently to be sheared. The relationship between the veins and the granite may be purely a structural one, due to a difference in competency of the granite and lava under stress."

Bruce (1937a) describes the mineralogy of the Dik-Dik property as follows:

"Quartz lenses occur in a shear zone crossing the contact between the granite and andesite. The strike is N40°W, and the dip nearly vertical. A parallel vein on the adjacent claim to the east is wholly in andesite, but the relation of this vein to the contact in depth is not known. The shear zones are clearly later than the consolidation of the granite, since the contact seems to be slightly offset and the granite is somewhat gneissoid along the vein. The ore bodies are parts of irregular lenses of quartz which in places bulge to widths of 6 feet. A width of 9 feet is recorded in one place. From the contact in both directions the vein becomes narrower and finally seems to feather out."

"The gold content of the narrow lens that was removed in the open cut was exceptionally high. In general the values are higher and more consistent where the wallrock is lava. There are however, lenses of good grade in the granite, but the gold seems to be much more erratically distributed in them than it is in lenses within the lavas. Apparently also the content diminishes rather rapidly as the lenses are followed into the granite. Fritzsche states that the widest as well as the richest parts of the ore lenses occur where narrow fissures now filled with calcite intersect the quartz-filled fissure."

"The quartz of the vein is white and so fine-grained that it is almost chalcedonic. In parts of the lenses metallic minerals make up a considerable part of the vein filling. The most abundant of these is pyrite. Chalcopyrite is common; pyrrhotite, sphalerite, and galena less so. Under the microscope a little arsenopyrite and tetrahedrite have been recognized. Gold in visible amounts occurs sparingly. It is very pale in colour on account of a large mixture of silver; the mineral can with propriety be called electrum. Under the microscope gold can be recognized as a late mineral. It usually occurs in pyrite and is commonly associated with galena."

GREENOAKS MINE

The Greenoaks Mine was discovered in 1947 by A. E. Rissanen on claim T. B. 35563. Considerable exploration work in the form of stripping, trenching, diamond drilling, geophysical surveys and geological surveys were conducted on the property from the initial discovery to 1982. In 1982, 2448 tons of ore was milled to produce 457 ounces of gold and 311 ounces of silver (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

The property is located at the boundary of Pifher and Elmhirst townships about 27 km (15.5 miles) northeast of Beardmore.

The general geology is described by Mason and White (1986):

> "The Greenoaks Mine property is underlain by intermediate to felsic metavolcanics, including andesite, dacite, rhyolite flows, tuffs, feldspar porphyry, porphyritic rhyolite and intermediate to mafic pyroclastic rocks. The Crooked Green Creek Mine and Greenoaks Mine are hosted in the same metavolcanic unit. Flow rocks appear to predominate over pyroclastic rocks (Mackasey and Wallace, 1978).
>
> The Elmhirst Lake Stock (granodiorite to quartz diorite) intrudes the metavolcanics on the east portion of the property. A hybrid metavolcanic-granitoid contact zone prevents accurate identification of specific lithologies. Also to the east and northeast lies the sill-like Pinel Creek Intrusion which is thought to be in fault contact with the Elmhirst Lake Stock. The Pinel Creek Intrusion is gabbroic and hosts copper-nickel mineralization.
>
> Steeply dipping diabase and lamprophyre dikes intrude the metavolcanics. Shearing trends 075° to 085°."

Mason and White (1986) described the mineralization of the mine as follows:

"Gold mineralization occurs in quartz veins hosted within ductile shear zones cutting metavolcanics. Four zones (1-4) have been identified on claim TB35563. The No. 1 zone is the main zone. Zones 2, 3, and 4 were historically considered to contain low erratic gold values over narrow widths.

The No. 1 zone consists of a main quartz vein, subsidiary parallel veins (at least 3 others), fracture fillings and mineralized porphyritic host rock. The vein contains chalcopyrite, pyrrhotite and gold mineralization. The main quartz vein, which is typically blue-black (smokey), strikes 115° and dips 80°S to vertical. Much of the gold is present as free gold associated with the sulphides."

HARD ROCK MINE

The Hard Rock Mine was discovered by "Hardrock" Bill Smith and Stan Watson in the spring of 1931 on Discovery Point of Kenogamisis Lake. In 1935, shaft-sinking commenced at the Hard Rock Gold Mines Limited property. The mine started production in 1938 and ceased operations in 1951. In total the Hard Rock Mine produced 269 081 ounces of gold and 9009 ounces of silver (Ferguson et al. 1971).

The mine property is located in southwestern Ashmore Township, approximately 5.6 km (3.5 miles) southeast of Geraldton. The general geology of the Hard Rock property has been described by Horwood and Pye (1955) as follows:

> "The oldest rocks in the vicinity of the Hard Rock Mine are tuff and volcanic breccia, which, with peridotite and hornblende diorite, form a low but conspicuous ridge along the south edge of the claim group. Grain gradations indicate that the tops of the tuffaceous beds face north, and that the volcanic horizon is overlain in this direction by a thick series of sedimentary rocks. Intrusive into the sediments are hornblende diorite, diorite porphyry, quartz-albite porphyry, quartz diorite, and quartz and olivine diabase.
>
> The sedimentary rocks are the more interesting from the standpoint of mine geology; it is within them and along their contact with the quartz-albite porphyry that several important orebodies have been found. They consist mainly of greywacke and iron formation, as a glance at surface and level plans will indicate, but interbeds of slate occur locally and a continuous band of conglomerate has been traced across the property. Since it is not sharply separated from the enclosing greywacke, and in one or two places the pebbles become less numerous and smaller towards the margins of the band, the conglomerate is believed to be essentially intraformational in character... The greywackes overlying the conglomerate to the north are fine to medium-grained varieties. Bedding structures are not recognized readily in the underground workings except where interbeds of slate occur... The greywacke grades into finely stratified iron formation. Not all the iron formation bands are entirely of this nature, however, for in the vicinity of the No. 2 shaft

many of the iron-rich laminae are separated by and alternate with narrow bands of dark-grey or dull-red cherty quartz, as well as the typical greywacke. Fine-grained slate is also present in many places, and where shearing has been intense, this has been made over into a dark-green chlorite schist that stands out in marked contrast to the adjacent, relatively massive, iron-rich or quartz-rich laminae. Serpentinized peridotite and hornblende diorite, the oldest of the intrusive rocks, occur together as a folded lens or sill-like mass along the north flank of the tuff-breccia horizon in the vicinity of the No. 1 shaft.

...Quartz-albite porphyry outcrops in the western part of claim TB9991. It forms a large, highly irregular, contorted mass, which plunges west at about 20 degrees and for the most part conforms to the highly complex pattern of the enclosing sediments.

...The close resemblance of the rock to quartzite, and an apparent interbanding with the enclosing greywackes along the borders of the mass, led early workers in the area to regard the porphyry as a member of the sedimentary series. It now appears, from evidence accumulated in recent years, that this assumption is wrong. Cross-cutting relationships, chilled margins, and other features leave little doubt as to the igneous origin of the rock.

Altered quartz diorite(?) has been found in several places cutting the greywackes and iron formation as narrow dikes and sill-like bodies too small to be shown on the map. The rock is greenish, medium-grained, speckled variety not unlike a typical diorite in appearance.

...Narrow dikes of both quartz and olivine diabase, which cut all the other rock formations, have been found in several places in the underground workings. They invariably strike almost north and dips steeply east about 65 degrees, parallel to a prominent set of joints."

Horwood and Pye (1955) have also noted:

"All of the rock formations in the vicinity of the Hard Rock Mine...have been intensely folded. These folds strike in a general east-west direction and, except for minor variations, plunge westerly at 20-25 degrees."

Mason and White (1986) have described the mineralization at the Hard Rock Mine. Only portions of their description are given here:

"Three distinct orebody types have been recognized at the Hard Rock Mine and Macleod-Cockshutt Mine.
(1) 'Quartz veins and mineralized zones occur within and along the contacts of the albite porphyry...and within greywacke and lean iron formation.' (Horwood and Pye, 1955). These zones consist mainly of quartz veins and stringers along fractures, containing pyrite, pyrrhotite, arsenopyrite, chalcopyrite, carbonate, tourmaline and rare scheelite. The sulphides show a high tendency to concentrate in the wall rocks. Gold occurs in both altered wall rocks and veins, and is closely associated with sulphides. Zones of this type include the F Zone, No. 1 and No. 2 vein systems, the X vein and the 401E drift zone (Horwood and Pye, 1955).

(2) 'Irregular, massive lenses of sulphides and quartz occur in a folded series of greywacke and iron formation...' (Horwood and Pye, 1955). These massive replacement lenses (up to 65% sulphides) cut the Z-folded iron formation and are related to quartz-carbonate veins up to 0.6 m (2 feet) wide. Veins are usually barren of gold mineralization except where they contain sulphides, consisting primarily of pyrite, arsenopyrite and pyrrhotite. Mineralization is preferentially concentrated in the wall rocks outward from the quartz veins and ore is locally banded due to the selective replacement of the less competent wacke laminae in the iron formation by sulphides. The main ore zone (the North or No. 30) was of this type (Horwood and Pye, 1955).

(3) Finally, numerous thin, gold-bearing quartz stringers occur along shear fractures in zones of faulting, folding and shearing at the contact with wacke and albite porphyry. When stringers merge, elongate replacement or blowout lenses up to 1 m (3 feet) long are formed. Normally, they occur as thin highly contorted veinlets which follow both shear and tension fractures and locally have a gash-like character. Carbonate (ankerite-dolomite), sulphides (pyrite, pyrrhotite, arsenopyrite and chalcopyrite) and tourmaline are found to be associated with the quartz. Gold concentrations were relatively lower than in the first two types, and is gold free milling. Zones A through H were of this type. (Horwood and Pye, 1955).

The F zone was the most spectacular zone, accounting for an orebody of some 10,000,000 tons of 0.15 ounce gold per ton (Macdonald, 1983). The first hole drilled into the zone encountered 0.453 ounce gold per ton 'over a width of 22.4 feet' (Horwood and Pye, 1955)."

"To summarize the mineralogy, sulphides recognized in order of abundance include pyrite (80%), arsenopyrite (15%), pyrrhotite, sphalerite, chalcopyrite, leucopyrite, galena, gold and cubanite. Non-metallic minerals recognized include ankerite, calcite, scheelite, tourmaline and graphite. Iron oxides occur in many places (Armstrong 1943)."

HUTCHISON LAKE (MAYLAC/GULCH) MINE

The former past producing Hutchison Lake or Maylac/Gulch Mine is located in southeastern Fulford Township approximately 6.4 km (4 miles) north of Geraldton. The Hutchison Lake Mine was a minor producer, producing 792 ounces of gold and 46 ounces of silver from 1518 tons of ore milled resulting in an average of 0.52 ounce of Au per ton (Ferguson et al., 1971).

MacDonald (1943) describes some of the rock types found on the Hutchison Lake property as follows:

> "The lavas consist of dark-green, moderately sheared andesites and pillow lavas and grey-green, massive andesites. They are highly altered and consist dominantly of chlorite, altered feldspar, and calcite. A coarse-grained basic rock occurs in several places on the claims. In most cases it is massive and even-textured; some of the material from the diamond drill holes northwest of the shaft has a porphyritic appearance due to large crystals of chloritized hornblende. The rock may be a diorite or gabbro, but since it is everywhere associated with finer-gained andesite and shows no intrusive relations with it, it is considered to be a coarse-grained basic lava. A rock with a granular fragmental texture, consisting mainly of feldspar with slightly larger, well-formed amphibole crystals occurs on claim TB14661. It forms a band between andesite flows and is probably a basic fragmental tuff. Coarse agglomeratic fragmental material is also present in the western claims of the property. Bedded sedimentary tuffs are interbanded with the lavas in some places. They are typically more highly sheared than the lavas and are medium-grained to slaty in character. The coarser-grained ones consist dominantly of feldspar. Many of them are high in carbonate and weather to a rusty-brown colour. Some contain disseminated pyrite. A diabase dike with a maximum width of 175 feet cuts across claims TB14661 and TB14229.

...The rocks have been subjected to regional shearing, which strikes in the neighbourhood of N80°E. Regional folding has upturned the rocks to a steep or vertical position, and minor local folds are present. These features are shown best in the bedded tuffs. On claim TB14229 the minor folds drag southward on the east. In the outcrop to the north of the shaft, the strike of the tuff bedding swings from N35°W, on the west side of the outcrop to N80°E, on the south side, where it is finally obliterated by shearing. On claim TB14661, the trend is in the opposite direction, since the beds there fold northward on the east. The structure indicated is that of a westward-plunging syncline, but the evidence is not conclusive."

Morrow (1949) has described the ore bodies as consisting of:

"...highly irregular, branching, mineralized quartz veins in sheared and carbonatized tuffs and dacites (altered andesite).

...Quartz is the dominant vein material, but in some places sulphide mineralization is heavy. The carbonate and ankerite is very common in the veins, and along the veins, and along the wall rocks have been extensively carbonatized. The metallic minerals are pyrite, pyrrhotite, sphalerite, chalcopyrite, galena and gold."

The occurrence of gold in the mine has been summarized by MacDonald (1943) as follows:

"It occurs in some specimens as coarse, easily visible blebs and has been observed in the following associations:
1. In quartz gangue that is free from any visible fractures; or in fractures in quartz gangue, either with galena or alone.
2. In pyrite, sphalerite, and galena as blebs and veinlets.
3. Along contacts between sphalerite and quartz and penetrating the sphalerite."

JELLICOE MINE

The Jellicoe Consolidated gold mine is an example of a small-scale gold producer. Jellicoe Consolidated resulted from the amalgamation of Whitehorse Gold Mines Limited and Jellicoe Gold Mining Company Limited situated immediately west of the Tombill and Bankfield properties in the eastern portion of Lindsley Township.

In 1937, a shaft was started on the property, but it was not until 1939 that production of gold was started. The Jellicoe Mine operated from 1939 to 1941 and again in 1949. In total, 5675 ounces of gold and 515 ounces of silver were extracted from this small producer.

The general geology and structure is described by Mason and White (1986):

> "As the entire property is overburden-covered, interpretation of the geology is dependent on information from the diamond drill holes and the underground work. In general, the deposit lies within an elongated trough of metasediments and metavolcanics bordered by younger granitic batholiths (Matheson, 1948).
>
> Specifically, the property is part of the south limb of a regional synclinal structure and is underlain entirely by metasediments consisting of arkose, wacke, and ironstone (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).
>
> One and a half to three metre (5 - 10 feet) wide dikes of quartz-feldspar porphyry and narrower diorite dikes intrude conformably and non-conformably, as do quartz veinlets and stringers. The strike of the bedding is about 290° with a steep southerly dip. A steeply dipping right-hand fault cutting across the property with a northerly strike offsets the formations by about 700 m (200 feet) (Matheson, 1948).

The 91.5 m (300 feet) wide arkose horizon, which is closely associated with the auriferous veins, contains interbedded lenses of wacke and shale and is intruded by numerous porphyry dikes. This horizon occurs in the central portion of the property. To the north, the rocks are predominantly wacke with interbeds of arkose and to the south, chloritic wacke with ironstone and minor arkosic interbeds occur. Several sheared and silicified zones occur throughout the property (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay)."

Mason and White (1986) also describe the mineralization associated with the Jellicoe Mine as follows:

"Gold (occurring both in the free state and associated with sulphides) is found in dark-coloured quartz stringers, quartz veinlets, sheared and silicified zones of brecciated arkose, and in saddle-shaped veins. Associated minerals are pyrite, arsenopyrite, sphalerite and silver (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

The only mineable ore body found occurred as an S-shaped vein in a shear zone in the arkose horizon. Averaging 0.6 m (2 feet) in width, the longest section had a westerly strike and a dip of 60° to the south. The offshoots at either end had steep northerly dips (Matheson, 1948). This resulted in a wedge-shaped section, about 107 m x 30.5 m x 1.5 m (350 feet x 100 feet x 5 feet) (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay)."

LEITCH MINE

The original Leitch Mine property was staked in 1901 as H. F. 1 to H. F. 8 and A. L. 412 to A. L. 416.

Exploration for iron was initially conducted on these claims by a number of companies including the Nipigon Hematite Ore Company and the Lake Superior Iron Ore Company (both part of the Leitch Estate) during the period 1910 to 1923.

It was not until 1934-35 that R. and J. Cryderman prospected the strike extension of the Sand River Mine's No. 1 vein which lead to the discovery of the Leitch's No. 1 vein on parcel H. F. 1.

The result was the discovery of one of the richest gold producers in Canada. The Leitch Mine produced 861 982 ounces of gold at an average grade of 0. 92 ounce of Au per ton, as well as 31 802 ounces of silver (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay). Also a portion of the Leitch dump was milled in 1980 and 1984 by Teck Corporation (Leitch Division) and in 1987-88 by Ateba Mines Inc. In 1980, Teck Corporation recovered 70 000 tons from the dump of the Leitch Mine and shipped 50 000 tons of ore to Val D'Or, Quebec. Mill grade for the first 29 000 tons of ore milled was approximately 0. 235 ounce Au per ton. In 1984, Teck Corporation produced 70 000 tons of screened dump material from the Leitch Mine and shipped 50 000 tons to the Pan-Empire Mill, 1 km east of Beardmore. Mill grade was approximately 0. 11 ounce Au per ton for the first 24 000 tons of ore. From November 1987 to September 1988, 14 846 tons of screened dump material from the Leitch Mine at a head grade of 0. 1 ounce Au

per ton was milled at the Pan-Empire Mill (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

The Leitch property is located in the east central part of Eva Township, approximately 4 km (2.5 miles) west-northwest of the town of Beardmore.

Mason and White (1986) have described the geology of the Leitch Mine in detail (only brief excerpts are presented in this report):

> "The Leitch Gold Mine property lies within the southern portion of the Wabigoon Sub-province in the Beardmore-Geraldton Belt. This belt has been further sub-divided by Mason and White in Patterson et al. (1985) into the Southern Metavolcanic Sub-belt and the Southern Metasedimentary Sub-belt. It is within the latter that the property is situated. Although this sub-belt is primarily dominated by sedimentary rocks, interfingerings of basic to intermediate volcanic rocks are prevalent, in particular along the western portion of the belt. Of the gold produced in the Beardmore-Geraldton Camp, 94% is from the Southern Metasedimentary Sub-belt (Mason and McConnell, 1983).
>
> Rocks within the Southern Metasedimentary Sub-belt overlie those of the Southern Metavolcanic Sub-belt (tops to the north) and are dominated by turbidite sequences consisting of Archean greywacke, conglomerate, argillite, magnetite-hematite chert (jasper) iron formation, quartz diorite-gabbro intrusions and Proterozoic diabase dikes. The metasediments are mainly thick-bedded uniform greywackes with associated narrow slaty bands and thin interbeds or lenses of argillite and pebble conglomerate. Iron formations occur in the sediments and vary from a well-banded jasper-hematite with associated magnetite to hematite-bearing red argillite. The iron formations are generally east-trending, vary in width up to a maximum of 24.4 m (80 feet) and occur as somewhat continuous regional features across the belt to the Geraldton Camp. The metavolcanics in the area of the mine site are fine-grained and vary in colour from light grey to green. Ash-fall tuffs and flow rocks predominate."

Mason and White (1986) also describe the gold mineralization of the Leitch Mine as follows:

"Gold mineralization occurs in two sets of narrow quartz veins occupying fractures in the greywacke; those parallel to the fold axial plane in shear zones and those nearly perpendicular to the axial plane. These veins are strongly sheared parallel to the shear zone and contain transverse, healed, tension gashes. The depth continuity of the quartz veins normally exceed the horizontal continuity by a multiple of 15 (Trusler, 1981).

The veins range in width from 10 cm (3.9 inches) to 45.7 cm (18.0 inches) on the average and many parts of the veins are contorted with thickened portions in the bends of folds. They consist mainly of light grey to white quartz with common chlorite-sericite occurring in thin fractures within the quartz veins, as well as minor sulphides including arsenopyrite, pyrite, tetrahedrite, sphalerite and ankerite. Some visible gold occurs on surface and in parts of the mine, although much of the ore did not contain visible quantities. The overall gold content was found to be greatest in the narrowest parts of the veins and where widths up to 1.22 m (4 feet) were encountered the gold content was lower. Secondary quartz tension gash fillings, some containing orange halite cut all previous fracture fillings. Halite is also present in some faults up to 20 cm thick (Ferguson, 1965). Scheelite is relatively abundant and appears to form at the junction of cross-cutting fractures rather than within individual fractures. The wallrock adjacent to the mineralized quartz veins is reportedly unmineralized. No assays of wallrock appear among the old data (Trusler, 1981)."

LITTLE LONG LAC MINE

In February of 1933, Little Long Lac Gold Mines Limited was incorporated and in March of the same year, the company commenced sinking a three-compartment shaft. The Little Long Lac Mine was the first gold producer in the Geraldton area and a major influence in the development of the Geraldton gold camp.

The Little Long Lac Mine produced 605 499 ounces of gold, 52 750 ounces of silver, and minor amounts of tungsten from 1934 to 1956 (Ferguson et al. 1971).

The property is located in the east central part of Errington Township and the west central part of Ashmore Township. It is situated near the south shore of Barton Bay of Kenogamisis Lake, and about 3.2 km (2 miles) south of Geraldton.

The geology of the Little Long Lac Mine and surrounding area has been described in detail by a number of authors, including Bruce 1936b, 1937b; Pye 1952; Horwood and Pye 1955; Mason and White 1986. Only brief excerpts from some of these works are given in this report.

Pye (1952) described the property geology:

> "...the property is underlain by clastic sediments...including intraformational conglomerate, arkose, greywacke, slate and iron formation, all of which have been severely folded and intruded in turn by diorite, diorite porphyry, lamprophyre, and quartz diabase."

According to Bruce (1936b):

"The consolidated rocks underlying this group of claims consist chiefly of sediments. A small area of diorite is exposed to the southeast of the shaft, and a narrow diabase dike outcrops on a point west of the large island. It strikes north and south and must lie beneath the marsh at the west end of the bay. Recently a 4-inch lamprophyric dike considerably altered to calcite has been intersected in the underground workings. The sediments are massive greywacke and bands of iron formation. A thick band of iron formation is exposed on claims west of Barton bay and on the north side of the large island. North of the bay, it is concealed by marsh and swamp except at three places."

..."The most conspicuous structural feature is an east-west shearing so pronounced that in many places it causes a platy parting easily mistaken for bedding. In the greywacke the bedding is recognizable only in a few places; near the mine buildings it strikes slightly north of west and thus is nearly at right angles to the shearing. On the southwest end of the large island the bedding strikes N. 68° W. and dips 75° S. W. The iron formation beds are much contorted, and cleavage plates show the bedding crossing the shear planes at all angles. Along many of the shear planes there have been slight movements, so that in many places the beds are offset from a quarter of an inch to half an inch. The iron formation is much more closely folded than the adjoining greywacke. It has been dragged into close plications, probably because the massive greywacke to the south and the massive greenstone or conglomerate to the north were more competent formations. The lack of well-marked bedding in the greywacke, however, makes it less easy to recognize folding in it than in the distinctly bedded, iron-bearing members. So far as structure has been determined the ore bodies at the Little Long Lac Mine are along the crest of a minor anticline that plunges at about 30° W."

Mason and White (1986) describe the ore bodies of the Little Long Lac Mine as follows:

"The ore bodies at the Little Longlac Mine occurred in the large Z-shaped minor fold on the north limb of the Barton syncline. The nature of this fold has been studied by Bruce (1936b), who has determined the plunge to be 45° to 55° to the west. Superimposed upon the large minor fold are numerous smaller flexures, most of which plunge to the west and therefore, are compatible structures. A few were found to plunge to the east at about 50° and are, therefore, incompatible structures which are believed to have been formed during a period of deformation later than that which resulted in the formation of the westward plunging minor folds (Pye, 1952)."

According to Pye (1952):

"The ore bodies at the Little Longlac Mine consist of more or less parallel quartz veins and stringers within fracture zones in massive arkose."

"...For the most part, the sulphides are confined to narrow selvages and books of altered wall rock along and within the individual veins, although small amounts are commonly enclosed by the vein quartz itself. Limonite, hematite, magnetite, and ilmenite occur in small quantities in the ore, but the writer considers these, with the possible exception of hematite, to be original constituents of the arkose rather than introductions..."

The mineralization has been reported by Armstrong (1943) who states:

"Mineralization occurs chiefly in quartz and consists of small amounts of carbonate and scheelite and subordinate sulphides. The metallic constituents, which rarely make up more than 2 or 3 percent of the ore, include arsenopyrite, pyrrhotite, sphalerite, chalcopyrite, galena, leucopyrite, bornite, grey copper, berthierite, and gold."

Other minerals noted by Pye (1952), include tetrahedrite and tourmaline.

MACLEOD-COCKSHUTT (MACLEOD-MOSHER) MINE

The MacLeod-Cockshutt Mine was staked by Fred MacLeod and Arthur Cockshutt in 1931 following staking of the Hard Rock Mine immediately to the east. Diamond drilling was carried out between 1933 and 1935. In 1936, an economically favourable gold zone was found by diamond drilling near the east boundary of claim T. B. 10 038 close to the Hard Rock Mine's Porphyry Hill.

In 1938, the MacLeod-Cockshutt Mine became the fourth gold producer in the Geraldton district and operated from 1938 to 1970; a total of 33 years.

This mine produced more gold than any other in the Geraldton Camp; over 1.5 million ounces of gold and over 100 thousand ounces of silver (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

MacLeod-Cockshutt gold mines, Hard Rock gold mines and Consolidated Mosher mines were amalgamated into MacLeod-Mosher gold mines in 1967. The company continued mining the MacLeod and Mosher mines and milled ore in the MacLeod mill. In 1968, Lake Shore Mines Limited, controlled by Little Long Lac Gold Mines Limited (now Lac Minerals Ltd.), bought the MacLeod-Mosher Mine and continued to produce gold until 1970 when it became the last of the area's mines to close.

Present ore reserves are estimated at 869,873 tons with an average grade of 0.107 ounce Au per ton (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

The general geology has been described by Horwood and Pye (1955) as follows:

"The MacLeod-Cockshutt property is underlain by a wide variety of rock formations. The oldest are of volcanic origin and form a narrow zone of tuffs and agglomerates, which, with intrusive hornblende diorite, form a low ridge across the southern part of the claim group. To the north, in which direction grain gradations indicate the tops face, narrow conformable bands of hydroclastic material appear and, as these increase in both number and thickness relative to the tuffaceous horizons, the zone passes over into an overlying sedimentary series made up of conglomerate, greywacke, iron formation, and slate. Intrusive into this series is a variety of igneous rocks, which from the oldest to the youngest include hornblende gabbro and diorite, quartz albite porphyry, and both quartz and olivine diabase.

...Of the rocks exposed at the surface and in the underground workings, the clastic sediments are the most prominent. They consist mainly of greywacke with occasional interbeds of slate, but several continuous bands of iron formation, the principal horizon marker, and one of conglomerate have been traced across the property. The greywackes are greenish-grey rocks of fine to medium grain. They generally appear quite massive underground, but surface exposures exhibit a pronounced stratification, with individual beds ranging in thickness from a fraction of an inch to several feet. This stratification is commonly accentuated by laminae of fine-grained slate alternating with massive greywacke and, in many places, by conformable layers made up largely of iron oxides. With any sizeable increase in the number and thickness of the latter, the rock grades into and becomes a typical iron formation."

Horwood and Pye (1955) also state that:

"The orebodies at the MacLeod-Cockshutt Mine occur within the western part of a large elliptical bulge...along the south flank of the Ellis syncline. Within this bulge the rock formations have been intensely folded along east-west axes and plunge westerly at 20-25 degrees. Both S-shaped and Z-shaped (reverse) folds occur. They are believed to be the expressions of at least two epochs of deformation, the one responsible for the development of the Ellis syncline, the other responsible for the initial adjustments along the Bankfield-Tombill fault zone. For the most part they are slightly overturned so that their axial planes dip steeply south, but the axial planes of those north of the porphyry intrusive tend to dip vertically or steeply north. A characteristic feature is

a pronounced thickening of the sedimentary rocks in the troughs of the synclines and in the crests of the anticlines. This is due in part to intense crenulation in these sections, and in part to a tendency of the rock material to move from areas of maximum compression along the the limbs of the folds to areas of least compression in the crests and troughs.

In addition to the strongly sheared zone (Bankfield-Tombill fault zone) extending across the southern part of the property, there are many minor transverse faults of general north-south strike and steep easterly dip. Of these the most important is represented by a well-defined zone of brecciated rock and gouge that cuts the sulphide ores in the extreme eastern part of the property. This fault dips to the east at an angle of 45 degrees. It has been encountered in several places in the workings at the Hard Rock mine, where detailed mapping has indicated a thrust-type movement in which the hanging wall has moved up and to the west with respect to the footwall. Other faults of minor consequence strike east-west and dip steeply south. The relative displacement along them has not been ascertained. It is quite possible that many of them are pre-ore and were formed concomitantly with the ore fractures."

Mason and White (1986) have described the mineralization at the Hard Rock Mine and MacLeod-Cockshutt Mine. See writeup under "Mineralization of the Hard Rock Mine".

MAGNET CONSOLIDATED MINE

In 1937, shaft sinking at the Magnet Consolidated Mine commenced and some underground development work was performed. However, in May of 1937, lack of funds brought operations to a halt. Work resumed in November of 1937 when financing was provided by Newmont Mining Corporation.

The Magnet Mine operated from 1938 to 1943 and again in 1946 to 1952, producing a total of 152 089 ounces of gold and 16 879 ounces of silver (Ferguson et al. 1971).

The Magnet Mine property is located in southwestern Errington Township, immediately east of the Bankfield Mine, approximately 8.0 km (5.0 miles) southwest of Geraldton.

Inferred reserves stand at 944 000 tons grading 0.17 ounce Au per ton (Ateba Mines Inc. 1987).

The general geology of the Magnet property is described by Pye (1952) as follows:

> "Only in one locality on the property does bed rock outcrop at the surface. Surface mapping was, therefore, of little or no value. Correlation of geological structures depended solely upon the information secured from diamond drill holes and underground workings. For the most part, the property is underlain by clastic sediments, including conglomerate, iron formation, greywacke, and slate. These have been intruded in turn by diorite, diorite porphyry, albite porphyry and diabase.
>
> The most useful horizon marker south of the Bankfield-Tombill fault zone is a band of conglomerate, about 30 feet in thickness which has been traced a distance of several miles by both surface mapping and diamond drilling from the boundary between Errington and Lindsley Townships to outcrops south of Mosher Lake... This band of conglomerate is paralleled, about 350 feet to the north, by a second, equally prominent, conglomeratic horizon. The two bands are identical lithologically, and if they are the same horizon, a folded structure is

necessary to account for the repetition.
Several bands of iron formation, three of which have been used successfully as marker beds in the determination of the geological structure, cross the property."

Iron formation used as marker horizons are up to 13.7 m (45 feet) in width and consist of thin laminae of magnetite and hematite separated by narrow interbeds of either green slate or greywacke (Pye 1952).

Pye (1952) described the gold deposits:

"The ore bodies at the Magnet Mine are shoots of variation within quartz veins that occur for the most part as fracture fillings and replacements within Timiskaming greywacke and iron formation. To date, all the ore has been provided by two vein systems, the Magnet vein zone and the North or Footwall vein zone. In addition, three other structures have been opened up and tested, but none of these has yielded any ore. The three vein systems are known as the Wells vein zone, the 205E drift zone, and the Hanging Wall zone."

"Only two bodies of ore, known as the Magnet and North ore bodies, have been worked. Both are roughly lenticular shoots of variation within the Magnet and North vein zones. The richer magnet ore body has been opened up for a maximum length of about 1,300 feet on the 1,080-foot level. In longitudinal section, it is a discontinuous, lens-shaped body that extends from the surface down to the 1,380-foot level. Between the 220-foot and the 780-foot levels, this body of ore has an average rake of 45°W., in a direction N.75°W.; between the 780-foot and the 1,380-foot levels, it has a rake in this direction of 30°W. This attitude corresponds with that of the low grade zone that occurs in the centre of the ore body where the vein zone passes through the No. 1 band of iron formation. The North ore body, now being exploited, is not so well known. Like the Magnet ore body, it rakes parallel to the intersection of the North vein zone and the bedding of the sediments. It has been opened for a horizontal length of 720 feet on the 1,730-foot level, and is known to extend from the 980-foot level to the deepest underground workings. Generally speaking, the grade of ore has not been as high as that obtained from the Magnet ore body, but an increase in both widths and values with depth has been indicated."

Mineralization has been described by Pye (1952):

"The orebodies at the Magnet Mine consist chiefly of quartz with small amounts of carbonate and subordinate sulphides. The metallic constituents, which seldom constitute more than 5 percent of the ore are, in order of paragenesis, arsenopyrite, pyrite; pyrrhotite, chalcopyrite, sphalerite; leucopyrite; galena and gold. For the most part, the sulphides are confined to narrow selvages and books of altered wall rock along or within the individual veins, although small amounts of these minerals are frequently found completely enclosed by the vein quartz itself."

MALONEY STURGEON MINE

The Maloney Sturgeon gold mine was a very minor producer, only producing 73 ounces of gold and 16 ounces of silver. The mine operated in 1937 (Ferguson et al. 1971).

The Maloney Sturgeon property is located 20 km (12.5 miles) north-northeast of the town of Beardmore in the southwest part of Pifher Township, approximately 2.4 km (1.5 miles) northeast of Twin Falls on the Sturgeon River.

The general geology and mineralization has been described by Laird (1937):

> "It is underlain mainly by pillowed Keewatin lavas and tuffaceous types. In places the lavas have been intruded by irregular masses and dikes of altered feldspar or granite porphyry.
>
> The only showing of any importance is that which is credited with precipitating the gold rush into the Sturgeon River area early in the summer of 1934. This discovery was made by Rene Maloney. It occurs in rather massive andesitic greenstone at the northwest corner of claim T.B. 12,914. A shallow test pit exposes a lens-shaped mass of quartz 7 feet in maximum width, which strikes N.50°W. and dips 70°S. The quartz is rather glassy but well-fractured and fairly heavily mineralized with pyrite and lesser quantities of chalcopyrite, galena, and malachite. Two cross-trenches to the northwest failed to disclose any further vein matter, although the "break" was traced for some distance in this direction. About 50 feet east of the pit the vein narrows down to 20 inches and takes a sharp turn southward. Several deep pits in this direction expose a strong rusty shear zone dipping 45°W. Although a little quartz was picked up in one of these pits, no important mineralization was disclosed. The "break", however, has been indicated for a distance of nearly 1,000 feet. Stockworks of quartz in an irregularly shaped mass of feldspar porphyry lying a few feet south of the discovery pit likewise showed little or no mineralization.

In the summer of 1935 the groups were further prospected with no important results. The original discovery pit was further opened up by blasting, and much spectacular gold ore was revealed. From one short ore shoot or pocket, not more than 20 feet in length, vein matter estimated at 40 tons was removed. A shipment of cobbed material weighing 364 pounds is reported to have yielded a small gold brick weighing 21.4 ounces. Even though a sizeable ore shoot is not yet indicated, the officers plan to remove the extremely rich high-grade ore and follow the shoot by sinking a shallow shaft if it extends to depth."

MOSHER LONG LAC (CONSOLIDATED) MINE

The Mosher Long Lac Mine began production in 1962. A total of 330 042 ounces of gold and 34 586 ounces of silver during the period of 1962 to 1966 were produced (Ferguson et al., 1971). In 1967, an amalgamation of three companies, MacLeod-Cockshutt Gold Mines Limited, Consolidated Mosher Mines Limited and Hardrock Mines Limited, formed a new company, MacLeod Mosher Gold Mines Limited. The MacLeod-Mosher property during 1967 to 1970 produced 180 576 ounces of gold and 17 312 ounces of silver (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

The Mosher Long Lac Mine is located west of and adjoining the MacLeod-Cockshutt Mine south of Geraldton.

The geology of the Mosher Long Lac property is described by Ferguson et al. (1971) as follows:

> "Metasediments and metavolcanics are intruded by sill-like masses and dikes of felsic to mafic rocks. Mineralization occurs adjacent to feldspar porphyry located in a synclinorium plunging gently in a westerly direction. The ore represents the western extension of the 'F' zone exploited at MacLeod-Cockshutt Mine. Recovery of gold averaged 0.12 ounces per ton of ore milled to the end of 1966."

Refer to MacLeod-Cockshutt Mine writeup for geology and mineralization.

NORTHERN EMPIRE (BEARDMORE) MINE

The Northern Empire (Beardmore) Mine was discovered in 1925.

Development work was started in 1926 with two shafts being sunk as well as other underground development work being performed. The Northern Empire Mine was brought into production by Newmont Mines Limited and operated from 1934 to 1941 and again in 1949. Recorded production is 149 493 ounces of gold and 19 803 ounces of silver (Ferguson et al., 1971). An average grade of 0.34 ounce Au per ton of ore milled was achieved. A small amount of ore was processed from the Northern Empire Mine in 1979, 1982, 1987 and 1988.

The Northern Empire Mine is located approximately 1.6 km (1 mile) northeast of Beardmore in Summers Township. The shaft is on claim T.B. 4803.

Mason and White (1986) describe the general geology of the area:

> "The Northern Empire Mine property lies within the most southerly unit of the Wabigoon Subprovince in the Beardmore-Geraldton Belt. This Belt has been further subdivided into the Southern Sedimentary Sub-Belt and the Southern Metavolcanic Sub-Belt. It is within the latter, near its northern contact with the sediments, that the property is situated."
>
> "A diabase sheet, 170 m thick, crops out in western McComber Township. The sheet dips approximately 10°-15° to the west and intersects the Northern Empire ore zone. These Late Precambrian diabase and porphyritic diabase dikes consistently trend north to northeasterly. In reference to the structural geology of the area, the southern Metavolcanic Belt appears to be in fault contact with the turbidites on its northern and southern boundaries. The Northern Empire Fault contact, as interpreted by Benedict and Titcomb (1948) was intersected in diamond drill core by Newmont Mines Limited on the Northern Empire property in the 1930's. The fault is represented by a black graphitic gouge bordered by less

than 2 m of intense shearing. The southern contact is marked by a regional lineament depression known as the Blackwater Fault and is seen as stretched pillowed metavolcanic rocks in the field. Cleavage-foliation data combined with younging directions determined from upward fining flows and pillowed metavolcanic rocks suggest the presence of an upward-facing fold (overturned anticline) in the western portion of this Belt."

Langford (1929) described the discovery vein of the Northern Empire property as follows:

..."The Power vein, on which work has been done, crosses the west property line about 3 and a half chains south of the No. 4 post of T. B. 4,803, and has been stripped and cross-trenched east for approximately 1,000 feet in a N. 75° E. direction. In 1926, a 25-foot shaft was sunk on the vein. The quartz occurs as lenticular bodies, chiefly in carbonate rock, which in many places has been sheared into a paper schist and is very rusty, owing to decomposition of the iron carbonate. In a few places the schist is 25 feet wide, but usually it is confined to a zone 2 to 3 feet wide on each side of the vein quartz. The quartz bodies which make up the vein are not continuous but pinch out both horizontally and vertically. The greatest width of quartz seen was 6 feet. In the shaft the vein is vertical and consists of two parallel quartz lenses separated by a few inches of rusty schist, but forming a vein from 4 to 5 feet wide. The quartz is a milky-white or bluish-white colour, is often quite rusty, and is mineralized with arsenopyrite, pyrite, chalcopyrite, galena, tourmaline, and gold. Panning of the rusty, schisted wall rock shows that it often contains gold, and this together with the vein may prove to be an ore body worth mining...."

Mason and White (1986) also describe the geology and mineralogy of the Northern Empire Mine as follows:

"The Main, or Power, Vein intrudes mafic to intermediate metavolcanics several hundred metres to the south of the metasedimentary contact. The vein strikes N72° E and dips 80° S, with an average width of 0.60 m, and is both a single and composite vein in a 1.2 to 1.5 m wide shear zone. The quartz is mineralized with pyrite, arsenopyrite, pyrrhotite and minor chalcopyrite, native gold, galena, carbonate and tourmaline. In addition to gold, silver was produced as a secondary mineral."

"Gold was confined almost entirely to the vein quartz, with the associated schist carrying low values, and the walls negligible values. The ore shoots ranged up to 122 m (400 feet) long and averaged 45.7 m (150 feet) in length. Below the 1,725 foot level there was marked decrease in grade and little or no ore was found below the 2,075 foot level. Less than ore grade vein material was also found immediately above and below the diabase sill, primarily due to alteration and leaching. It is thought that the initial source for the gold was the mafic volcanics (Mackasey et al., 1974) and that the sheared zone was a favourable structural site for gold deposition.

No exposures of metasedimentary rocks are to be seen on the Northern Empire property, however they were encountered in the 600 foot north cross-cut and in the shaft below the 2,200 foot level.

Small, irregular, dike-like masses of pink rock believed to be acid intrusions occur in the metavolcanics on the 600 foot north cross-cut near the metasedimentary contact and below the diabase sill. The unit is also exposed on surface.

A prominent diabase 'sill' occurs as a flat-lying sheet and is known to extend for several kilometres. It cross-cuts the bedding at about 75° and has numerous off-shoots extending down from the main body, striking north. The "sill" crops out some 1,829 m (6,000 feet) east of the mine shaft and also to the west (1.6 km) near Beardmore (the same unit was also found 7.2 km to the northwest at a depth of 488 m (1,600 feet) on the Sand River Gold Mine property). The diabase in the shaft cuts off the vein at a depth of about 198 m (650 feet) and 172.2 m (565 feet) thick. The vein continues beneath the "sill" without any noticeable displacement. An alteration halo surrounds the diabase in the form of blackened to bleached, silicified, metavolcanic country rock up to 15 m (50 feet) wide, with prominent chloritic alteration extending from this point outward for a distance of approximately 61 m (200 feet) (Benedict and Titcomb, 1948)."

SAND RIVER MINE

The Sand River Mine was discovered by Russell Cryderman, south of the Leitch Mine in Eva Township in 1935. This past producer operated from 1937 to 1942 and produced 50 065 ounces of gold and 3628 ounces of silver (Ferguson et al. 1971).

The Sand River Mine property is located in east central Eva Township, south of the Leitch Mine, about 10 km (6.25 miles) northwest of the town of Beardmore.

Ferguson et al. (1971) describe the geology of the Sand River Mine as follows:

> "Greywacke strike N85°W, dip 80°N has been cut by a few dikes of diorite and diabase. A nearly horizontal diabase sheet was intersected in the shaft between 1,600 and 2,220 feet. The Sand River vein follows a shear zone in greywacke, strikes N60° - 70°E, averages 12 inches in width and has been developed over a length of 3,000 feet above the diabase sheet. Recovery of gold averaged 0.32 ounces per ton of ore milled."

Mason and White (1986) describe the mineralization found on the Sand River property:

> "The Sand River Gold Mine property adjoins the Leitch ground to the west. It is, therefore, reasonable to expect that the vein character and nature of the gold mineralization are similar in many ways to the Leitch Vein system. Three veins on the Sand River property were described in the literature: The No. 1 vein (known as the Main or Discovery Vein), the 'Creek Vein', and an unmineralized, sub-parallel quartz vein 6 m (20 feet) east of the main vein. However, only the No. 1 vein, which is the western extension of the No. 2 vein on the Leitch property, was mined and extensively developed below the surface. All three exist as narrow quartz veins occupying fractures in bedded greywacke. Gold mineralization is associated with chlorite-sericite 'slips', ankerite, pyrite, arsenopyrite and tetrahedrite in well fractured milky-white quartz."

Laird (1937) described the three veins in detail as follows:

"Vein No. 1 occurs in a narrow shear zone in well-bedded greywacke with thin slaty interbeds. The vein follows the shear zone, which strikes N60° - 70° E. Like other veins in the area it shows a strong tendency to pinch and swell, both along the strike and on the dip. The quartz is milky in colour and well fractured parallel to the strike. Narrow veinlets of a later generation of lighter-coloured quartz up to half an inch in width intersect the main vein at right angles. Some of the stronger of these veinlets cut across the main vein and penetrate the schistose wall rocks on either side for several feet. This late generation of quartz carries no mineralization. Generally speaking, the quartz is rather sparsely mineralized with pyrite, flakes of malachite and azurite, and tetrahedrite; specks of visible gold are common, especially in test pits near the west end of the exposure. Carbonate, greenish sericite, and chlorite are rather common constituents of the vein matter and occur mainly in the longitudinal fractures and in tiny slip planes.

The greywacke beds strike N85° W and dip 80° N. The vein is rather sinuous and broken in several places by eastward-dipping thrust faults, which results in minor horizontal displacements. Its sinuosity at first suggests folding, but on further examination it seems clear that this has not been a dominant process, since the enclosing bedded greywacke has not been subjected to a similar derangement. It would appear rather that the vein matter occupies an original sinuous fracture cutting across the bedded sediments, as it is quite independent of any structural folding in them. Although the average width is only about 13 inches, it is remarkably persistent along the strike, having been exposed in cross-trenches and test pits for a length of 2,100 feet, and exposed continuously for 550 feet.

The 'Creek vein' is not well exposed on surface. One section 25 feet in length outcrops in the creek bed, and 200 feet west of this point another section 20 feet in length is exposed. It strikes N74° E and has an apparent dip of 50° N; it has an average width on surface of 24 inches. It occurs mostly in a broad dike of quartz diorite, dipping 50°-60° N, but toward the east it passes into greywacke; the dike ranges from 60 to 130 feet in width. The vein matter consists of a highly altered, greenish, silicified material cut by numerous quartz stringers, which constitute about 25 percent of the whole. In places arsenopyrite is abundant, and a little pyrite occurs. No visible gold was observed, but a character sample carrying arsenopyrite yielded 0.14 ounces gold per ton. The quartz is milky in colour and much fractured and carries some carbonate in the form of ankerite. Just

below a waterfall about 20 feet east of the main vein is another subparallel quartz vein striking N74°E. The quartz is well fractured, but no important mineralization was observed. Early in May, 1935, over 2,450 feet of diamond-drilling was done on the main vein, a total vein length of 400 feet being indicated. According to official plans the average of channel assays taken on surface indicates a gold content of 0.218 ounces per ton over a width of 18 inches."

Mason and White (1986) also note:

"The No. 1 vein, on which the Sand River shaft was sunk in 1936, is located near the northwest corner of claim TB12941. Surface exploration later uncovered the 'Creek vein', which lies toward the west side of the claim group in the northeast part of TB13759. Other work in 1946 was confined to testing the extension, by use of drilling, of the Leitch No. 16 vein along the northern boundary of the Sand River claim group."

STURGEON RIVER (QUEBEC STURGEON) MINE

In 1934, the original showing was staked by the Wood-Brown Prospecting Company and later optioned to Coniagas Mines Limited. Sturgeon River Gold Mines was incorporated in August of 1934 to acquire the property.

Development of the property continued during the late 1930's and early 1940's. The Sturgeon River Mine produced 73 438 ounces of gold and 15 922 ounces of silver during the years 1936 to 1942 (Ferguson et al. 1971).

The Sturgeon River property is situated at the common corner of Irwin, Walters, Pifher and Elmhirst Townships on the south side of the Sturgeon (Namewaminikan) River. The shaft is located 20.9 km (13 miles) northeast of the town of Beardmore.

A detailed description of the geology over the Sturgeon River property is given by Mackasey (1975):

> "The area is underlain by intermediate to felsic metavolcanics that have been intruded by granodiorite, mafic dikes, quartz veins, and diabase dikes. The metavolcanics are medium grey to dark green and vary from massive to foliated. Fine-grained 'quartz-eye' porphyry is present in the vicinity of the mine and may be the result of silicification related to the intrusion of the granodiorite stock to the east. Tuffaceous volcanic rocks and minor tuff-breccia outcrop along the north half of the western boundary of the property. Tourmalinized metavolcanics similar to those described by Laird (1937, p. 72-73) were found in claim TB16730.
>
> Granodiorite and quartz diorite stocks lie to the north and east of the mine. Irregular tongues and porphyritic, hybrid zones of these bodies can be found in the vicinity of the mine site."

Mackasey (1975) gives a detailed description of the mineralogy:

"The gold bearing quartz veins cut all rocks in the mine area with the single exception of a flat dike on the 1,125 foot (343 m) level (believed by the writer to probably be diabase). According to Bruce (1937a, p. 38) there are two or three sets of quartz veins. One set strikes northeast and a second set (containing the No. 3 Vein) slightly east of north. The No. 3 Vein itself strikes N13°E and dips 70 degrees west. As the No. 3 Vein changes to an easterly dip underground Bruce (1937a, p. 39) concludes that there may be a third set of fractures."

Bruce (1937a) described the metallic and non-metallic minerals found at the Sturgeon River Mine as follows:

..."The quartz appears to be younger than the calcite. There is as well a very marked difference in the grain size of the quartz, which may be due to brecciation. If so, there are two generations of quartz, and it is not certain that both are younger than the calcite. Sericite is apparently later than both the quartz and calcite. It occurs in narrow, irregular veinlets. Metallic minerals form a very small part of the vein filling. In order of abundance these are pyrite, chalcopyrite, sphalerite, gold and gold telluride. Some of the pyrite shows fairly good crystal outlines; some of it is in irregular grains. Chalcopyrite is found within apparently unfractured pyrite but generally occurs in fractures in it."

..."Gold is relatively abundant in some parts of No. 3 vein. Most of it is in very fine particles and is very pale in colour. Hence, it is not always easily recognizable in hand specimens, especially where it is along highly sericitic slip planes. Very high assays have been obtained from some sections of the vein. The average gold content over a width of 9 inches for the total length exposed is said to be more than an ounce per ton. There is comparatively little in the wall rocks, even where they are somewhat altered."

TALMORA LONG LAC (ELMOS) GOLD MINE

The Talmora Long Lac or Elmos Mine was part of the Ellis group of claims staked by John A. McKechnie in 1912. The mine was situated between the Mosher property and the Little Long Lac Mine.

The mine operated in 1942 and again from 1947-48 producing in total 1415 ounces of gold and 66 ounces of silver (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

The Talmora Long Lac property is situated in Errington Township on the south side of Barton Bay of Kenogamisis Lake about 4 km (2.5 miles) southwest of Geraldton.

The geology of the Talmora Long Lac Mine is described by Ferguson et al. (1971):

> "Greywackes with interbeds of iron formation and intruded by a diorite mass have been folded into a westerly-plunging anticline. A felsic intrusive occurs as a sill-like mass on the south limb. Two steeply-dipping diabase dikes up to 100 feet wide cross the anticline in a northerly direction. Shear zones, strike N60°E-80°E and dip 45° - 90°N, near the diorite-greywacke contact contain quartz lenses averaging less than one foot in thickness. Main associated sulphides are pyrite and arsenopyrite."

TASHOTA-NIPIGON MINE

In 1923, J. McKechnie and H. Girvin discovered visible gold on claim K. K. 524 which was to become the Tashota-Nipigon Mine. During 1927, surface stripping and test-pitting were done on two veins on claims K. K. 523 and K. K. 524. In 1928, a two-compartment vertical shaft was sunk with levels at 100 (30 m) and 200 (60 m) feet. This mine operated from 1935 to 1938 producing 12 356 ounces of gold and 14 527 ounces of silver.

The Tashota-Nipigon Mine is located northwest of Onaman Lake and south of Oboshkegan Township, between Onaman Lake and Onaman River.

Gledhill (1925) describes the McKechnie Claim K. K. 524 as follows:

> "A vein carrying visible gold, chalcopyrite, pyrrhotite, pyrite, native copper, and a mineral found to be bismuthinite, was discovered near the south boundary of K. K. 524 in August, 1923 by J. McKechnie. This find attracted attention because of the high gold assays which amounted to several hundred dollars per ton.
>
> The mineralization is in a shear zone in greenstone, which trends N. 10° E., and the break is occupied by a feldspar-porphyry dike. Mineralized quartz veins coming from the dike have been segregated parallel to it, and the mineralization accompanies the vein quartz. The break, which has been picketed, has several test pits along it. Two of the well-mineralized pits lie near the centre of the south boundary of K. K 524. One shows chalcopyrite and pyrrhotite in quartz, and the other chalcopyrite and gold in a sugary quartz. In one place the quartz vein is three feet wide. The chalcopyrite and pyrrhotite were ground up separately and panned, and the native gold was found to accompany the chalcopyrite. This mineralized break continued east and west. The Nipissing Mining Company have optioned this claim and propose to do some diamond-drilling this coming winter (1924-25).
>
> Mineralization similar to this occurs on claim K. K. 523 which lies just to the west of K. K. 524."

The geology, structure and mineralized zones of the Tashota-Nipigon property have been described by Thurston (1980):

> "The property is underlain by pillowed, porphyritic and massive mafic metavolcanics (grain size 1-3 mm) which are gradational into rocks termed "diorite" by Tindale (1967, p. 5). The dioritic rocks are coarser grained (up to 5 mm) massive rocks with frequent intercalations of chlorite schist. On the basis of their relationship to the granitic rocks to the south near the "west showing" the author believes that they probably represent a coarse-grained synorogenic intrusion. To the north the metavolcanics are overlain by Algoma type (Gross 1965) oxide and sulphide facies iron formation. The iron formation extends the full length of the property, at least 600 m, and is a maximum of 25 m thick, where not thickened by deformation. To the north of the iron formation is an irregular, semiconcordant body of gabbro about 90 m thick, extending at least 600 m east-west. This rock type was thought to be intrusive into the volcanic pile by Tindale (1967, p. 5) on the basis of xenoliths of iron formation found within it. Numerous porphyry dikes cut all the above units. Their extent is uncertain as they cannot be traced from outcrop to outcrop.
>
> The iron formation, chloritic horizons in the mafic metavolcanics, and the dioritic unit south of the shaft form excellent marker horizons to trace structural features. The markers serve to delineate minor secondary folds consisting of a syncline plunging 55-60 degrees northwest, the trough of which is occupied by the gabbro southeast of the shaft, succeeded to the northeast by a north-west-plunging anticline indicated by strikes and dips on surface.
>
> The mineralized zones consist of quartz- and sulphide-filled shear zones, generally bearing a close spatial relationship to the intrusive diorite and porphyry bodies. The zones plunge parallel to the plunge of the secondary folds at 55-60 degrees to the northwest.
>
> Moorhouse (1938, p. 23) stated that most of the production of the mine came from the A zone. It is located on surface about 6 m west of the shaft, and was described by Moorhouse as follows:

"The chief production of mine has come from "A" ore body, which is about 200 feet long. At the surface, widths were about 3 feet. At the 624-foot level, the average width is 57 inches. At 720 feet and 925 feet, widths, determined by drilling, are 6.6 feet and 13.1 feet, respectively. Values above the thrust fault average 0.4 ounces in gold per ton; below it they averaged 0.16 ounces per ton. The deep drill-hole to 925 feet, however, gave an average value of 0.33 ounces per ton over a true width of 13.1 feet. The ore zone dips 70°N and in the upper levels rakes at 68°W. It has now been practically mined out above the 625-foot level.""

THERESA GOLD MINE

The initial discovery of the Theresa gold mine is believed to have been made by Moses Fisher in 1934, who was also instrumental in the initial discovery of the Manitouwadge base metals camp and also involved in the Hemlo gold area in the early stages of exploration.

The Theresa gold mine, which is located approximately 9.5 km (6 miles) south of Longlac, on the Making Ground River, started operations in 1935 and operated through the years 1935-1938, 1941-1943, 1945, 1950-1953 and 1955.

The Theresa Mine produced 4717 ounces of gold and 198 ounces of silver (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

The geology and mineralization of the Theresa Mine is described by Mason and White (1986):

> "According to Fairbairn (1938), the area consists predominantly of altered mafic volcanic rocks, agglomerates and metasediments. These units have been intruded by massive quartz diorite-granodiorite bodies. These units are all cut by northeast-trending diabase dikes.
>
> The Theresa Gold property covers a large area of the quartz diorite-granodiorite intrusion, the remainder of the intrusion is mostly in Indian Reserve #77. The workings are almost entirely restricted to the area of the contact between the intrusion, the volcanics, and the metasediments."

Fairbairn (1938) describes the mineralization as follows:

> "The most important showing is on claims TB16373 and TB17784 of the Caouette group, about a quarter of a mile west of the Making Ground river. A steep-dipping shear zone, averaging 5 feet in width over a length of 300 feet, strikes N40°E along the contact of a sheared agglomerate and massive hornblende-quartz diorite. The agglomerate is on the northwest, the diorite on the southeast. The shear zone contains a quartz vein averaging about one foot in

width and shows coarse visible gold in many places. Pyrite and tourmaline are associated minerals. The zone has been traced at least 650 feet and apparently dies out to the southwest. The results of surface sampling and of preliminary drilling are reported to warrant more extensive operations (Shaft 1 Area).

The two best showings on the Indian group are No. 2 vein on claim TB16581 and No. 3 vein on claim TB15777. The former consists of a network of small quartz stringers spread over a zone 10 feet wide on the contact of hornblende-quartz and a fine, highly altered, greyish dike rock. The contact strikes N85° E and dips 55° N. A thin section of the dike rock shows a fine felted mass consisting mostly of calcite, quartz, feldspar, sericite, and accessory biotite, chlorite, and epidote. The feldspar is indeterminable, and much of the quartz may be secondary. The veinlets occur mostly in this altered rock and contain coarse visible gold, with minor amounts of chalcopyrite, pyrrhotite, bornite, and pyrite. A novelty is the occurrence with the gold of small amounts of the gold-silver telluride, petzite. Tellurides have not been reported elsewhere in this area. The vein zone forks at the southwest end and is continuous for a maximum distance of 100 feet.

No. 3 vein is highly deformed and discontinuous. The showing on the east end consists of an altered hybrid rock, probably greenstone, which contains a drag-folded quartz vein about 3 feet wide. This vein has been traced for 65 feet and contains irregular gold values. On the west end values are scattered over a width of 10 feet and a length of 200 feet. The shear zone contains, in addition to the vein, contorted hybrid greenstone and sheared dioritic material."

TOMBILL MINE

The Tombill Mine was also known as the Tom Johnson Claims and was originally staked in 1931 and again in 1932. In 1933, the claims were transferred to Tom Johnson who with a consortium of other associates including Percy Hopkins and Newmont Mines Limited formed a company to develop the property.

The Tombill Mine was in production from 1938 to 1942 and again briefly in 1955 when clean-up operations were performed. In total, 69 120 ounces of gold and 8595 ounces of silver were recovered from this mine (Ferguson et al., 1971).

The property is located on the eastern boundary of Lindsley Township, immediately north of Trans-Canada Highway No. 11.

The geology of the Tombill Mine is similar to that of the Bankfield Mine which is located 0.4 km (0.25 mile) to the southeast.

Ferguson et al. (1971) have described the geology as follows:

> "Metasediments and felsic intrusives along the sheared and fractured contact of which ore zones have developed."

Bruce (1937b) has described the mineralized zones as:

> "...mainly sheared and fractured greywacke and porphyry impregnated with silica and small amounts of metallic minerals. To a lesser extent there are definite quartz veins in the ore zone."

Metallic minerals are predominantly pyrite, arsenopyrite, pyrrhotite and native gold. Refer also to the Bankfield Mine description.

C. GOVERNMENT WORK

Table 2 on the following pages outlines government work, both provincial and federal, completed in the Beardmore-Geraldton District. Through the years, there appears to have been a correlation between areas mapped by the government, and prospecting trends.

TABLE 2

G O V E R N M E N T R E S E A R C H

B E A R D M O R E - G E R A L D T O N D I S T R I C T

(Publications are by the Ontario Government unless marked otherwise)

YEAR	AUTHOR	AREA	REPORT	MAP
1869	Bell, R.	North Shore Lake Superior and Lake Nipigon	Summary*	--
1898	Dowling, D.B.	Lake Nipigon	Summary*	--
1902 1903	Parks, W.A.	Nipigon Lake and River	Summary* (2)	--
1907	Coleman, A.P.	Iron Ranges East of Lake Nipigon	Annual	--
1907	Moore, E.S.	Iron Ranges, Lake Windigokan	Annual	--
1908	Coleman, A.P. & Moore, E.S.	Iron Ranges East of Lake Nipigon	Annual	17d**
1908	Moore, E.S.	Iron Ranges, Onaman	Annual	17c**
1909	Coleman, A.P.	Iron Ranges, Nipigon District	Annual	--
1909	Moore, E.S.	Iron Ranges North of Round Lake	Annual	--
1909 1910	Wilson, A.W.G.	Lake Nipigon	Summary* Memoir*	-- 8A
1916 1917	Hopkins, P.E.	Kowkash	Annual Annual	25a 26a
1917	Burrows, A.G.	Longlac-Jellicoe-Beardmore	Annual	26b
1918	Hopkins, P.E.	Ogahalla to Collins	Annual	--
1918	Tanton, T.L.	Between Nipigon and Longlac	Summary*	--
1925	Gledhill, T.L.	Tashota-Onaman	Annual	34g
1929	Langford, G.B.	Beardmore-Nezah	Annual	37k
1932	Kindle, L.F.	Kowkash-Ogoki	Annual	40f
1933	Burwash, E.M.	Atigogama and Dillabough Lakes	Preliminary	--

TABLE 2 CONTINUED....

YEAR	AUTHOR	AREA	REPORT	MAP
1934	Jameson, F.	Sturgeon River	--	1934c
1934	Tanton, T.L.	Little Long Lac Sturgeon River	Summary* (2)	313A 312A
1936 1937	Bruce, E.L.	Little Long Lac and Sturgeon River	Annual (3)	44d 45a
1937	Laird, H.C.	Sturgeon River	Annual	45a
1938	Fairbairn, H.C.	Long Lake	Annual	46b
1938	MacDonald, R.D.	Pagwachuan Lake	Annual	46b
1939	Moorhouse, W.W.	South Onaman	Annual	47h
1939 1942	Gussow, W.C.	Caribou-Pikitigushi Lakes	Preliminary Annual	-- 49q
1942 1943	MacDonald, R.D.	Kenogamisis River Hutchison Lake	Annual Annual	49m 50f
1945	Evans, E.L.	Hearst to Longlac	Annual	51h
1948	Chisholm, E.O.	Linklater Lake	Preliminary	--
1952	Peach, P.A.	Beardmore	Preliminary	--
1952	Pye, E.G.	Errington Township	Annual	1951-7
1955	Horwood, H.C. and Pye, E.G.	Ashmore Township	Annual	1951-2
1956	Moorhouse, W.W.	O'Sullivan Lake	Annual	1955-2
1959	Langford, F.F.	Gripp Lake	Annual	1958-1
1964	Pye et al.	Geraldton	--	P.241
1964 1965	Pye, E.G. and Harris, F.R.	Nipigon and Mojikit Lakes	-- --	P.257 P.267
1965	Pye et al.	Ogoki Lake	--	P.274
1966	Pye, E.G.	Nipigon-Schreiber	--	2137
1966	Pye et al.	Tashota-Geraldton	--	2102

TABLE 2 CONTINUED...

YEAR	AUTHOR	AREA	REPORT	MAP
1968	Mackasey, W.O.	Irwin, Walters and Leduc Townships	--	P.481 P.539 P.540
1968	Pye, E.G.	Crescent Lake	Geological	2100
1969	Innes, D.G.	Caramat Pagwa River Wababimiga-Jog Lakes	-- -- --	P.551 P.552 P.549
1969	Innes, D.G. and Ayres, L.D.	Caramat - Pagwa River	--	2202
1970	Mackasey, W.O.	Eva and Summers Townships	--	P.601 P.602
1973	Carter et al.	Nipigon-Schreiber	--	2232
1973	Mackasey, W.O. and Wallace, H.	Elmhirst Township	--	P.801
1973	Thurston et al.	Onaman Lake	--	P.847
1974	Amukun, S.E.	Tashota	--	P.931
1975	Mackasey, W.O.	Dorothea, Sandra and Irwin Townships	Geological	2294
1976	Amukun et al.	Willet Lake	--	P.1092
1976	Mackasey, W.O.	Walters and Leduc Townships	Geological	2356
1976	Mackasey et al.	Colter and Legault Townships	-- --	P.1192 P.1191
1976	Thurston et al.	Onaman Lake	--	P.846
1977	Amukun, S.E.	Tashota	Geological	2354
1977	Amukun et al.	Conglomerate Lake	--	P.1236 P.1237
1978	Amukun et al.	Little Marshall Lake	--	P.1561
1978	Mackasey, W.O. and Wallace, H.	Elmhirst and Rickaby Townships	Geological	2373
1979	Amukun, S.E.	Willet Lake	Geological	2415

TABLE 2 CONTINUED...

YEAR	AUTHOR	AREA	REPORT	MAP
1979	Amukun et al.	Howard Falls	--	P.2310 P.2311
1979	Bond, W.D.	Melchett Lake	Summary of Field Work Misc. Paper	--
1980	Amukun, S.E.	Gledhill and Conglomerate Lakes	Geological Geological	2412 2429
1980	Thurston, P.C.	Onaman Lake	Geological	2411
1980 1981	Wallace, H.	Attwood Lake	Geological	2436
1981	Bond, W.D. and Foster, J.R.	Melchett Lake	--	P.2392 P.2393
1983	Beakhouse, G.P. and Chevalier, P.	Kirby, Fulford and McQuesten Townships	--	P.2592 P.2593
1983	Carter, M.W.	McComber Township and Vincent Township	Summary of Field Work Misc. Paper	--
1983	Lavigne, M.J.	Geraldton	Summary of Field Work Misc. Paper	--
1983	Sage, R.P.	Chipman Lake	Open File	P.1068
1984	Amukun, S.E.	Klob Lake	Geological	2469
1984	Beakhouse, G.P.	Grenville Lake	Open File	P.2592 P.2593
1984	Stott, G.M.	Geraldton	--	P.241
1985	Amukun, S.E.	Little Marshall Lake	Open File	P.1561
1985	Carter, M.W.	McComber and Vincent Townships	--	P.2853 P.2854
1985	Sutcliffe, R.H. and Greenwood, R.C.	Lake Nipigon	--	P.2837 P.2839
1987	Amukun, S.E.	Howard Falls	Open File	P.2310 P.2311

TABLE 2 CONTINUED...

YEAR	AUTHOR	AREA	REPORT	MAP
1988	Kresz, D.U. and Zayachivsky, B.	Barbara, Meader and Pifher Townships	Open File	P.3077 P.3078
		Seagram Lake	--	O.F. 115
1988	Macdonald, A.J.	Geraldton	Open File	--
1989	Beakhouse, G.P.	Grenville Lake	Geological	2513

*Published by Geological Survey of Canada.
**Maps/Reports are not on file in the Thunder Bay Office.

4. HISTORICAL RESEARCH

A. PROCEDURE

As outlined in the introduction, the three main objectives of the Historical Research Project are:

1) to research and document old/forgotten mineral occurrences
2) attempt to locate the occurrences in the field
3) provide the mineral occurrence information to the public.

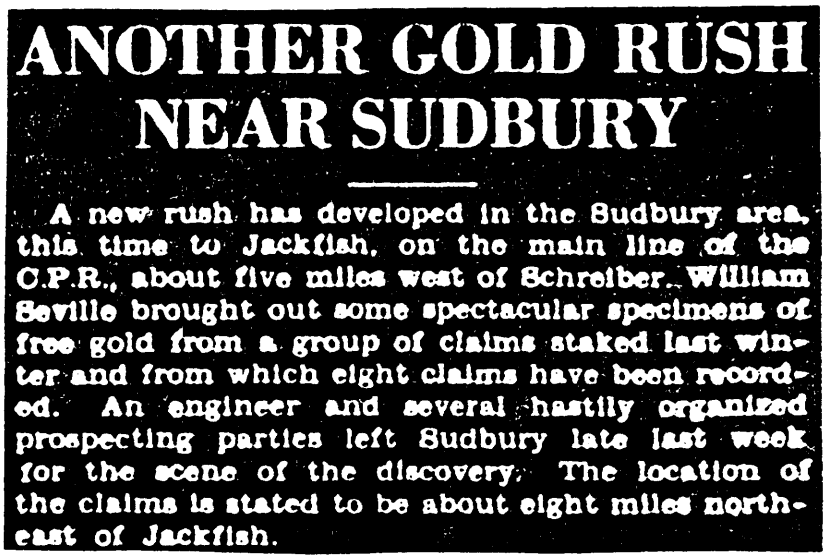
The following text will describe in detail the procedure followed for each of these objectives.

1) Research

A list of source articles researched to date is shown in Table 3. The list indicates both daily newspapers (i.e. The Fort William Daily Times Journal) and mining journals (i.e. The Northern Miner) have been perused for documentation of mineral occurrences. Generally, these articles provide significant information about the mineral occurrences such as location, parties involved, type of work, and assay values. However, not all articles are accurate or complete. For example, an article from the 1933 Northern Miner is titled "Another Gold Rush Near Sudbury" (see Figure 2).

Table 3
ARTICLES RESEARCHED.

	Source Articles	Dates of Articles
1.	a) Canadian Mining Review b) Canadian Mining Journal	1883-1907 1908-1930 1936-1960
2.	The Pre-Cambrian	1932-1958
3.	The Daily Sentinel and North Shore Miner	1882, 1884-1890
4.	Thunder Bay Sentinel	1879-1893
5.	The Weekly Herald and Lake Superior Mining Journal	1882-1887
6.	The Weekly Herald and Algoma Miner	1889-1895
7.	The Daily Journal	1895-1899
8.	The Fort William Daily Times Journal	1900-1936
9.	The Weekly Times Journal	1903-1905
10.	The Morning Herald	1909, 1912
11.	The Northern Miner	1915-1948
12.	The Engineering and Mining Journal	1881-1902
13.	Gold Magazine of Canada's North	1933-1939
14.	Canadian Mines Handbook	1931-1955



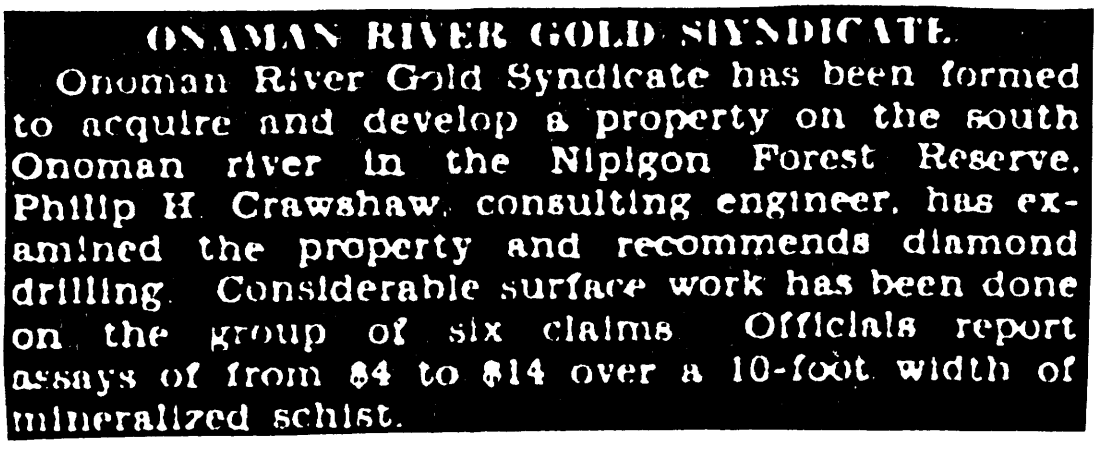
ANOTHER GOLD RUSH NEAR SUDBURY

A new rush has developed in the Sudbury area, this time to Jackfish, on the main line of the C.P.R., about five miles west of Schreiber. William Seville brought out some spectacular specimens of free gold from a group of claims staked last winter and from which eight claims have been recorded. An engineer and several hastily organized prospecting parties left Sudbury late last week for the scene of the discovery. The location of the claims is stated to be about eight miles northeast of Jackfish.

Figure 2

This article is describing a property near Jackfish, which is located east of Schreiber, on the north shore of Lake Superior. Schreiber is approximately 840 km (525 miles) west of Sudbury. In this case, the article had to be read in its entirety to realize that a property in Northwestern Ontario was being described.

Not only can the location be wrong, but it can also be vague, as indicated by the article in Figure 3, also from the 1933 Northern Miner.



ONAMAN RIVER GOLD SYNDICATE

Onoman River Gold Syndicate has been formed to acquire and develop a property on the south Onoman river in the Nipigon Forest Reserve. Philip H. Crawshaw, consulting engineer, has examined the property and recommends diamond drilling. Considerable surface work has been done on the group of six claims. Officials report assays of from $4 to $14 over a 10-foot width of mineralized schist.

Figure 3

The south branch of the Onaman River covers approximately 16 miles in the Nipigon Forest Reserve. Even though the values from $4 to $14 are interesting, it is not possible to pinpoint the location of the six claims mentioned in the article.

Geological reports published by the Ontario Department (Bureau) of Mines in the form of annual reports, preliminary reports, and maps are another important source of information for mineral occurrences. Generally, these reports are very comprehensive (see Figure 4) as the property has been visited by the author. Often the claim numbers for the property are included in the description, and occasionally there is a sketch of the showing. In some cases the property location is indicated on the geological map which accompanies the report (as seen in Figure 5).

McFarlane-Manion

At mileage 51.3 west of Grant, or four miles east of Redmond on the north side of the track on claim T.B. 2722, is a quartz-calcite vein, two to ten feet wide in a Keewatin greenstone which is said to extend across several claims in an east-west direction. Mr. McFarlane has sunk a pit 11 feet deep on the vein where it strikes south 70° east and dips 70° to the north. A one-half inch vein of galena occurs near the foot wall. Chipped samples for assay taken in three sections with a moil and hammer across the vein at the bottom of the pit gave as follows:

No. 1. 1½ ft. hanging wall part of vein, gold none; silver none.

No. 2. 3½ ft. centre of vein, gold $1.20; silver none.

No. 3. 1½ in. foot wall part of vein, containing galena, gold $6.00; silver none.

Figure 4

PROVINCE OF ONTARIO

DEPARTMENT OF LANDS, FORESTS AND MINES

BUREAU OF MINES

Hon. G. H. Ferguson, *Minister.* Willet G. Miller, *Provincial Geologist.*

GEOLOGICAL NOTES

The Kowkash area possesses similar pre-Cambrian rocks to those found elsewhere in northern Ontario.

The Keewatin consists chiefly of massive, fine-grained chlorite and hornblende rocks which are in places altered to schist. Among these rocks are altered diabase, meta-basalt showing pillow structure, agglomerate, iron formation and rusty carbonate. The banded iron formation is composed largely of red jasper and magnetite. Cutting the greenstones and closely associated with the iron formation are numerous narrow dike-like masses and flows of quartz porphyry or rhyolite.

Granite and gneiss of Laurentian age are shown on the map, but these rocks may include some granites of later age.

Conglomerate and slate, apparently of Timiskamian age, are found about two miles below Howard falls on the Kawashkagama river. Slates also occur at mileages 50.7, 51.7 and 53.6 along the railway.

Massive fresh-looking biotite granite, probably of Algoman age, occurs in the area. An exposure, three miles wide, forms the height of land, altitude 1118 feet, at Redmond.

Quartz diabase dikes of Keweenawan age occur in many parts of the area. Larger exposures of diabase and gabbro can be seen south of Tashota and also about 300 yards north of the Dodds' gold vein.

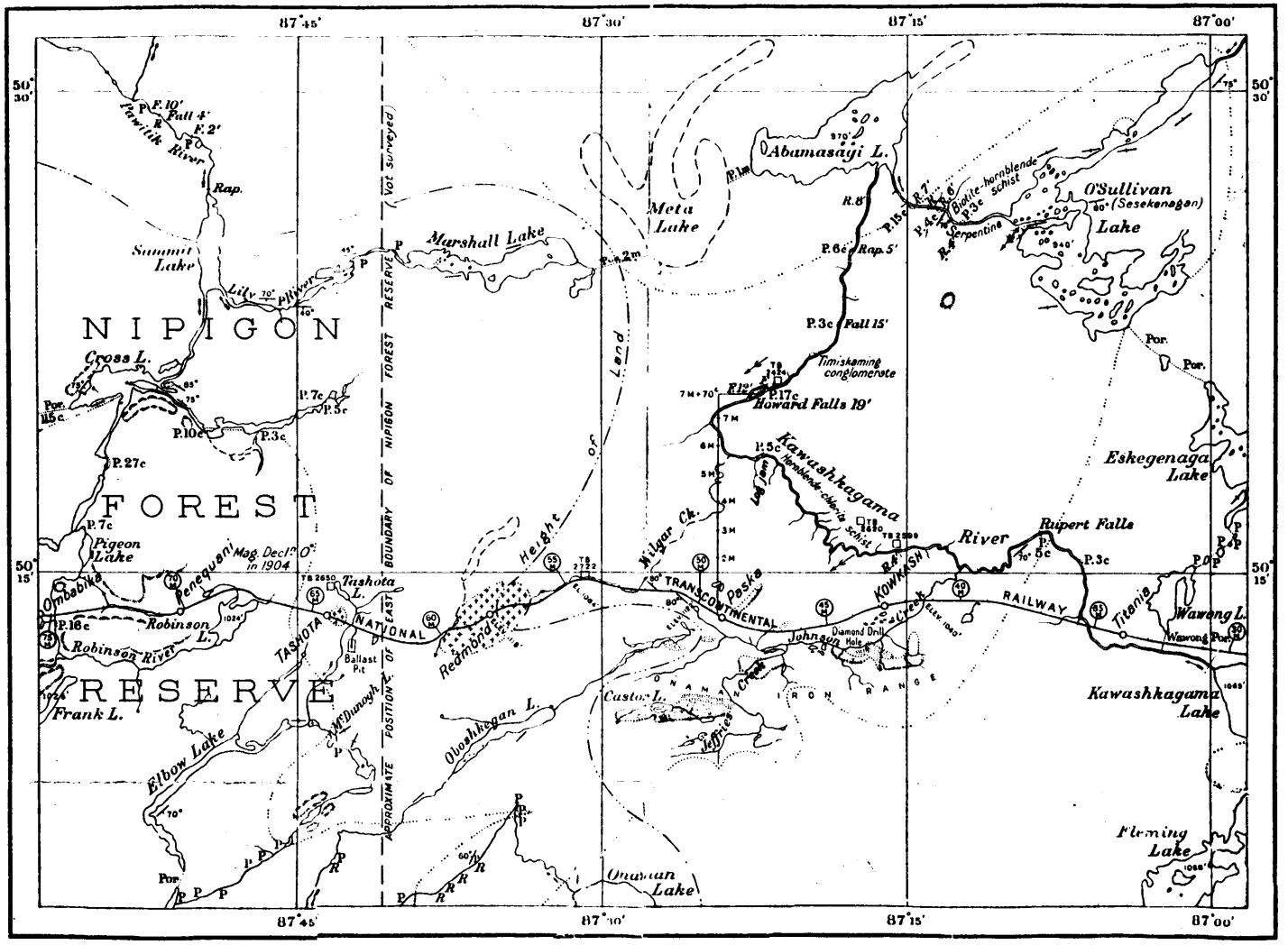
Gold Veins

Numerous quartz veins, some of which are auriferous, occur over the whole Keewatin area. The first gold discovery in the area was a spectacular showing in a narrow quartz vein in pillow lava on the Dodds' claim. Visible gold occurs on the Dawson and Richardson claims farther up the Kawashkagama river. Both gold and a telluride occur on the Devanney claim near Tashota. Gold values were obtained near Redmond, at mileage 54.3, and from other parts. Samples from Summit and Cross lakes yielded 80 cents, $1 and $2.80 in gold.

As yet, no work has been done other than some stripping and the sinking of two or three shallow test pits; however, a thorough prospecting of the whole area seems advisable.

Mining Claims

T.B. 2424, Dodds.
T.B. 2620, Dawson.
T.B. 2599, Richardson-London-Ogilvie.
T.B. 2722, McFarlane-Manion.
T.B. 2650, Devanney.



MAP No. 25a.

KOWKASH GOLD AREA

DISTRICT OF THUNDER BAY

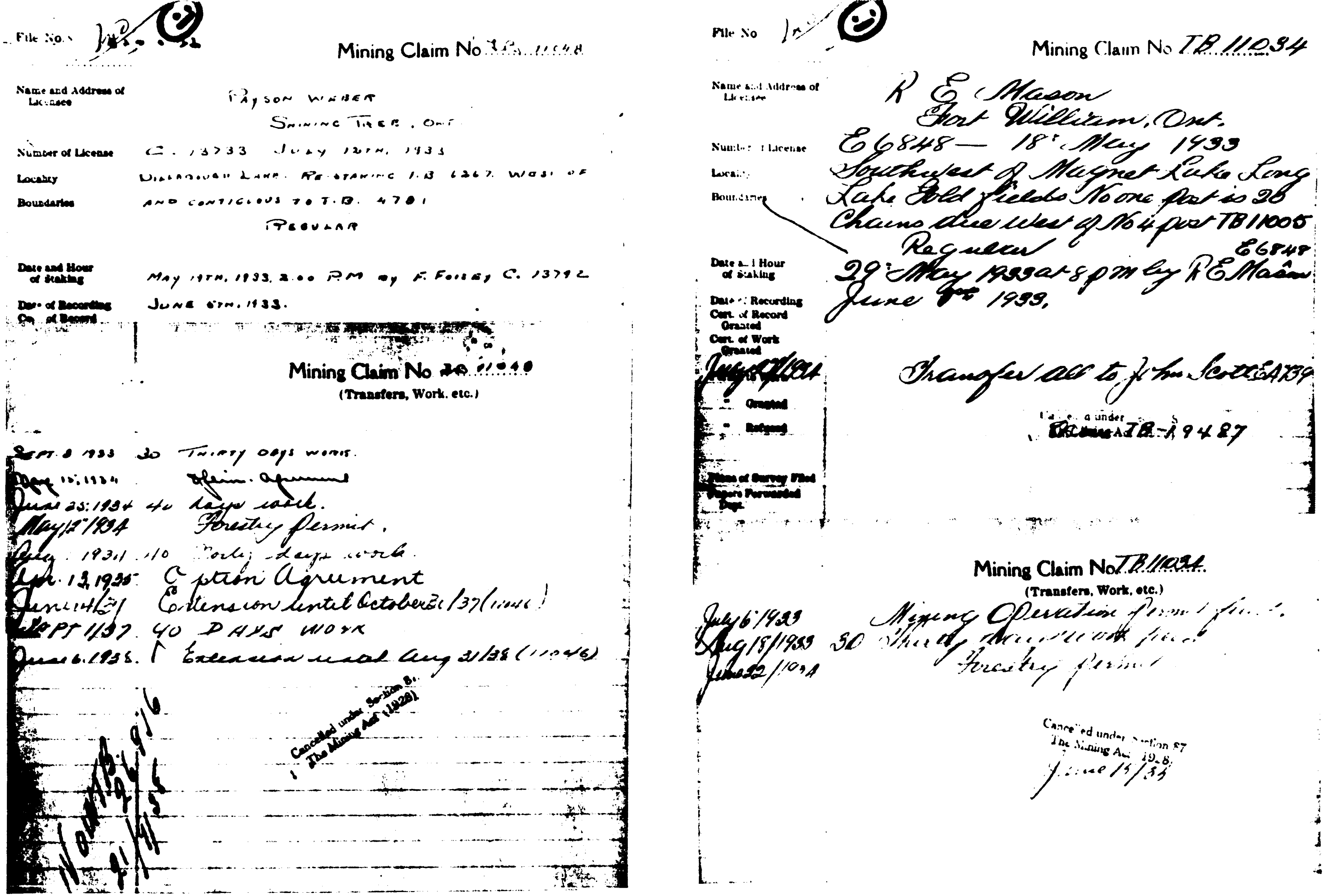
Figure 5: Section of map which accompanied Part 1, Volume 25, Report of Ontario Bureau of Mines Report, 1916.

Claim abstracts and maps provide information on the occurrences also. Standard information on the older claim abstracts includes

1) who staked the claim
2) who held the claim
3) date of staking and filing
4) general location.

As can be seen from examples of older claim abstracts in Figure 6, the remainder of the abstract indicates the work and status of the claim. Transfers, options and days work are documented. The main problem with the older claim abstracts is that the type of work (i.e. trenching, stripping, drilling, mapping), or exact location of work (i.e. on which claim within a group of claims) is not indicated. Also, names of the parties involved are often not included in option agreements.

Claim maps showing the location of the claims are very useful also. However, many areas shown on the earlier claim maps had not yet been surveyed. Generally the claims were located with respect to lakes or rivers on the claim map. Since the lakes and rivers had not been surveyed the original location of the claims may be incorrect. Another major problem with the claim maps is that lakes and rivers documented on one map will not appear on a later version of the same claim map. Quite often the names of the lakes or rivers have changed from the earlier version of the claim map to the version released at a later date. An example of a 1930's claim map may be seen in Figure 7.



File No.

Mining Claim No TB 11048

Name and Address of Licensee: PAYSON WEBER, SHINING TREE, ONT.

Number of License: C. 13733 JULY 12TH, 1933

Locality: DIAMOND LAKE. RE-STAKING T.B. 6267. WEST OF

Boundaries: AND CONTIGUOUS TO T.B. 4781

REGULAR

Date and Hour of Staking: MAY 19TH, 1933, 2.00 P.M. BY F. FOLEY, C. 13772

Date of Recording Cert. of Record: JUNE 6TH, 1933.

Mining Claim No TB 11048

(Transfers, Work, etc.)

Sept. 8 1933 30 Thirty days work.

June 25: 1934 40 days work.

May 12 1934 Forestry Permit.

Apr. 13, 1935 Option Agreement

Sept 1/37 40 DAYS WORK

June 6. 1938. Extension until Aug 21/38 (11046)

Cancelled under Section 8 The Mining Act (1928)

File No

Mining Claim No TB 11034

Name and Address of Licensee: R E Mason, Fort William, Ont.

Number of License: E6848 — 18th May 1933

Locality: Southwest of Magnet Lake Long Lake Gold Fields

Boundaries: No one post is 26 chains due West of No 4 post TB 11005

Regular

Date and Hour of Staking: 29th May 1933 at 8 p.m. by R E Mason E6848

Date of Recording: June 1933

Cert. of Record Granted

Cert. of Work Granted

Granted

Refused

Plans of Survey Filed

Papers Forwarded Dept.

Transfer all to John Scott EA739

Cancelled under TB-19487

Mining Claim No TB 11034

(Transfers, Work, etc.)

July 6/1933 Mining Operation Permit filed.

Aug 18/1933 30 Thirty days work filed

Forestry Permit

Cancelled under Section 87 The Mining Act 1928

June 15/35

Figure 6: Examples of Claim Abstracts

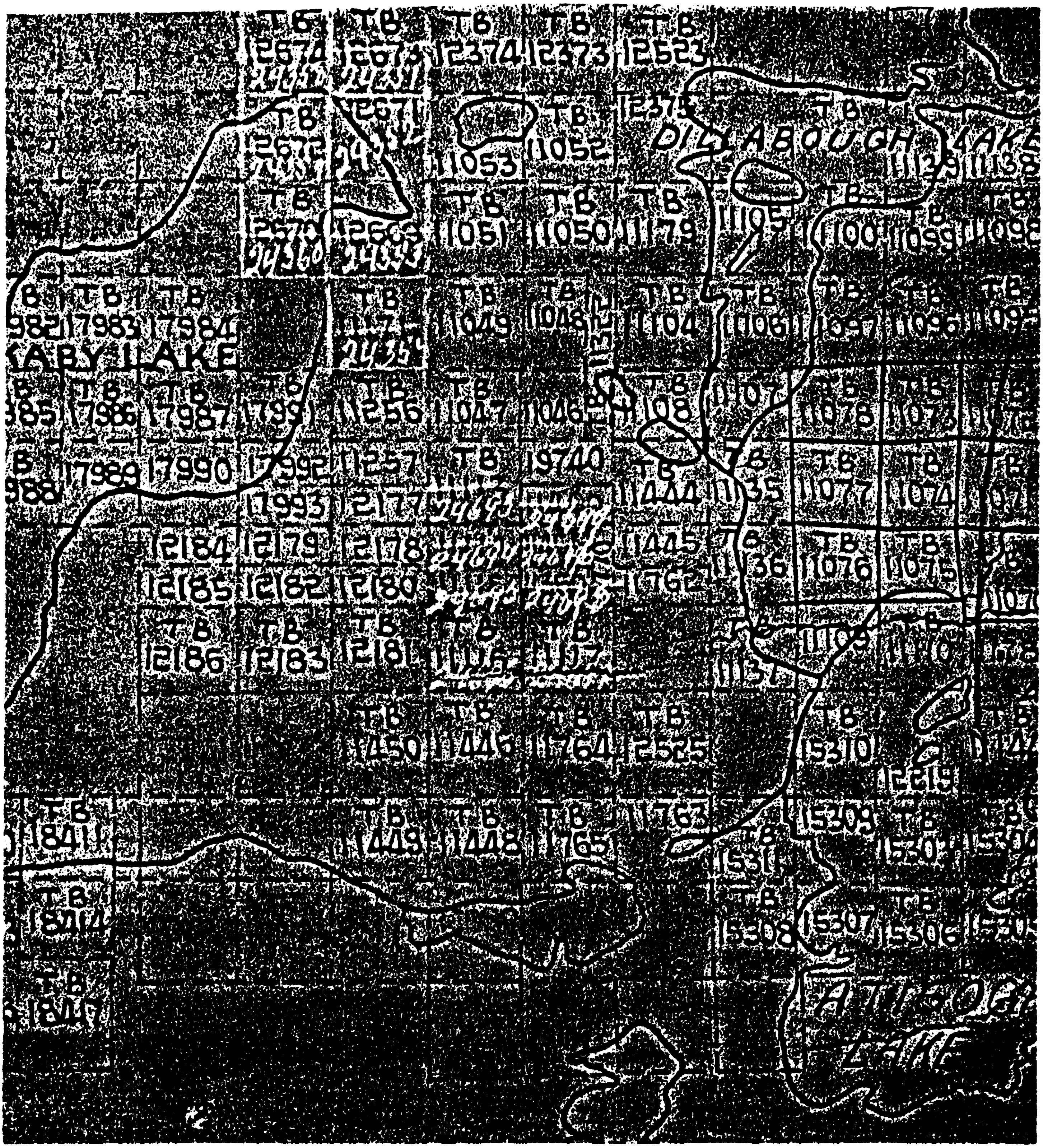


Figure 7:
A section of Claim Map G161 - Rickaby Township, 1936

The largest problem encountered with the claim abstracts and maps is in the completeness of files. Often, abstracts are missing from the numerical sequence. Whether these abstracts are missing just from the Ministry of Northern Development and Mines, Thunder Bay files, or whether these abstracts are not on record anywhere in the system, is difficult to determine. To exemplify this point, in February of 1936 the mining recorder's office in Tashota was destroyed by fire. Whether any records were saved from the fire is unknown, and whether any copies of the records from that office are anywhere within the system is also unknown.

2) Locate Occurrence in the Field

Once an article of interest is found, the article is researched to try and determine the occurrence's location in the field. This involves the use of the old claim maps and abstracts to help decipher the location. If the original claim numbers are given, the claim map for that time frame is located. From the claim map, the location of the property is determined. The original claim block is then traced through to present day claim maps. The abstracts for any claims which were subsequently staked over the original block will be researched. From the claim abstracts and maps it is possible to attain a general idea of who held the property and what type of work was undertaken on it. As well, assessment files, mineral deposit files and government reports that cover the property are reviewed. The information collected from these sources may range from very little to detailed geological maps covering the area. The process of tracing the property from one claim map to

another in principle is simple. However, problems encountered while trying to trace the claims may include: 1) the claim map showing the original claims may not exist in our files, 2) the original claims may not be in the correct position on the map, and/or 3). The area of search may not be the correct geographic area.

Once the property has been researched, a field visit is undertaken to try and locate the old showings. If the property is staked, claim lines help determine location in the field. If the property is unstaked, compass and pace method is used from a known location. In many cases, old pits, trenches and clearings have been located. However, it must be kept in mind most of the showings we are looking for are more than 50 years old and may be overgrown.

3) Provide Information to the Public

When an article of interest is found, it is copied and filed in two places; the location file and chronological file. The location files have been set up on the National Topographic System (see Appendix ? for description of the N. T. S.). These property location files are cross-referenced on file cards both by location and alphabetically by name for easy retrieval of files. There are four standard pieces of information given on each card. These include: (a) company or property name in top left hand corner; (b) NTS location in upper right hand corner; (c) a brief description of the general location and (d) alternate names (or previous owners or company names).

As material has been researched for the Beardmore-Geraldton District, relevant articles for other districts in the northwestern region of the Ministry of Northern Development and Mines, have been discovered, copied and sent to the Resident Geologist for that area. Resident Geologists for the Kenora, Red Lake, Sioux Lookout, Thunder Bay and Schreiber-Hemlo Districts have received these files. Each Resident Geologist has either assimilated the articles into existing mineral deposit files, or set up the historical files in separate system. All files in the Beardmore-Geraldton and other districts are open to the public for research purposes.

B. RESULTS

There are two end results when the procedure outlined in the previous text is followed. The first result is positive, and has lead to properties being rediscovered through the research. The second result is negative and is a function of the numerous problems encountered through this type of historical research. Examples of properties rediscovered through the program, as well as an overview of the many problems encountered throughout the project will be discussed in the following text.

1) Properties Rediscovered

The following text will document 2 examples of occurrences which have been rediscovered through this project.

(i) The McFarlane-Manion Occurrence

The McFarlane-Manion occurrence is located in Gzowski Township, directly north of the Canadian National Railway, between Tashota and Kowkash. The property was described by Hopkins in the 1916 Ontario Department of Mines Annual Report entitled "Kowkash Gold Area". The article documented a quartz-calcite vein, and a pit sunk to a depth of 3.3 m (11 feet), which ran values of $1.20 to $6.00 gold. In 1916 the value of gold was $20.67 per ounce, which converts the previously mentioned dollar values to 0.058 and 0.29 ounce Au per ton respectively. The McFarlane-Manion occurrence was described in the 1987 annual report of the Beardmore-Geraldton Resident Geologist, based on information from this 1916 article and the map which accompanied the report. Two prospectors from Hornepayne, Charlie Paul and Gerald Milks, read about the occurrence in the report, and became intrigued with the showing. Being familiar with the area, they decided to try and locate the original property. In July of 1988, Charlie Paul and Gerald Milks located numerous trenches and pits, including the original pit (shallow shaft) mentioned in the 1916 article. They subsequently staked the property and have staked additional claims since the summer of 1988. In June of 1989 the property was visited by the authors. A detailed description of the showing may be seen in Appendix D. It is important to note that the article written by Hopkins in 1916 was descriptive and accurate such that two prospectors could locate the old workings more than 70 years later.

(ii) The Foisey Occurrence

The Foisey occurrence was also rediscovered through the Historical Research Project. The showing is located in Rickaby Township, directly south of Onaman Lake. In the spring of 1988, Frank Houghton, a prospector from Beardmore, discovered an article in the 1934 Canadian Mining Journal by E.M. Burwash that described gold occurrences in the Atigogama Lake area, including the Foisey property. In the article, the best analysis of a grab sample from the occurrence assayed $18 per ton, which converts to 0.52 ounce Au per ton. The map which accompanied the report indicated the occurrence is west of Dilla Lake. In May of 1988, Frank Houghton staked nine claims, after finding the original showing documented by Burwash. During a property visit in July, it was interesting to note that the occurrence matched the description given by the 1934 article. In the latter part of July 1988, Frank optioned the property in a joint venture to Freewest Resources Inc. and Murgor Resources Inc. An extensive exploration program including linecutting, stripping, geological mapping, channel sampling, geophysics and geochemistry was undertaken on the property. Channel sampling, completed by this joint venture, assayed up to 5.4 m of 0.0593 ounce Au per ton, while grab samples taken by the authors assayed up to 0.62 ounce Au per ton. It is important to note that even though various individuals and companies held the property between 1936 and 1988, no detailed work was performed. In this instance, the original article written in 1934 was descriptive enough to find the original occurrence more than 50 years later, yet the occurrence remained "undiscovered" until 1988.

2) Review of Problems

This section will briefly list the problems encountered in a project of this type, which have been described during the previous text. The main reason for this is to emphasize that even though properties are being rediscovered through the project there are many difficulties which must be overcome to reach that step.

RESEARCH

1) Articles	a) inaccurate location b) vague location
2) Claim Abstracts	a) type of work unknown b) exact location of work unknown c) lack of names involved in option agreement
3) Claim Maps	a) earlier maps - area not surveyed b) name changes of lakes and rivers c) lakes and rivers appearing on one map may not appear on the next map
4) Claim Maps & Abstracts	a) incomplete set - due to i) records missing from office set or ii) records non-existent?

LOCATE OCCURRENCE IN FIELD

1) Claim Maps	a) position of original claim group - is it correct- are you in the right area in the field?
2) Time Frame	a) vegetation has obscured pits or trenches and surficial material has partially infilled trenches which are +40 years old.

A historical research project can be successful if it is approached with the understanding that a portion of the material may be missing or incorrect, as would be expected in any project dealing with history.

5. SUMMARY

The Historical Research Project in the Beardmore-Geraldton District is a unique project which has provided valuable mineral occurrence information to prospectors and mining companies.

The historical files created through this project for the Beardmore-Geraldton District are a new exploration data base of historical information. These files document numerous occurrences which have been lost or forgotten through time. The files established within the Beardmore-Geraldton District have 4 main applications or uses for prospectors and exploration companies. The first three applications deal with the location files. These files may be used to (1) research a specific area; (2) follow up a field occurrence and/or (3) evaluate a property. The main or fourth application for the chronological files is to look at a specific time period to see what exploration and development was taking place.

The Historical Research Project has initiated the establishment of 'historical files' within the Northwestern Region, as material documenting occurrences, prospects and deposits in other districts has been collected and catalogued.

Many interesting occurrences within the files have been researched and/or field visited by the authors. In joint efforts with prospectors, this research has led to the rediscovery of old occurrences. The Foisey occurrence is an excellent example of the success of this project. The Foisey occurrence was unstaked when it was rediscovered in the field, by Mr. Frank Houghton (1988),

following research by Mr. Houghton and the authors. The property has since been optioned to a junior-major company joint venture. Another example is the McFarlane-Manion occurrence, which has been staked following rediscovery. Exploration work has been undertaken on it, preparing it for a possible option agreement. This project has contributed to more exploration and development within the Onaman-Tashota belt.

The project has also led to interaction with many older prospectors who actually lived through the staking 'boom' periods within the Beardmore-Geraldton District. These prospectors are an invaluable source of information with respect to access and to descriptions or locations of old occurrences.

The Thunder Bay Mining Recorder's office has also benefited through the Historical Research Program. While researching claim abstracts and claim maps, the existing microfiche within the Mining Recorder's office were updated and added to.

The files also contribute culturally to the general public. Many people are interested in history and in many regions of northwestern Ontario, mining is an integral part of the development of a town. For example, Edgar Lavoie has published a book "...and the Geraldton Way," (1987) to mark the 50th anniversary of Geraldton. Information gathered from the historical files was one source for the documentation of the mining history of Geraldton within the publication. Another person who has utilized information gathered through the project is Jim Dwyer, an American citizen, who is writing a guidebook for the circle route around Lake Superior.

One other possible application of a project such as this one, would be to utilize information from the files to identify potential mining hazards. The files contain information on location of old workings such as shafts and trenches and other possible hazards.

Historical research projects implemented in other portions of the province would be of benefit to the exploration industry and others.

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APPENDIX A

(N. T. S. SYSTEM)

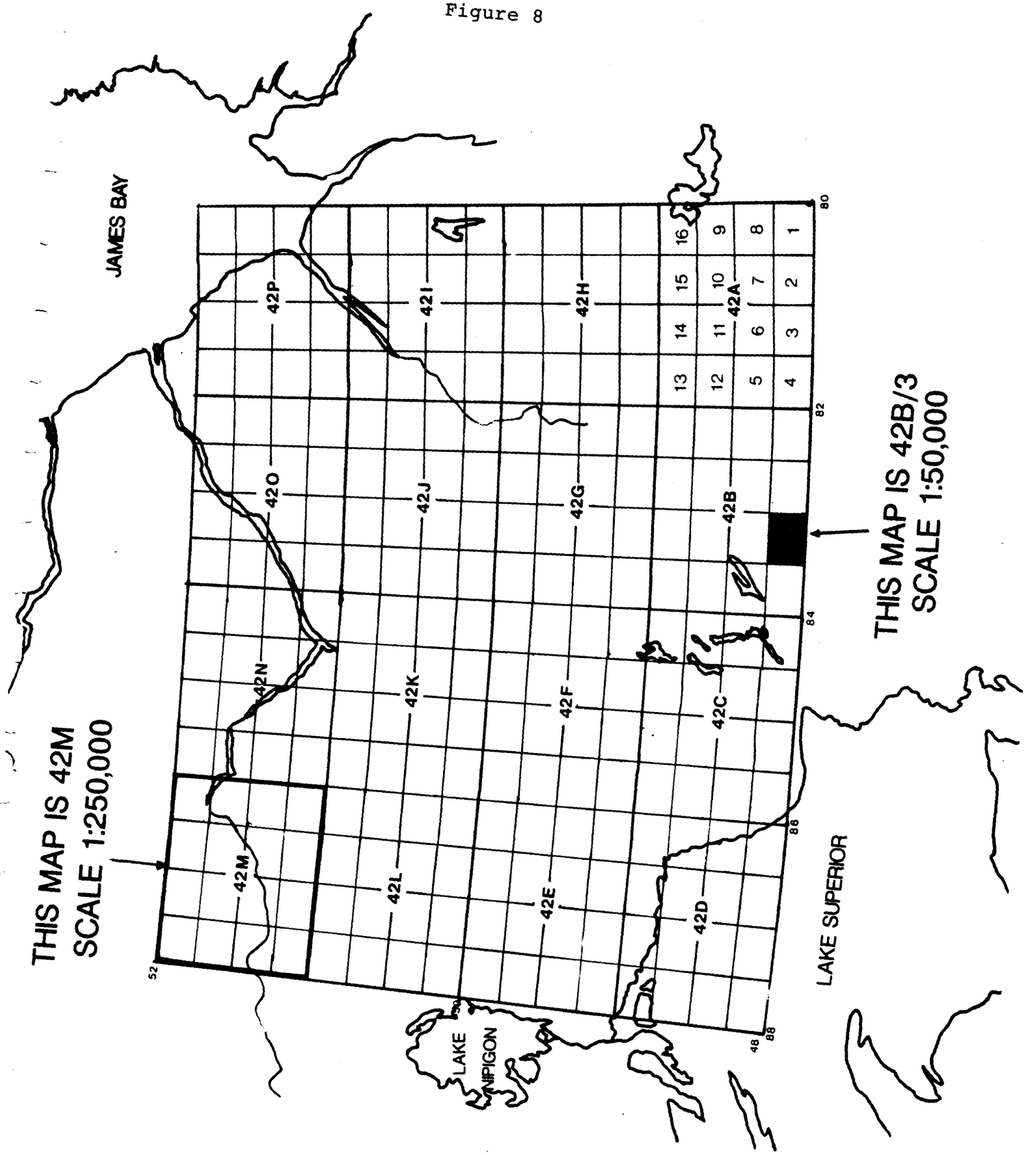
THE NATIONAL TOPOGRAPHIC SYSTEM (N. T. S.)

Under the National Topographic System (N. T. S.), the location of any map-area in Canada is delineated by a number and letter combination. Canada is divided into a number of "quadrangles" along latitude and longitude lines. A quadrangle is defined as "a rectangular area bounded by parallels of latitude and meridians of longitude, used as a unit in systematic mapping" (Bates and Jackson, 1980). The numbers assigned to these quadrangles increase from east to west across the country in the 'tens' part of the number, and increase from south to north in the 'units' part of the number. Ontario is covered by quadrangles 30, 31, 32, 40, 41, 42, 44, 52, 53 and 54. Maps in this sequence are published at a scale of 1: 1 000 000.

Each quadrangle is then subdivided into sixteen smaller quadrangles each given a letter; i. e. 42A, 42B, 42C and so on (see figure next page). Maps in this sequence are published at a scale of 1: 250 000.

Each of these smaller quadrangles is further subdivided into sixteen still smaller quadrangles which are given a second number; i. e. 42A/1, 42A/2, 42A/3 and so on. The second numbers follow the same order as the letters (see figure, next page). Maps in this series are published at a scale of 1: 50 000. These map sheets may be divided into northeast, northwest, southwest and southeast sections for filing purposes. All topographic maps have a geographic name as a well as N. T. S. designation (Faulkner, 1986).

Figure 8


JAMES BAY
42P
42I
42H
42O
42J
42G
42N
42K
42F
42M
42L
42E
42D
42C
42B
42A
16
9
8
15
10
7
2
1
14
11
6
3
13
12
5
4
52
50
48
88
86
84
82
80
THIS MAP IS 42M
SCALE 1:250,000
THIS MAP IS 42B/3
SCALE 1:50,000
LAKE NIPIGON
LAKE SUPERIOR

APPENDIX B

(CONVERSION FACTORS)

CONVERSION FACTORS

1 ounce (troy)	= 31.10 g
1 oz/ton	= 34.286 ppm
thus 0.01 oz/ton	= 0.343 ppm = 343 ppb
1 ppm	= 0.029 oz/ton
10 ppb	= 0.00029 oz/ton
1 gram/tonne	= 1 ppm
1 troy ounce	= 20 dwt
1 troy pound	= 12 troy ounces
1 imperial pound	= 13 troy ounces
1 dwt	= 1.555 grams
1 dwt	= 24 grains
1 %	= 10,000 ppm

ppb (part per billion)

ppm (part per million)

dwt (pennyweight)

g (gram)

Gram/ tonne	oz. / ton	Gram/ tonne	oz. / ton	Gram/ tonne	oz. / ton
0.1	0.003	5.1	0.149	10.1	0.295
0.2	0.006	5.2	0.152	10.2	0.298
0.3	0.009	5.3	0.155	10.3	0.301
0.4	0.012	5.4	0.158	10.4	0.304
0.5	0.015	5.5	0.161	10.5	0.307
0.6	0.017	5.6	0.164	10.6	0.310
0.7	0.020	5.7	0.166	10.7	0.312
0.8	0.023	5.8	0.169	10.8	0.315
0.9	0.026	5.9	0.172	10.9	0.318
1.0	0.029	6.0	0.175	11.0	0.321
1.1	0.032	6.1	0.178	11.1	0.324
1.2	0.035	6.2	0.181	11.2	0.327
1.3	0.038	6.3	0.184	11.3	0.330
1.4	0.041	6.4	0.187	11.4	0.333
1.5	0.044	6.5	0.190	11.5	0.336
1.6	0.047	6.6	0.193	11.6	0.339
1.7	0.050	6.7	0.196	11.7	0.342
1.8	0.053	6.8	0.199	11.8	0.345
1.9	0.055	6.9	0.201	11.9	0.347
2.0	0.058	7.0	0.204	12.0	0.350
2.1	0.061	7.1	0.207	12.1	0.353
2.2	0.064	7.2	0.210	12.2	0.356
2.3	0.067	7.3	0.213	12.3	0.359
2.4	0.070	7.4	0.216	12.4	0.362
2.5	0.073	7.5	0.219	12.5	0.365
2.6	0.076	7.6	0.222	12.6	0.368
2.7	0.079	7.7	0.225	12.7	0.371
2.8	0.082	7.8	0.228	12.8	0.374
2.9	0.085	7.9	0.231	12.9	0.377
3.0	0.088	8.0	0.234	13.0	0.380
3.1	0.091	8.1	0.237	13.1	0.383
3.2	0.093	8.2	0.239	13.2	0.385
3.3	0.096	8.3	0.242	13.3	0.388
3.4	0.099	8.4	0.245	13.4	0.391
3.5	0.102	8.5	0.248	13.5	0.394
3.6	0.105	8.6	0.251	13.6	0.397
3.7	0.108	8.7	0.254	13.7	0.400
3.8	0.111	8.8	0.257	13.8	0.403
3.9	0.114	8.9	0.260	13.9	0.406
4.0	0.117	9.0	0.263	14.0	0.409
4.1	0.120	9.1	0.266	14.1	0.412
4.2	0.123	9.2	0.269	14.2	0.415
4.3	0.126	9.3	0.272	14.3	0.418
4.4	0.128	9.4	0.274	14.4	0.420
4.5	0.131	9.5	0.277	14.5	0.423
4.6	0.134	9.6	0.280	14.6	0.426
4.7	0.137	9.7	0.283	14.7	0.429
4.8	0.140	9.8	0.286	14.8	0.432
4.9	0.143	9.9	0.289	14.9	0.435
5.0	0.146	10.0	0.292	15.0	0.438

Gram/ tonne	oz. / ton	Gram/ tonne	oz. / ton	Gram/ tonne	oz. / ton
15.1	0.441	17.7	0.517	23.0	0.672
15.2	0.444	17.8	0.520	24.0	0.701
15.3	0.447	17.9	0.523	25.0	0.730
15.4	0.450	18.0	0.526	26.0	0.759
15.5	0.453	18.1	0.529	27.0	0.788
15.6	0.456	18.2	0.531	28.0	0.818
15.7	0.458	18.3	0.534	29.0	0.847
15.8	0.461	18.4	0.537	30.0	0.876
15.9	0.464	18.5	0.540	31.0	0.905
16.0	0.467	18.6	0.543	32.0	0.934
16.1	0.470	18.7	0.546	33.0	0.964
16.2	0.473	18.8	0.549	34.0	0.993
16.3	0.476	18.9	0.552	35.0	1.022
16.4	0.479	19.0	0.555	36.0	1.051
16.5	0.482	19.1	0.558	37.0	1.080
16.6	0.485	19.2	0.561	38.0	1.110
16.7	0.488	19.3	0.564	39.0	1.139
16.8	0.491	19.4	0.566	40.0	1.168
16.9	0.493	19.5	0.569	45.0	1.314
17.0	0.496	19.6	0.572	50.0	1.460
17.1	0.499	19.7	0.575	55.0	1.606
17.2	0.502	19.8	0.578	60.0	1.752
17.3	0.505	19.9	0.581	65.0	1.898
17.4	0.508	20.0	0.584	70.0	2.044
17.5	0.511	21.0	0.613	75.0	2.190
17.6	0.514	22.0	0.642	100.0	2.920

ppb	oz./ton
5	0.00016
10	0.00032
20	0.00064
30	0.00096
40	0.00128
50	0.0016
60	0.00192
70	0.00224
80	0.00256
90	0.00288
100	0.0032
200	0.0064
300	0.0096
400	0.0128
500	0.016
600	0.0192
700	0.0224
800	0.0256
900	0.0288
1,000	0.032
2,000	0.064
3,000	0.096
4,000	0.128
5,000	0.16
6,000	0.192
7,000	0.224
8,000	0.256
9,000	0.288
10,000	0.32

APPENDIX C

(GOLD PRICES)

Average Price of Gold in Canada (in Canadian dollars)

Year	Gold Price per Ounce	Year	Gold Price per Ounce	Year	Gold Price per Ounce
1910*	$18.93				
1911	19.51	1941	$38.50	1971	$ 41.27
1912	20.87	1942	38.50	1972	57.66
1913	20.64	1943	38.50	1973	97.24
1914	20.67	1944	38.50	1974	155.36
1915	20.66	1945	38.50	1975	163.76
1916	20.67	1946	36.75	1976	123.01
1917	20.73	1947	35.00	1977	157.10
1918	20.67	1948	35.00	1978	220.74
1919	20.58	1949	36.00	1979	358.12
1920	23.42	1950	38.05	1980	719.08
1921	22.69	1951	36.85	1981	550.57
1922	20.88	1952	34.26	1982	463.51
1923	20.94	1953	34.42	1983	521.82
1924	20.79	1954	34.06	1984	466.99
1925	20.67	1955**	34.52	1985	433.21
1926	20.67	1956	34.45	1986	510.73
1927	20.67	1957	33.55	1987	592.18
1928	20.67	1958	33.98	1988	554.76
1929	20.76	1959	33.57		
1930	20.69	1960	33.95	1989 Jan.	481.34
				Feb.	460.75
1931	21.57	1961***	35.46	Mar.	466.35
1932	23.46	1962	37.41	Apr.	454.96
1933	28.94	1963	37.75		
1934	34.56	1964	37.75		
1935	35.15	1965	37.73		
1936	35.03	1966	37.71		
1937	34.98	1967	37.75		
1938	35.19	1968	37.71		
1939	36.20	1969	37.69		
1940	38.50	1970****	37.54		

Sources:

* 1910-1954: Johnston, B. 1955
** 1955-1960: Canadian Minerals Yearbook, 1966
*** 1961-1969: Canadian Minerals Yearbook, 1970
**** 1970-1988: Canadian Minerals Yearbook, 1988
1989: Average London Final Gold Price

APPENDIX D

(PROPERTY DESCRIPTIONS)

PROPERTY DESCRIPTIONS FOR THE BEARDMORE-GERALDTON HISTORICAL RESEARCH PROJECT

(Refer to Map in Back Pocket)

1) PROPERTY NAME: Adel Lake Occurrence (2)

DATE(S) VISITED: August 1988; June 1989

2) ALTERNATE NAME(S): Pagwachuan Lake Mining Syndicate

3) COMMODITY: MAIN: Au SECONDARY: Cu

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1936 A. Grace, A. Morley, J. Darling and C.W. McKeen held a block of 15 claims (TB 21473 - 21487) west of Adel Lake. These men were officers and directors of the Pagwachuan Lake Mining Syndicate.

1936-1939 Up to a total of over 200 days work was recorded on these claims. The exact nature of the work is unknown.

1939-1954 Numerous extensions were granted on the claims, yet no further work was recorded. A. Morley was killed in the war in 1946. The claims were cancelled by 1947.

1960 E. Maloney staked a block of claims, TB 100267 - 100284 which covered the original claims.

1962 All interest was transferred to Frobex Limited.

1963 Frobex Limited transferred all interest to Ranworth Explorations Limited in February. The claims were cancelled in July.

1965 P. Barrett staked TB 119692 - 119702 in May.

1966 The claims were cancelled with no work recorded in June.

1972 H. Otto staked claims TB 345901 - 345912 in July. They are part of a larger block of claims.

1973 Fifty-percent interest was transferred to L. Otto in May. In July, diamond drilling was undertaken on claim TB 329896. Twenty days work was applied to the above claims.

1975 Mechanical work and power stripping on TB 329895 allowed application of 80 days work on TB 345901 - 345912.

1976 Power stripping completed on TB 295665 and TB 455520 allowed application of 40 days work to TB 345901 - 345912.

1979 Eleven diamond drill holes totalling 577.3 m (1894 feet) were drilled on TB 345905, situated directly west of Adel Lake. Sixty days work was applied to TB 345901 - 345912.

1980-1981 Extensions were granted for application and payment of lease.

1982 The claims were cancelled in August.

1983 B. Atkinson staked TB 692286 - 692293 in January.

1984 Forty days work was applied to the claims for line-cutting and a ground magnetometer survey. In December, all interest was transferred to D. Atkinson.

1985 Thirty days work was recorded in January for geological mapping of the block. The claims were cancelled.

1986-1988 T. Koivisto staked the claims directly west of Adel Lake. The claims (TB 908105, 908106 & TB 925642 - 92651) were cancelled in June 1987. He restaked them as TB 1002239 and 1022075. These were cancelled with no work recorded in October. The claims were restaked in October as TB 1078893 - 1078912 by R. Koivisto.

Present Day The claims are held by R. Koivisto.

5) LOCATION AND ACCESS: NTS 42F13/SW

General Location: The property is located on the west side of Adel Lake, located south of Klotz Lake. Klotz Lake is approximately 45 km (28 miles) east of Longlac.

Access: Proceed east on Trans Canada Highway #11, through the town of Longlac for 45 km (28 miles) to Pagwachuan Lake Road. Turn right (south) and proceed for 2.5 km (1.6 miles) to the claim block.

References: Atkinson (1985a)
Amukun (1984)
Macdonald (1938)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 46b Long Lake-Pagwachuan Lake Area (Fairbairn & McDonald 1937)
Map 51h Hearst-Longlac Portion of Trans Canada Highway (Evans 1945)
Map 2202 Caramat-Pagwa River Sheet (Innes & Ayre 1969)
Map 2469 Klob Lake (Amukun 1984)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Paglamin Lake Stock which intrudes the eastern extension of the Beardmore-Geraldton Metavolcanic-Metasedimentary Belt. Generally, the Paglamin Lake Stock is predominantly massive, however slightly foliated or cataclastic zones may be locally present. The east-west trending Klob Lake-Hoiles Creek Fault transects the property (Amukun, 1984).

7) DETAILED GEOLOGY AND MINERALOGY:

According to Amukun (1984) the claim group is located within the Paglamin Lake Stock, composed of foliated to cataclastic and pegmatitic felsic plutonic rocks. A fault trending east-west runs directly through the claim group. The country rock adjacent to the fault has been sheared, carbonatized, silicified and/or brecciated. However, a sample collected by Amuken at old trenches on the property was defined as a metasedimentary(?) rock.

A detailed study by Atkinson (1985a) in the claim block area reinterprets the belt of rock extending through the claim group as volcanic tuffs. The lithology of the rocks are dominantly "interbedded, welded and non-welded tuff with minor interbedded clastic metasediments".

According to Atkinson:

> "most of the outcrop contained little or no pyrite mineralization, generally less than 0.5%. One outcrop just west of the northern head of Adel Lake contained a 2 inch (15 cm) seam of stratiform pyrite."

MacDonald (1938) reported several small shear zones which contained visible gold and pyrite disseminated throughout the silicified shear zone.

8) CHEMICAL ANALYSES:

MacDonald (1938) reports only traces of gold in assays on samples taken from the property.

A sample collected by Amukun (1984) assayed <3 ppm Ag, 5 ppb Au, 74 ppm Cu, 10 ppm Ni, 22 ppm Pb and 170 ppm Zn.

Sample results from visits by the authors:

Sample No.	Au oz/ton	Ag oz/ton	Cu ppm	Pb ppm	Zn ppm
1	<0.01	<0.10	48	<10	107
2	"	"	103	"	105
3	"	"	54	"	109
4	"	"	27	"	64
5	"	"	885	"	63
6	<0.01	<0.10	33	<10	42
7	<0.01	<0.10	138	"	112
8	"	"	21	"	32
9	"	"	--	--	--
10	"	"	--	--	--
11	trace	nil	--	--	--
12	0.004	nil	19	--	--
13	nil	nil	--	--	--
14	nil	nil	--	--	--

1) PROPERTY NAME: Agaura (Barnum Green) DATE(S) VISITED: Occurrence (4)

2) ALTERNATE NAME(S): Barnum-Green Claims
Quebec Sturgeon River Mines
Sturgeon River Gold Mines
Coniagas Mines Limited

3) COMMODITY: MAIN: Au SECONDARY: Ag

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1934 In the summer of 1934, R. H. Barnum and J. J. Green staked a group of 14 claims, TB 13392 - TB 13405 located east of the Sturgeon River Mine claims. This claim group was subsequently transferred or optioned to Agaura Explorations Limited (a wholly-owned subsidiary of the United States Smelting, Refining and Mining Co.). Four veins were uncovered by extensive stripping and trenching.

1937 Claims TB 13401, 13402, 13404 and 13405 were cancelled. Claim TB 13405 later became TB 31384 (1944) and a patent granted in 1954. Subsequently Milestone Exploration Limited was granted a 21-year lease beginning on Jan. 1, 1974.

1935-1939 Stripping and trenching were conducted over claims TB 13392 to TB 13400 and TB 13403.

1939 Mining lease patents were granted for claims TB 13392 to TB 13400 and TB 13403 to J. K. Brenner (Land Titles Office, Thunder Bay). The main vein or No. 2 vein, discovered in 1934, was stripped for more than 2500 feet. It outcrops on claims TB 13395, 13399 and TB 13398 and strikes N. 30° E. (Bruce 1937a).

1950 Ten claims were purchased by Sturgeon River Gold Mines Limited for $15,000.00 (Canadian Mines Handbook, 1951) and incorporated into patented claim holdings to the west including the Sturgeon River gold mine. Although unconfirmed these 10 claims are likely the J. K. Brenner patents mentioned above, which include TB 13392 to TB 13400 and TB 13403. (The Sturgeon River Gold Mine produced a total of 73,438 oz of gold at an average grade of 0.51 oz Au per ton from June 1936 to October 1942.)

1955-1956 The company changed its name to Sturgeon River Mines Limited. The mill was dismantled late in the year and the equipment was sold in 1956.

1964 The company name was changed to Quebec-Sturgeon River Mines Limited.

1967 The property was sold to Coniagas Mines Limited to cancel a debt owned to them.

1972-1973 Jupiter Minerals Inc. was formed to hold the original Sturgeon River gold property. Quebec-Sturgeon held 95% interest in the new company and Coniagas held the other 5%. Trenching, electromagnetic and magnetometer surveys, and geochemical work were carried out on the property to assess the base metal potential and to re-evaluate the gold potential. It was stated that re-opening the mine would only be feasible if the price of gold rose above $100.00/oz. A planned diamond drilling and gold re-evaluation program was deferred as the parent company decided to concentrate its efforts on a more viable property.

1975 Jupiter Minerals Inc. changed its name to Phoenix Gold Mines Limited.

1984-1985 The Quebec-Sturgeon River Mines property consists of 35 leased claims - TB 13392 to TB 13400, TB 13403, TB 13641 to TB 13647, TB 13931 to TB 13933, TB 16726 to TB 16734, and TB 25967 to TB 25972. TB 13392 to TB 13400 and 13403 represents most of the original Agaura Exploration property. A major exploration program over the entire claim group, including the Agaura Exploration property, was initiated involving linecutting, detailed geophysical surveys (magnetometer, VLF and IP), detailed geological mapping, basal till sampling, stripping and trenching. The latter part of the season was spent diamond drilling. Drilling was concentrated along the southern extension of the No. 3 vein on the original Sturgeon River block (TB 13641 to TB 13647).

1986 Work during 1986 was concentrated in the Macjoe Sturgeon block along the north and western portion of the property (refer to the Macjoe Sturgeon Gold Mines Ltd. property description in this report).

1988 Placer Dome optioned the property from Phoenix Gold Mines. The Marge vein on the Macjoe block was diamond drilled.

1989 Placer Dome dropped the option.

5) LOCATION AND ACCESS: NTS 42E13/SW

General Location: The property is located primarily in the SW corner of Elmhirst Township and partially covers Pifher, Irwin and Walters townships. It lies just south of the Sturgeon or Namewaminikan River.

Access: Access to the claim group is via Highway #801 (Paint Lake Road), which leads North from Highway 11, 9.6 km (6 miles) west of Jellicoe. Proceed 11 km north on Highway #801 to the center portion of the Agaura block on the Sturgeon River property. From this point the main No. 2 vein may be reached on foot approximately 300 m (1000 feet) due east.

References: Koskitalo (1985)
Laird (1937)
Mackasey (1975)
Mason & White (1986)
Patterson et al. (1987)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 45a Sturgeon River Gold Area (Bruce & Laird 1937)
Map 1934c Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 2102 Tashota-Geraldton Sheet (Pye et al. 1966)
Map 2294 Dorothea, Sandra & Irwin Twps. (Mackasey 1975)
Map P.3078 Precambrian Geology of the Pifher Twp. (Kresz & Zayachivsky 1988c)

6) GENERAL GEOLOGY AND STRUCTURE:

The Macjoe Sturgeon property is located within the Onaman-Tashota Belt of the Wabigoon Subprovince. The property is underlain by intermediate to felsic metavolcanics, which are intruded by the Elmhirst Lake Stock (granodiorite and quartz diorite) to the north and the Coyle Lake Stock (porphyritic granodiorite to granodiorite) to the east. Archean mafic dikes and late Precambrian diabase dikes also intrude the metavolcanics (Patterson et al. 1987, p.101).

7) DETAILED GEOLOGY AND MINERALOGY:

The Agaura property is described by Bruce (1937a, p. 45-48):

"The claims of Agaura Exploration, Limited, T. B. 13,392-13,404 lie immediately east of the claims of the Sturgeon River Gold Mines. Staked early in the summer by 1934 by R. H. Barnum and J. J. Green, they have had a rather more thorough surface examination than most other groups in the area. Several veins have been discovered. One of these, No. 2, now almost completely uncovered for more than 2,500 feet, is one of the most persistent veins yet found in the area.

The northwestern part of the group is underlain by granodiorite; the southeastern third of the claim farthest southeast is underlain by granite. Between the granite and granodiorite, volcanics, mainly andesite, extend across the claims in a diagonal belt 50 chains in width.

The veins on this group of claims belong to two sets similar to those just described on the adjoining claims. No. 2 vein outcropping on claims T. B. 13,395, 13,399, and 13,398, strikes N. 30° E. and appears to be vertical, or nearly so. The average width of quartz in the vein is about 2 feet. The maximum width is 7 feet, and the minimum 2 inches. Variations in the size of the vein occur in short distances, so that any section through the vein has a marked lenticular form. Lenses of quartz a foot in width commonly taper in both directions to 2 or 3 inches in a distance of 5 feet.

Along the south end of No. 2 vein there is a silicified zone separated from the quartz-filled vein by a few feet of country rock. At the extreme south end, on claim T. B. 13,395, the quartz vein is on the northwest side, but a short distance to the north it cuts through the silicified zone, which, from that point north for several hundred feet is on the northwest side of the quartz vein. The wall rock of both is white-weathering, greenish-grey lava, which is slightly schistose immediately adjacent to the vein and has been eroded into grooves marginal to the quartz. Under the microscope, quartz is the only original mineral in the rocks, which are composed mainly of chlorite and sericite. The thin sections are traversed by quartz veinlets. In view of the abundance of chlorite and the presence of quartz, the rock is considered to have been a dacite.

In addition to quartz, the vein contains calcite, pyrite, chalcopyrite, sphalerite, and galena. Most of the quartz is a massive, coarse-grained, milky to translucent variety, which in places has a ribboned appearance due to the presence of zones of chlorite and sericite. This type is cut by veinlets of glassy quartz one-half inch to three inches in width. Pyrite, chalcopyrite, and galena are present in small quantities, and there is a little gold. The silicified zone contains sericite, biotite, zoisite, calcite, leucoxene, hematite, limonite, apatite, and quartz. Some of these minerals are evidently derived from the alteration of original constituents of the lava. Later these secondary minerals were replaced by pyrite, chalcopyrite, sphalerite, and galena. A little gold is present. Thomson[1] examined a number of specimens of ore from this property. The vein from which they were obtained is not specified, but it is likely that most of them came from No. 2. He reports pyrite, sphalerite, chalcopyrite, galena, gold, and magnetite. The first three of these predominate; magnetite and gold are minor constituents.

Vein No. 6 on claim T. B. 13,398 differs from most of the others in that its outcrop is curved. At the south end it strikes north-south, curves gently to N. 30° E., and at the north end is N. 45° E. The total exposed length is 220 feet. The vein appears to be vertical. At the south end the wall rocks are lavas of intermediate character; at the north end the vein is in granodiorite. Rock trenches at the point where it begins to curve eastward show 40 to 50 inches of quartz, in which are included several fragments of chloritized wall rock. In the quartz, sphalerite, galena, and chalcopyrite are present. Pyrite occurs in the granodioritic wall rocks, and near the edge of the quartz the country rock is cut by calcite veins up to half an inch in width.

During the summer of 1935 much of the exploration work on this group was concentrated on the claims adjacent to those of the Sturgeon River Gold Mines. The contact between granodiorite and lava runs northeastward across claims T. B. 13,394 and 13,396; granodiorite lies to the northwest. On these claims several veins were discovered, trenched, and sampled. One of these (No. 11 on the Agaura property) continues southwestward on to claim T. B. 13,642, crossing the boundary between the two properties at the No. 1 post of claim T. B. 13,642 (No. 3 post of claim T. B. 13,394). At that point the vein has a width of 15 inches of quartz. In places it narrows to 2 inches, but is less variable in width than are most of the veins. The gold content so far as the vein has been sampled is low. At the No. 1 post of T. B. 13,394 two veins intersect. One strikes northeastward, the other nearly north. The former cuts through the latter and has

the same northeasterly strike as the one just described; it may be the continuation of it. At this point it is narrow, but 50 feet to the north a vein parallel to it has a width of 8 inches of quartz, with which is some pyrite. Gold has been found at several places along rusty shear zones parallel to the walls of the vein, around grains of pyrite, and in quartz that shows no visible fracturing. Some of the north-south veins in this locality also contain gold in visible quantities. In physical character and mineralization they resemble the gold-bearing veins on the adjacent claims of the Sturgeon River Gold Mines.

Development work on the Agaura claims consists of a large amount of stripping, trenching, and test-pitting. The long and continuous No. 2 vein has not been found to have any ore shoot in the part that has been exposed. Some of the veins found on the western claims have a considerable gold content, but they are so narrow that only small tonnages of ore can be expected from any one vein."

The area immediately surrounding the Agaura Occurrence is further described by Mackasey (1976, p. 44-45) as follows:

"In 1953 Sturgeon River Gold Mines Limited undertook an exploration program on a group of claims adjoining the leased claim property. Records on file with the Resident Geologist, Ontario Ministry of Natural Resources, Thunder Bay, indicate five diamond drill holes totalling 2,703 feet (824 m) were completed in November and December of 1953. (These holes are located along and just east of claim TB 13403 on the Agaura block.)

An examination of the drill logs shows that the main rock types encountered were metavolcanics and diorite. Mention is made of tourmaline and pyrite in drill hole No. 1; sphalerite and galena, associated with quartz veins, were found to occur in hole No. 3, minor scheelite was observed in core from hole No. 4, and pyrite, sphalerite, and chalcopyrite are recorded as being prese in a quartz vein intersected by drill hole No. 5 (Assessment Files Research Office, Ontario Division of Mines, Toronto). According to the drill logs, gold was assayed for but not detected, in this vein, and in a pyritic quartz vein from hole No. 4. This group of claims has since been dropped.

A minor amount of chalcopyrite was found by the field party as a joint filling in trondhjemite within this area. A small amount of pyrite, sphalerite, and chalcopyrite, along with minor gold and silver was located by the field party in a quartz vein along a road cut on Highway 801 in the east part of claim TB 13403."

Descriptions of the Sturgeon River Gold Mine, Irwin Township are given by Bruce (1937a) and Mackasey (1975).

Detailed discussions of the geology and mineralization by Phoenix Gold Mines limited (1985 and 1986) covering portions of the 35-claim block, are given in the Macjoe Sturgeon property description within this report.

8) CHEMICAL ANALYSES:

A grab sample collected in 1972 from vein No. 6 by R. C. Phillips of Jupiter Minerals Inc. (claim TB 13398) assayed 6.45 oz/ton gold and 2.72 oz/ton silver.

In 1985 extensive stripping was conducted by Phoenix Gold Mines Ltd. along the main No. 2 vein on the Agaura block. Numerous grab and chip samples were collected along the strike of this vein. Grab samples assayed up to 0.59 ounce gold per ton and 1.97 ounces silver per ton.

1) PROPERTY NAME: Anglo-Beardmore Gold Mines Occurrence (6) DATE(S) VISITED:

2) ALTERNATE NAME(S): Sandenise Gold Mine
Broadview Gold Mine

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1934 Maylor Hayne staked TB 15179 - 15185 for Anglo-Beardmore Co. in September. In December, 48 days work was recorded. The main occurrence is on the SW part of claim 15184, whose history will be traced.

1936 In January, 76 days work was recorded on each claim. In November, F. R. Burton of Noranda Mines examined the property. At this time, over 91 m (300 feet) of trenching had been carried out to trace the main quartz vein. Burton did not sample the vein due to previous "low" assays of 0.03 to 0.13 ounce Au per ton.

1937 In January, 76 days work was recorded on each claim. Maylor Hayne recorded 610 m (2,000 feet) of trenching, stripping and test pitting and had opened up 12 veins on the property. There was also a bunkhouse and cookery on the property. In May, 1/2 interest was transferred to A. Seas. In May, 200 days work was recorded on TB 15179 and TB 15180.

1947 Extensions were granted on claims TB 15181 to 15185 until they were cancelled in August. In August, J. Lariviere restaked TB 15182 - 15185 as TB 36716 - 36718. (TB 15184 became TB 36717). These claims were part of a larger group held by Sandenise Gold Mines Limited. By October 1947, several shallow test pits, as well as shallow ddh, were put down on the property.

1948 In 1948, between 50 and 72 days work was carried out on the claims.

1949 In July, between 8 and 30 days work was carried out on the claims. In October, the three claims were transferred to Broadview Gold Mines Limited.

1950 In October, a ground magnetometer survey was carried out over claims TB 36716 - 36718, and was recorded as 40 days work on each claim.

1953 Claims TB 36716 - 36718 were cancelled and restaked as TB 47098 - 47100 in September by J. Lariviere (TB 470999 was 36717).

1954 J. Lariviere passed away in May.

1955 The claims were cancelled in December.

1960 F. Oja staked claims TB 97709 - 97711 in March (with 97710 - 97711 covering original showing).

1962 After an extension on each claim, 40 and 42 days work was recorded on TB 97710 and TB 97711 respectively in March. In May, TB 97709 was cancelled with no work recorded.

1963 TB 99710 - 99711 were cancelled in April.

1972 A. Douglas staked TB 337373 in September.

1973 TB 337373 was cancelled in October with no work recorded.

1975 In August, J. Allard staked TB 399789/399820.

1976 In May, all interest was transferred to O. Seeber.

1977 The claims were cancelled with no work recorded.

1979 In December, D. Galley staked TB 519885.

1980 In December, D. Galley transferred TB 519885 to K. Jesseau.

1981 TB 519885 was cancelled and then reinstated in June. In September, power stripping was completed on TB 519885.

1983 TB 519885 was cancelled in January and restaked by F. Houghton as TB 715428 in May.

1984 In May, 20 days work of power stripping was recorded on TB 715428 and the claim was then transferred to D. Thorsteinson.

1985 In June, an electromagnetic geophysical survey as well as geological work was recorded on the claim as 60 days work. The property was geologically mapped at a scale of 1:24 000.

1986 TB 715428 was cancelled in June. In August, D. Thorsteinson passed away. In September, T. Auger staked TB 941648 to cover the occurrence.

1988 In September, A. Lafontaine staked TB 1068872.

5) LOCATION AND ACCESS: NTS 42E12/SW

General Location: The property is located approximately 2.5 km (1.6 miles) southwest of the town of Beardmore in Summers Township.

Access: Proceed east through the town of Beardmore to Highway #580. Turn left (north) and follow the highway to the pipeline. Turn left and follow the pipeline road to the Blackwater River (approximately 5 km). The original area of the showing is due west approximately 200 m (656 feet), just north of the river.

References: Burton (1936)
Christianson (1947)
Erdic (1985)
Laird (1937)
Langford (1929)
Low (1949)
Marcotte & Webster (1983)
Peach (1952)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 37k Beardmore-Nezah Gold Area (Langford 1929)
Map 45a Sturgeon River Gold Area (Bruce & Laird 1936)
Map P.602 Summers Township (Mackasey 1970b)
Map 1934c Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 2102 Tashota-Geraldton Sheet (Pye et al. 1966)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Beardmore-Geraldton Belt of the Wabigoon Subprovince. The property is underlain by a north-northeast trending band of metavolcanic rocks. The metavolcanics consist of basaltic to andesitic flows, tuffs and volcanic breccia. Minor diorite intrusions cut the metavolcanic belt. Iron formation occurs within the metavolcanics (Erdic 1985).

7) DETAILED GEOLOGY AND MINERALOGY:

The property is underlain by andesitic flows and to a lesser extent basaltic flows. Foliation within the flows strikes from 65 to 85 degrees and dips steeply to the north. Quartz veins up to 25.4 cm (10 inches) have been observed within the andesite. No significant mineralization has been noted within the quartz veins or in smaller quartz-carbonate veinlets. In places, the andesite is sheared and/or silicified and mineralized to some degree. Bands of iron formation are associated with the metavolcanics. A lensoid body of diorite cuts the metavolcanics and iron formation. The diorite is medium- to coarse-grained with subhedral feldspar and amphibole phenocrysts up to .13 cm (0.05 inches) in size (Erdic 1985).

Iron staining is prevalent on the property, being most intense adjacent to shear zones. The shear zones are often mineralized with minor pyrite.

> "Mineralization of apparently more economic importance is associated with the iron formation. Subhedral to euhedral pyrite and lesser amounts of arsenopyrite and chalcopyrite occur within bedding or quartz veins that have comformably intruded the iron formation. Thin seams of pyrite or 0.25 inch quartz veinlets fill late stage fractures dipping 30 degrees to the south. It was believed that gold mineralization was associated with these fractures." (Erdic 1985)

According to Burton (1936), the main discovery of the Anglo-Beardmore property was a quartz vein 3 to 4.5 m (10 to 15 feet) wide which strikes N 60 degrees E and dips steeply SE. The quartz was white, barren-looking with sparse mineralization of pyrite and arsenopyrite.

8) CHEMICAL ANALYSES:

Samples taken by Burton (1936) assayed 0.03 to 0.13 ounce Au per ton. Maylor Hayne reports grab samples up to 0.22 ounce Au per ton in a 1937 report.

Christianson (1947) reports a grab sample of 0.63 and a shallow diamond drill hole on a 5.5 m (18 feet) wide section which ran 0.04 ounce Au per ton.

1) PROPERTY NAME: Ballina Lake Occurrence (10) DATE(S) VISITED:

2) ALTERNATE NAME(S): J. J. Green Property
Barnum-Green Group

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1935 Claims TB 20290 to TB 20295 were staked by J. J. Green for himself and P. Mowry in October. Trenching and sampling were undertaken.

1936-1940 A total of 212 days work was filed on the claims.

1947 The claims were cancelled.

1966 Claims TB 129340 to TB 129343 were staked by W. G. Ferring in July.

1967 The claims were cancelled in September as no work had been completed on the property.

1971 G. Bruce staked claims TB 304294 to TB 304297 in August.

1972 The claims were cancelled in October due to lack of work.

1986 Main Showing on TB 928652 staked by Amede Lafontaine. Extension to March 31, 1988.

1987 Herb K. Goodman staked a claim group surrounding the main Ballina Lake claim (TB 928652). This includes claims TB 961759 to TB 961768 and TB 929807 to TB 929810. A total of two years assessment work was filed on each claim, which consisted of an Airborne VLF-EM Survey (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

1988 The main Ballina Lake claim - TB 928652 was cancelled due to lack of work.

1989 Additional claims TB 1108394 to TB 1108397 and TB 1108388, which contains the main Ballina Lake Occurrence, were staked by H. K. Goodman

1990 In April, the entire area was restaked by Herbert K. Goodman, including the main Ballina Lake Occurrence (now TB 1147404). A total of 19 claims were staked - TB 1141780 to TB 1141786 and TB 1147405 to TB 1147415, in addition to TB 1147404.

5) LOCATION AND ACCESS: NTS 42E13/SE

General Location: The Ballina Lake property is located approximately 2 km (1.25 miles) north of the north-east corner of Rickaby Township and about 9.6 km (6 miles) south of Onaman Lake.

Access: A bush road leads north from the Kinghorn Road about 6 km (3.75 miles) west of Atigogama Lake. The road can be traversed by truck until its end [approximately 3.2 km (2 miles)]. A traverse along trails and claims lines for approximately 3.5 km is required to reach Ballina Lake. Alternate transportation would be by helicopter.

References: Moorhouse (1939)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 47h South Onaman Area (Moorhouse 1939)
Map 2102 Tashota-Geraldton Sheet (Pye et al. 1966)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Onaman-Tashota Belt of the Wabigoon Subprovince. Moorhouse (1939) covered the property while mapping the South Onaman Area. The following text documents the general geology of the South Onaman Area (Moorhouse, 1939):

"The consolidated rocks of the area are of pre-Cambrian age. Those termed Keewatin include lavas, tuffs, sediments, and intrusives. The lavas comprise chiefly intermediate and basic lavas, which are predominantly fine-grained and chloritic, often sheared. Coarse dioritic phases are abundant. Very acid lavas, such as rhyolites, are rather rare. Medium- to fine-grained intermediate lavas are extensively developed east of Crooked Green Lake.

In general, no regular distribution of the coarse-grained dioritic rocks was discovered, and they were so hazardly interspersed with fine-grained volcanics that no attempt was made to distinguish them in mapping. In some cases it is certain that the coarser types are intrusive into the finer-grained lavas; in other cases, evidence is lacking.

The most characteristic sedimentary representative of the Keewatin is the iron formation, which is the banded quartz-magnetite type.

No evidence of Laurentian igneous activity was recognized in the area. The Laurentian is only represented by boulders in the Timiskaming (?) conglomerate.

The sedimentary rocks, assigned to the Timiskaming by Kindle and Gledhill, include, predominantly, boulder conglomerates and coarse, arkosic quartzites. Some greywackes and quartzites were also encountered. The relations of the Timiskaming and Keewatin rocks in this area are obscure, but there seems to be no evidence of marked unconformity.

Algoman intrusive activity had several phases, of which the most extensive is granite. Throughout the area it is predominantly a light-coloured, pink, fairly coarse granite, of uniform grain. In some cases it makes sharp contact with the older rocks; in others there is a broad gradation from recrystallized greenstone through hybrid intrusives, coarse-grained porphyritic and fine-grained gneissoid granites to normal granite. Inclusions of greenstone and bodies of coarse diorite are frequently found some distance within the granite. Besides the main batholith, there are fairly large areas of syenite and diorite north and west, respectively, of Crooked Green lake, a smaller mass of typical pink granite about a mile south of Conglomerate lake, and south of O' Neil lake, an extension of the granite body that lies east of Atigogama lake."

7) <u>DETAILED GEOLOGY AND MINERALOGY</u>:

Moorhouse (1939) shows the area around Ballina Lake as being underlain by a belt of basic lavas intruded to the south and north by granitic stocks. The basic lavas were dominantly chloritic or hornblendic in composition and fairly dark in colour. South of Ballina Lake porphyritic texture was observed in the basic lavas.

Moorhouse (1939) documented the Ballina Lake property as follows:

"Considerable work was done on a zone of quartz stringers at the contact of granite and greenstone, south of Ballina lake. The stringers are from half an inch to 9 inches wide, of glassy, sometimes rusty quartz. The chief sulphide is pyrite, very coarsely crystallized. It is understood that values were not encouraging. The writer was informed, however, that more interesting results were obtained from a quartz vein which disappears under Ballina lake itself. It is reported that the property is held by J.J. Green."

An airborne magnetic and VLF-EM survey flown over the area in 1987 (Barrie 1988) indicates the property is underlain by mafic to intermediate metavolcanics with local magnetically active sub-members. Faults interpreted from the survey trend predominantly northeast-southwest in the area south of Ballina Lake.

8) CHEMICAL ANALYSES:

The only chemical analyses available from the property are from a 1934 map (Beardmore-Geraldton Resident Geologist's Files, Thunder Bay). The following information is taken from this map:

Dillabough Samples
No. 1 Vein - Dip 85°N

Sample Number	Width of Sample	Ounces per ton Gold	Description of Sample
104	6"	0.692	quartz, east end centre pit
105	4"	1.892	west end No. 2
106	40"	0.072	quartz
107	10"	0.248	No. 4 crosscut
108	4"	0.176	No. 4 crosscut
109	10"	0.136	No. 1 crosscut
110	8"	0.756	north end, No. 1 crosscut
111	16"	0.076	
112	16"	0.008	

1) PROPERTY NAME: Buffalo-Beardmore Occurrence (19)

DATE(S) VISITED: August 1989 October 1989

2) ALTERNATE NAME(S): Fox Occurrence
Broadview Gold Mines

3) COMMODITY: MAIN: Au SECONDARY: W

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

Note Buffalo-Beardmore held a block of 14 claims. This section will outline the development, history and ownership of 4 claims on which the main veins were on: TB 5055, 5056, 5098 & 5099.

1925 G. Graft and G. Vallier staked TB 5055, 5056 and 5098, 5099 respectively in August. In September, all interest was transferred to C. Fox.

1926 In April, 90 days work was filed on each claim. In November, 30 days work was filed on each claim. According to a report by Langford (1929), in 1927, work on the claims involved mainly stripping and trenching of a shear zone for a distance of 0.6 km (3/8 of a mile)..

1931-1934 The next period of work was done on the claims in November of 1931. Extensions were granted on the property until 1934. Forty days work was recorded for the survey of the property, and 40 days work was recorded on the property.

1935 In January, the lease was paid, the papers were filed for the lease and Buffalo-Beardmore Gold Mines Limited was incorporated. Surface exploration commenced also in January on claims TB 5055, 5056, 5058 and 5059. At the end of July, a Chicago pneumatic, single-stage, 8 by 6-inch gasoline compressor was installed for the purpose of sinking deep test-pits. Ten men were employed on the property. A bunk-house and cookery, compressor house and blacksmith shop had been built on the property. Towards the end of the year, it was reported that preparations were underway to sink a shaft on claim TB 5056.

1936 According to a company prospectus released in September (Beaton 1936), Buffalo-Beardmore held 7 patented and 6 unpatented claims. Seven wide mineralization zones had been uncovered on the property. A total of 10,000 feet of development work had been completed. Operations in 1936 were confined to zone No. 4 due to money constraints. The zone was trenched for 198 m (650 feet), and test pits were sunk along the zone. The No. 4 zone was being regularly sampled at the time of the report. Shaft sinking and drilling under power, as well as preparation for 1500 m (5000 feet) of diamond drilling, were taking place.

1937 The shaft on the No. 4 zone was sunk to 24.4 m (80 feet). Considerable work was carried out on the property.

1938 Three-thousand metres (10,000 feet) of diamond drilling was carried out on the property along with extensive surface work.

1939-1943 A scheelite find on the property was stripped, trenched and diamond drilled.

1946 A geophysical survey was carried out.

1948 The claims came open in January and were restaked as TB 37378 - 37381 by L.E. Morrison.

1949 In January, 80 days work was recorded on each claim. In October, the claims were transferred to Broadview Gold Mines Limited. These four claims are part of a larger (21-claim) block held by Broadview which include the Anglo Beardmore property to the east. A geomagnetic survey was carried out and 40 days work was applied to each claim.

1953 The claims were cancelled in September and restaked as TB 47093, 47094, 47097 and 47102 by J. Lariviere and P. Blanchette.

1954 J. Lariviere passed away in May.

1955 The claims were cancelled in December.

1957 R. Smith staked TB 88103 - 88105 in September.

1959 The claims were cancelled in December after being granted one extension.

1960 W. Morehouse staked TB 97225, 97226, 97227 and 97229 in January.

1961 The claims were cancelled in April with no work recorded on them.

1962 T. Church staked TB 103334, 104550, and 104552 in September.

1965 T. Church passed away.

1966 The claims were cancelled in April with no work recorded.

1969 A. Rentz staked TB 20419 - 20422 in April.

1970 The claims were cancelled with no work recorded.

1972 A. Douglas staked TB 336681 - 336683 in August.

1973 All interest was transferred to New Metalore Mining Ltd.

1975 The claims were cancelled in February with no work recorded. The claims were restaked as TB 443548 - 443550 by C. Lingman in August.

1976 In May, all interest was transferred to O. Seeber.

1977 The claims were cancelled in July.

1979 D. Galley staked TB 519888 in December.

1980 All interest was transferred to K. Jesseau.

1981 The claim was cancelled and then reinstated in June. In September, 20 days work of power stripping was recorded on the claim from work performed on adjoining claims.

1982 C. Mortimer staked TB 658987 - 658989 in October.

1983 TB 519888 was cancelled in January and restaked in May as TB 715425 by F. Houghton.

1984 In May, 20 days work of power stripping was recorded on TB 715425 (the work was actually done on TB 406090, a contiguous claim further east). All interest was then transferred to D. Thorsteinson. TB 658987 - 658989 were cancelled in September. J. Nabigon and D. Cullen staked TB 815572 and 815609 - 815611 in September and then transferred all interest to B. Vatri.

1985 Fifteen days work of geophysical magnetometer as well as 40 days work for geological were recorded on TB 715425.

1986 TB 715425 was cancelled in June, while TB 815572 and 815610 were cancelled in August. N. Hibbart staked TB 939658 - 939663 in July. In August, all interest was transferred to G. Stankey. In December, all interest was transferred to Legion Resources Ltd.

1987 Fifty-nine days of work was recorded on the claims. Legion Resources carried out an exploration program consisting of line cutting, geophysical surveying and overburden drilling.

1988 In December, the name of Legion Resources was changed to V. S. V. Resources Limited.

1989 In January, one day of work was recorded on the property.

5) LOCATION AND ACCESS: NTS 42E12/SW

General Location: The property is located in south central Summers Twp., 3 km (1.9 miles) southwest of Beardmore, Ontario.

Access: Proceed east through Beardmore on Highway #11. Turn left (west) on the first road after the bridge over the Blackwater River. Follow road for 100 m (328 feet). Follow left branch of road (SW) for 400 m (1300 feet) to branch in road. At this point, continue S-SW until road crosses pipeline. Continue SW on a trail till it ends [approximately 850 m (0.53 mile)]. Proceed south through bush for 600 m (1970 feet) to property.

References:
Beaton (1936)
Laird (1937)
Langford (1929)
Low (1949)
Marcotte and Webster (1983)
Peach (1952)
Thompson (1949)

Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 37k	Beardmore-Nezah Gold Area (Langford 1929)
Map 45a	Sturgeon River Gold Area (Bruce & Laird 1936)
Map P. 602	Summers Township (Mackasey 1970b)
Map 1934c	Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Beardmore-Geraldton Belt of the Wabigoon Subprovince. The property is underlain by a north-northeast trending band of mafic to intermediate metavolcanics. This belt is bordered to the north and south by metasedimentary belts. The metavolcanics are mainly undifferentiated. However, in rare outcrops, amygdaloidal and pillow lavas are seen (Mackasey 1970b).

7) DETAILED GEOLOGY AND MINERALOGY:

Langford (1929) described the original "Fox" showing as follows:

> "A shear zone has been traced by trenches for a distance of 30 chains in a N 80 degrees E direction from claim TB 5098 across TB 5056. The schist varies in width from 10 feet to more than a chain, being little broken up where it is wide; in places it is very rusty owing to the breaking-down of the ferrous iron in the carbonate rock. Quartz occurs as small scattered lenses, as much as 2 feet wide, throughout the length of the fractured rock. The quartz is white or bluish-white in colour, and in places is fairly well mineralized with arsenopyrite and pyrite. The west end of this vein is beside a band of iron formation which, in addition to magnetite, carries disseminated pyrrhotite and pyrite."

A prospectus report written by Beaton in 1936 for Buffalo-Beardmore Gold Mines Limited reported the following:

"The property is situated on the axis of a steeply dipping anticlinal fold in the Keewatin lavas. These lavas are composed for the most part of rocks of an intermediate basicity, andesites, diorites, and basalts that have been intensely sheared and altered. Interbedded in the lavas are a number of relatively fresh diorite dykes."

"Seven wide mineralized zones have been uncovered, composed of alternating beds of quartzite, chlorite schist, chert and minor bands of siliceous magnetite. The bands are heavily mineralized with pyrite and arsenopyrite, with some chalcopyrite and pyrrhotite. Vein quartz has been injected along the bedding planes and crosses these planes. In places it has replaced the original formation."

As noted earlier, the main development work was on Zone No. 4. Beaton (1936) reported:

"This zone is composed of alternate bands of chert and re-silicified chloritized rocks which are heavily mineralized with pyrrhotite and arsenopyrite; the southern wall is heavily pyritized with some magnetite, and actinolite is in evidence. Numerous quartz veins cross the formation and small veins of calcite that follow the bedding has been disclosed. This zone has been intensely folded and contorted. Due to these contortions, the true width of the band is not discernable in many places."

The following is from the engineer's report (C. N. Thompson) submitted to Broadview Gold Mines Limited in November of 1949.

"One particularly interesting vein occurrence is seen striking north-east over claims TB 37379-80 and measures 2550 feet, end to end, only two short stretches aggregating 500 feet in low swampy ground being hidden from view. A number of other mineralized zones can be followed for lengths of four hundred to fourteen hundred feet. The mineralized zones all have a resemblance, being composed of alternate beds of quartzite, chlorite schist and minor bands of siliceous magnetite. They are heavily mineralized with pyrite, some chalcopyrite, arsenopyrite an pyrrhotite. Fine gold is also visible. Vein quartz has been injected along the bedding planes and in places has replaced the original formation. This latter quartz is responsible for the gold content. The Iron Formation is prominently disclosed throughout the entire vein showings and numerous drag folds, small to very large, are visible."

During the property visits, 2 shafts, both filled with water, were located. Numerous easterly trending trenches were located also.

8) CHEMICAL ANALYSES:

Langford (1929) reported grab samples of up to $32.00 per ton (1.54 ounces Au per ton with 1929 gold price of $20.76 per ounce).

The Buffalo-Beardmore company prospectus for 1936 reports 25 "representative sample" assays ranging from $0.70 to $112.80 per ton (0.02 to 3.22 ounces Au per ton at $35.03 per ounce in 1936) for the seven mineralized zones on the property. Fifty-one channel assays on zone No. 4 range from $0.35 to $166.13 per ton (0.01 to 4.74 ounces Au per ton) and average $14.64 per ton (0.42 ounce Au per ton) over average width of 8.69 feet.

Samples taken during 1989 property visits assayed the following:

Sample No.	Au oz/ton	Ag oz/ton
1	0.002	Trace
2	0.009	Nil
3	Nil	Nil
4	Nil	Nil
5	Nil	Nil
6	Nil	1.44
7	Nil	Trace
8	Nil	Nil
9	Nil	Trace
10	Trace	Nil
11	Trace	Nil
12	Nil	Nil

1) PROPERTY NAME: Bush Lake Gold Mines Occurrence (21) DATE(S) VISITED: June 1989

2) ALTERNATE NAME(S): Austin Rouyn Gold Mines Ltd.

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1937 Claims TB 25818 - 25825 were staked in December by J.R. Lanktree, S. Muton and S. Douglas.

1938 In April, all interest was transferred to S. Douglas. J.R. Lanktree and S. Douglas were officials of Bush Lake Gold Mines Limited. Thirty days work was filed in October on each of the claims. The 1939 Canadian Mines Handbook (Resident Geologist's Files) noted surface exploration, stripping and trenching were undertaken on the property.

1946 Claims TB 34568 - 34573 were staked on the property by D. Creamer and H. McIntyre in May.

1947 The claims were cancelled in December with no work recorded.

1969 C.M. Trudeau staked TB 222894, 222895 and TB 222632 in September. In November, all interest was transferred to Canadian Nickel Co. Ltd.

1970 The claims were cancelled in November.

1983 H. Ouimet staked TB 715590 - 715596 in May. In August, all interest was transferred to S. Chopak who then transferred all interest to Blackstone Exploration Inc.

1984 The claims were cancelled in June with no work recorded. The claims (TB 784769, etc.) were restaked by K. Killin in June and transferred to Blackstone Exploration Inc.

1985 The claims were cancelled in August with no work recorded. In October, D. Gaudette staked TB 863678 - 863689.

1986 The claims were transferred to Metalore Resources Limited in April. In July, Ontex Resources Ltd. filed a certificate of interest. In July, an airborne magnetometer and radiometer survey done by Metalore covered the property. Eighty days work was recorded on each claim for the survey. In October, 20 days work was recorded for diamond drilling. The drilling was done on claims not in the Bush Lake group.

5) LOCATION AND ACCESS: N. T. S. 42E12/NE

General Location: The property is located in central Walters Township directly south of Bush Lake.

Access: Proceed east through Beardmore on Trans-Canada Highway #11. Turn north onto Highway #801. Proceed north on the highway for 4.25 km (2.6 miles). Turn right (east) onto bush road. The west edge of the original claim block begins at 0.6 km (0.4 mile) down the road.

References: Mackasey (1976)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 1934	Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)
Map 2356	Walters and Leduc Twps. (Mackasey 1976)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Beardmore-Geraldton Belt of the Wabigoon Subprovince. In Walters Township, this belt is made up of alternating east-west trending belts of metavolcanics and metasediments. The property is underlain by the "central" belt comprised of blocky sandstone, conglomerate, siltstone and argillite (Mackasey 1976).

7) DETAILED GEOLOGY AND MINERALOGY:

The property is underlain by an east-west trending belt of metasediment with a schistosity ranging from 80 degrees vertical. The metasediments are dominantly conglomerates with associated sandstones, siltstones and argillites. The conglomerate is polymictic being composed of pebbles of granitic and volcanic material along with clasts of argillite, quartz and jasper. The conglomerate is poorly sorted and clasts generally show a high degree of rounding and close packing. Associated with the conglomerates are medium- to coarse-grained feldspathic sandstones and finer grained rocks (Mackasey 1976).

No visible workings were located during a property visit. Conglomerates, as well as fine-grained siltstones were found. The siltstones showed minor sulphides disseminated throughout.

1) PROPERTY NAME: Cameron-Picotte Gold Prospect (23) DATE(S) VISITED:

2) ALTERNATE NAME(S): Edgelake Gold Mine
Tashota Lake Mine

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1925 Claims KK 998 and 1038 were staked by P. B. Cameron. One-half interest was transferred to Thos. Devanney in October. (Later government reports include KK 1041 as part of the parcel held by Cameron. No record of KK 1041 could be found on old claim maps or in the Mining Recorder's records.)

1926 Devanney's half-interest was transferred to J. A. Picotte.

pre 1930 A 30 to 40 mesh stamp mill was installed on the claims. One diamond drill hole had been sunk 4.9 m (16 feet). Other exploration involved pits sunk on the quartz veins and the rusty zones in mafic metavolcanics.

1931 A total of 105 days work was recorded. More than a dozen veins had been uncovered proximal to Tashota Lake.

1934 Fifty-seven days of work was recorded. In September, J. A. Picotte's half-interest was transferred to P. B. Cameron. In September, Edgelake Gold Mining Ltd. was incorporated. The president of the company was P. B. Cameron while the vice-president was J. A. Picotte. Another shaft was sunk to 9.8 m (32 feet).

1935 Cameron and Picotte constructed a 10.4 m (34 foot) headframe over the 9.8 m (32 foot) shaft; a boiler and hoist room building; an assay office; and a small cabin. They also installed an Ingersoll-Rand 460 cubic-foot compressor and a 50 h.p. boiler on the property. A 20 h.p. portable locomotive-type boiler and a 6 by 8-inch Jenckes steam hoist were already on the property.

1936 The assay office was equipped, a second h.p. boiler installed and the installation of a 25-ton amalgamation mill commenced with the purchase of a Tremaine 2 stamp unit. Timber for the shaft was cut and framed as well as a large supply of fuel was cut. A lease for the claims was applied for.

1937 No underground work was done. A bunkhouse, mill house and crusher house were erected.

1938 Financing became a problem. Erie Canadian Mines Ltd. attempted to get an option on the property yet the deal never went through. Philip Cameron acquired the property and transferred the ground to M. Johnstone and K. Cameron.

1941, 1944 Production was stalled due to lack of financing.

1979 Amax Minerals Exploration conducted a low-level aeromagnetic survey over their Tashota claim group. The map covers the area around Tashota Lake where the leased claims are.

Present Day The property is held by M.U. Johnstone and K.G. Cameron.

5) LOCATION AND ACCESS: N.T.S. 42L4/NE

General Location: The claims border the north shore of Tashota Lake approximately 2 km (1.2 miles) north of Tashota Station on the Canadian National Railway.

Access: Access is by helicopter and/or float plane.

References:
Amukun (1977)
Kindle (1932)
ODM, 45th AR, V. XLV, pt. I (1936)
ODM, 46th AR, V. XLVI, pt. I (1937)
ODM, 47th AR, V. XLVII, pt. I (1938)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 38b-2	Lake Nipigon to Albany River Route Map (Burwash 1929)
Map 40f	Kowkash-Ogoki Area (Kindle 1932)
Map P.931	Tashota Area (Amukun 1974)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)
Map 2354	Tashota (Amukun 1977)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Onaman-Tashota Belt of the Wabigoon Subprovince. The property is underlain by a belt of mafic metavolcanics. Minor amounts of felsic volcanics are associated with the mafic metavolcanics. Diabase dykes cross-cut the metavolcanics in a NW-SE and NE-SW trend. The belt is intruded by the Robinson Lake Stock to the west and the Gzowski Lake Stock to the east.

7) DETAILED GEOLOGY AND MINERALOGY:

Kindle (1932) reported the following:

> "The country rock in the Tashota Lake basin is Keewatin green-stone which trends northwest-southeast. A number of outcrops of iron formation appear east of the lake. More than a dozen veins have been uncovered in the lake basin. The veins, which are wide and well mineralized, fill strongly sheared and schisted zone in the greenstone.
>
> A number of porphyry dikes intrude the greenstone at pit No. 1; they have all been severely altered in the process of shearing. The rock succession across the strike at pit No. 1, starting at the shore, is as follows: quartz porphyry, 40 feet; greenstone, 3 feet; biotite lamprophyre, 2 feet; quartz porphyry, 5 feet; lamprophyre, 8 feet; greenstone and rusty pyrrhotite, 2 feet, lamprophyre, 1 foot; brown-weathering, highly sheared quartz porphyry, 30 feet. The "bournonite pit" is sunk in the last named porphyry on a quartz vein 15 inches wide.
>
> The strike of the vein at No. 1 pit is 160 degrees, and the local dip is 85 degrees N. Vertical faulting is plainly evident. Vertical slickensiding indicates steep faulting along the vein in quartz porphyry. Polished sections of the ore from this pit show that the minerals fill irregular fractures in quartz. Remnant grains of pyrite have been replaced by sphalerite and chalcopyrite. Pyrrhotite was seen in siliceous gangue. The mineral bournonite was identified by M. Haycock in contact with chalcopyrite, sphalerite, and galena, but no age relationships could be determined.

The carbonate rock 12 feet northeast of the Tash-Orn pit is about 18 feet wide and lies against a volcanic breccia and rhyolite. The carbonate appears to owe its origin to replacement. The rock is white, being fully 80 per cent calcite, and is marked with numerous closely spaced pale-green bands, consisting of pyroxene, epidote and zoisite. Traces of zinc blende occur throughout the mass."

8) CHEMICAL ANALYSES:

Assays of a sample from the bournonite pit gave: gold - none; silver - 4 ounces; zinc - 6%. (Kindle 1932)

P. B. Cameron reports 4 ounces of gold and some silver was recovered from two tons of high grade which were taken from the dump and fed to the mill by hand. (Northern Miner, 1941, Beardmore-Geraldton Resident Geologist's Files)

1) PROPERTY NAME: Caramat Gold Mines Occurrence (25)

DATE(S) VISITED: May 11, 1988
Aug. 22, 1988

2) ALTERNATE NAME(S): Milestone Exploration Limited
Paglamin Lake Occurrence
Pagwachuan Lake Claims

3) COMMODITY: MAIN: Au SECONDARY: Cu, Ag

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1936 The ground was explored and a group of 18 claims was staked in August as follows: TB 22603-22607 (James A. Grant), TB 22608 to 22611 (Paul Aronson), TB 22585 to 22587 (Joseph Rankin), TB 22588 to 22590 (A.L. Cochrane) and TB 22591 to 22593 (E.A. Chapman).

The main showing is located at the northeast end of Paglamin Lake (TB 22588) where several trenches and pits were sunk over an auriferous quartz-carbonate vein during the summer. A second showing of similar character, located on the northwest shore of Paglamin Lake (TB 22585) was also explored by trenching during the same period.

In December Caramat Gold Mines Ltd. was incorporated to acquire the Paglamin Lake property.

1937 In January all claims associated with this property were transferred to James A. Grant, Secretary-Treasurer of Caramat Gold Mines Ltd.

The property was officially acquired by Caramat Gold Mines Ltd. of Toronto from the Caramat Syndicate for 15,000 shares, Athabasca Grant Mines Limited for 15,000 shares, and M.C. Mosher for 5,000 shares (Canadian Mines Handbook, 1938).

From February to April of this year Caramat Gold Mines Ltd. completed 15 diamond drill holes (see 'Chemical Analysis' for results) over the main occurrence in the northeast end of Paglamin Lake. In a company report dated April 29, 1937, Murdock C. Mosher (then President of Caramat Gold Mines Ltd.) stated that twelve of the fifteen holes "....cut the main shearing at depths of one hundred to two hundred feet". It was also

mentioned that "results obtained from this drilling did not warrant further expenditure" (Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

1947 In May of this year patents were granted for sixteen of the eighteen original claims comprising the Caramat Gold Mines occurrence property. These included: TB 22603 to 22605, TB 22608 to 22611, and TB 22585 to 22593.

1953 On April 23 claims TB 22606 and TB 22607 were cancelled.

1968 The name of the company was changed from Caramat Gold Mines Ltd. to Milestone Exploration Ltd. (Amukun, 1984).

1979 Amukun (1984) states that "...recent trenches were found during the current mapping. According to Murdock C. Mosher (President of the Company, Personal Communication, Toronto, 1979) the company has from time to time conducted geological and mechanical surveys on the property". This appears to be of a minor nature and essentially little work had been done on the property since 1937.

1984 From January 6 to January 18 Aerodat Limited conducted an extensive airborne VLF electromagnetic and magnetometer survey over the Klotz Lake-Pagwachuan Lake area (including Paglamin Lake) for Getty Canadian Metals Ltd. The company holds a large block of claims surrounding the Milestone Exploration Ltd. property (Caramat Gold Mines occurrence) to the south. As a result, several weak to strong EM conductors were located over the Milestone property. (Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay.)

1990 The Caramat Gold Mines occurrence consists of 16 patent claims including TB 22603 to 22605, TB 22608 to 22611 and TB 22585 to 22593. It is currently held by Milestone Exploration Ltd. of Toronto.

5) LOCATION AND ACCESS: NTS 42F13/SW

General Location: The property is centered around the north shore of Paglamin Lake approximately 2 km south of Highway 11 and 40 km east of Longlac. It lies between Klotz Lake to the northeast and Pagwachuan Lake to the southwest.

Access: Access is via Highway 11, 40 km east of Longlac to the Pagwachuan Lake Road, which trends south to Pagwachuan Lake. The north shore of Paglamin Lake is reached by travelling approximately 2.5 km along this road from Highway 11.

References: MacDonald (1938)
Amukun (1984)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 46b Long Lake-Pagwachuan Lake Area (MacDonald 1938)

Map P.551 Caramat Sheet (Innes 1969)

Map P.1527 Ontario Mineral Potential - Longlac Sheet Mineral Deposits (Springer 1978b)

Map 2202 Caramat-Pagwa River Sheet (Innes and Ayres 1969)

Map 2469 Klob Lake (Amukun 1984)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Paglamin Lake Stock which intrudes the extreme eastern extension of the main Beardmore-Geraldton metavolcanic-metasedimentary belt. Generally, the Paglamin Lake Stock is predominantly massive, however slightly foliated or cataclastic zones may be locally present. The east-west trending Klob Lake-Hoiles Creek and Gravel River-Kamuck River faults pa through the area just south of Paglamin Lake and the Caramat Gold Mines occurrence (Amukun 1984).

7) DETAILED GEOLOGY AND MINERALOGY:

According to MacDonald (1938, p. 39):

"The showing is situated at the northeast end of Paglamin Lake and consists of a carbonated quartz vein in sheared porphyritic quartz diorite. The wall rock contains abundant sericite and some carbonate. The shear zone, which has been traced on the surface for 300 feet, strikes east-west and dips steeply south. The vein ranges in width from 6 to 12 feet. Pyrite and chalcopyrite occur fairly evenly throughout the quartz. Visible gold is present. Assay values from surface work were sufficient to warrant a diamond drilling campaign."

The detailed property and area geology is described by Amukun (1984, p. 61) as follows:

"Several outcrops and trenches on the property were examined in detail by the field party during the current field mapping. The property is predominantly covered by drift and glacial material, but outcrops indicate that the property includes the contact between the Paglamin Lake Stock and the gabbro/diorite sill lying in the vicinity of Paglamin and Secon Lakes. The Paglamin Lake Stock is a distinctive granodiorite to trondhjemite stock which is characterized by blue quartz eyes, green sericitized plagioclase, and mafic inclusions. The stock is predominantly massive, but may be locally porphyritic and in some areas of the property, it is extremely well foliated and sheared. The metasediments south of the property (for example, south of Adel Lake) seem to be unaffected by the faulting, and retain such sedimentary structures as cross-bedding and graded bedding, channelling and load structures. The contact between the gabbro/diorite and Paglamin Lake Stock contains sulphide mineralization on the northern shore of Paglamin Lake and will be described in the next 3 paragraphs.

On the northwestern shore of the lake, 2 north-south trending trenches about 30 m long expose mineralization consisting of pyrite and minor amounts of chalcopyrite associated with auriferous quartz-carbonate veins. These are located in shear zones within the Paglamin Lake Stock whose strike length and width could not be traced due to the scarcity of outcrop. Visible gold was reported from the property (MacDonald 1938), but was only noted from assay results submitted by the field party. At the northeastern shore of the lake, 2 more trenches expose the highly sheared, cataclastic nature of the contact zone between the highly sheared Paglamin Lake Stock, and exposed quartz-chlorite schists, and quartz-carbonate veins up to 5 cm wide. Trace amounts of chalcopyrite and pyrite with minor bornite were found in association with

the quartz-carbonate veins. Disseminated pyrite is ubiquitous in the sheared stock, but the quartz-chlorite schists are notably barren of sulphide mineralization.

Several of the trenches were examined and sampled by the field party within the property. Several of the samples contain pyrite and minor chalcopyrite. The 2 best mineralized samples were assayed by the Geoscience Laboratories, Ontario Geological Survey, Toronto, and gave 23.5 ppm (0.82 oz/ton) gold, 910 ppm copper, and 74.3 ppm (2.21 oz/ton) gold, and 1250 ppm copper."

8) CHEMICAL ANALYSES:

Assay results from nine diamond drill holes completed by Caramat Gold Mines Ltd. in 1937 are listed below (Northern Miner Article, April 1, 1937, p.2):

Hole No.	True Width	Values (Au)
1	2.8 ft.	$2.80
2	1.8 ft.	1.05
3	22.5 ft.	4.95
including	7.5 ft.	7.12
4 5 6	core lost	
7	5.0 ft.	2.95
8	20.0 ft.	5.29
9	2.5 ft.	7.00

Note: In 1937 gold was $34.98/ounce.

Assays from rock samples collected during a 1988 visit to the property gave the following results:

Sample Number	Gold (oz/ton)	Silver (oz/ton)	Description
88-ASC-1	0.01	0.33	Granodiorite with pyrite in
88-ASC-2	0.01	<0.10	small quartz stringers
88-SCM-1	0.01	<0.10	Granodiorite with hematite and pyrite

1) PROPERTY NAME: Chipman Lake Occurrence (29)

DATE(S) VISITED: July 12, 1989

2) ALTERNATE NAME(S): Hoole Property
Powell Property

3) COMMODITY: MAIN: Cu SECONDARY: Ag, Au, Ni, Zn

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1900 E.V. Neelands (1900) reported the presence of pyrrhotite, and minor chalcopyrite and pyrite on Pine Lake (now called Chipman Lake).

1918 T.L. Tanton reports visiting an original chalcopyrite showing that Neelands had visited in 1900. P.E. Hopkins also visited the showing and reported molybdenite and gold were present.

1927 Thomas Powell staked TB 7143, 7144, 7145 in July. Thirty days of work was filed in October.

1931 Claims were cancelled in December.

1947-1954 During this time many different people held claim blocks in the original area. They are as follows:

F.J. Jowsey	TB 36972-78	1947-48
L.F. Weir	TB 38051-56	1948-50
Ed Klepatz	TB 44326-31	1952-54
Rene Lefrancois	TB 44333	1952-54

No work is recorded on these claims.

1954 B. Pitton staked TB 52101 - 52109 in January and transferred all interest to the Mining Corporation of Canada Limited. C. Wenzel staked 52087 - 52100 in January and also transferred all interest to the Mining Corporation of Canada Limited in April. Stewart Anderson staked TB 49336 - 49339 in January. All interest was transferred to A. Gustafson in May and then to the Mining Corporation of Canada Limited in September. From June to October, geological surveys involving trenching and stripping were completed on the property. During August to September, a magnetometer survey was completed. A self-potential survey was run during September and October.

1955 A magnetometer survey was run in January.

1956 All claims were cancelled.

1958 Emile Parozanin staked TB 92643 - 92646 in November. The claims were cancelled in 1960.

1964 Albert Onesime staked TB 111106 - 111113 in May. Claims were cancelled in October 1966.

1965 Edward Rosada staked TB 115304 - 115318 in January. In March of 1966, all interest was transferred to Consolidated Morrison Explorations Ltd. An airborne geophysical survey was flown. Claims were cancelled in 1970.

1969 Lambert Nabigon staked TB 221172 - 221184 in July. Claims were cancelled in 1970.

Present Day Open for staking.

5) LOCATION AND ACCESS: N. T. S. 42E16/NE

General Location: The property is located on the eastern shore of the south end narrows of Chipman Lake, O' Meara Township.

Access: The property can be reached by travelling the Trans Canada Highway #11, 12 km (7.5 miles) east of Longlac. Turn north onto Lukinto Lake Road (17) and follow for 15 km (9.3 miles) to the Fernow Lake Road. Turn east onto this road and continue for 3.25 km (2.0 miles). Then turn north onto the Ogahalla Lake Road and follow for approximately 3 km (1.9 miles). Claims are located to the west. An alternate route would be to continue north on Lukinto Lake Road for another 4 km (2.5 miles). Then turn right onto the road and follow for 0.5 km (0.3 mile). From here, it is possible to launch a boat and approach the claims from the lake shore.

References:
Britton (1955)
Hopkins (1918)
Neelands (1900)
Sage (1983)
Tanton (1918)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map P. 1068 (rev.)	Chipman Lake Area (Sage 1983)
Map P. 2076	Chipman Lake Area (Mason & Matthews 1980c)
Map 2202	Caramat-Pagwa River Sheet (Innes and Ayres 1969)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is underlain by an east-west trending belt of mafic to intermediate metavolcanics, generally composed of banded amphibolite and tuffs or lapilli tuffs. This belt is intruded by an east-trending quartz monzonite and granodiorite intrusion. Both the felsic intrusive rocks and metavolcanics are cut by north-south trending diabase dykes. The Chipman Lake Fault runs north-south through Chipman Lake. Displacement of lithologic units among the fault is unknown (Sage 1983).

7) DETAILED GEOLOGY AND MINERALOGY:

In the south part of the property, units of semi-to well-banded paragneisses occur. North of the paragneisses are well-banded tuffs of intermediate composition. Mafic metavolcanics lie north of the tuffs as well as minor remnant pillow lava. To the north and east of the property, an intermediate-to-felsic body of diorite to syenodiorite occurs. This intrusive body of rock is called the Chipman Lake Stock. The diorites and syenodiorites are usually massive, medium grained, equigranular and locally foliated and porphyritic. A narrow band of granite intrudes between the metavolcanics and intrusive granitic rocks (Britton 1955).

The following description of the mineralogy is taken from a report by Dr. E. Pye, Resident Geologist (Beardmore-Geraldton Resident Geologist's Files, Thunder Bay). The date of the visit is unknown.

> "Two mineralized zones have been located. One lies in diorite along the contact with volcanics to the south. It strikes E-W and consists of massive to disseminated sulphides (pyrite, pyrrhotite and minor chalcopyrite) over widths up to, and possibly exceeding 25 feet). The massive sulphides occur north of and parallel the diorite-greenstone contact, from which they are separated by a zone up to 20 feet wide, of disseminated mineralization.

The second zone lies about 160 feet south of and parallels the first. It is of similar character, but lies in volcanics south of a second sill-like body of diorite. This zone has been exposed over a width of 20 feet at one point, and has been traced for a length of 300 feet. The dip of the schistosity in one outcrop along this zone was recorded at 37 degrees north."

8) ECONOMIC FEATURES:

Grade: According to Dr. Pye, surface sampling indicated values up to 0.35% Cu over 12.0 feet in the north zone, and up to 0.29% Cu over 12.0 feet in the south zone.

9) CHEMICAL ANALYSES:

A report by Hopkins (1918) reports the following from the south zone:

> "A chipped sample across 3.5 m (10 feet) yielded on assay the following:
> Nickel 0.14%; gold 40 cents per ton (.02 oz/ton, 1918 Gold $20.67 per ounce); copper, none, and platinum, none."

Samples from the northern zone assayed the following: Copper 0.40%, Nickel 0.26%, Gold and Platinum - none. (Hopkins 1918)

A newspaper report (Beardmore-Geraldton Resident Geologist's Files, Thunder Bay) from November 1927 reports "encouraging copper values" from one section of a vein showing massive pyrrhotite. Another section of the zone exhibits blue quartz with calcite inclusions which have assayed 20 cents to $11.48 in gold (0.1 to .56 oz/ton, 1927 Gold $20.67 per ounce) and from 4 to 45 ounces in silver."

The following results were obtained by an examination of the property by W.H. Hansen in April of 1954 for Britton (1955) of the Mining Corporation of Canada. Exact location of samples is unknown.

Sample No.	Oz. Au Ton	Oz. Ag Ton	% Cu	% Ni
33	Nil	.34	.25	Trace
34	Trace	.28	.31	Trace
35	Nil	.30	.22	Nil
36	Nil	.24	.22	Nil
37	Nil	.30	.27	Nil
1A-1	Trace	Trace	.31	Nil
1A-2	Trace	Trace	.26	Nil
2A-1	Trace	Trace	.42	Nil
2A-2	Trace	Trace	.31	Nil
1B	Trace	Trace	.23	Nil
2B	.08	Trace	.34	Trace
1C	Nil	Trace	.26	Nil
2C	Trace	Trace	.34	Trace
1D	Trace	Trace	.21	Nil
2D	Trace	Trace	.26	Nil

The following tables are results from Sage (1983) report on the Chipman Lake Area.

Table 14: Assays of grab samples from pits and trenches along east side of Chipman Lake. Sample CP12-104B1 is the most southerly of the showings and CP12-115B2 is the most northerly.

Sample	Copper (%)
CP12-104B1	0.08
CP12-112A1	0.05
CP12-114B1	0.05
CP12-115A2	0.23
CP12-115B2	0.23

North Zone

Table 15: Assays of chip samples from north sulphide showing, dikes excluded.

Sample No.	Width (ft)	No. of Chips	% Cu
OC4-4 (Massive)	5.5	3	0.25
OC4-5 (Diss-north)	4.0	2	0.07
OC4-6 (Diss-south)	5.0	1	0.68

South Zone

Table 16: Assays of chip samples from south sulphide zone, dikes excluded.

Sample No.	Width (ft)	No. of Chips	% Cu
OC2-1 (Massive)	8.0	13	0.05
OCZ-2 (Diss-north)	26.0	5	0.08
OC2-3 (Diss-south)	14.0	3	0.03

The following assays are from grab samples taken during a 1989 property visit.

Sample No.	Au oz/ton	Ag oz/ton	Cu ppm	Pb ppm	Zn ppm	Ni ppm
89-SCL01	0.004	Nil	341	<10	108	16
89-SCL02	Nil	Nil	1440	10	105	440
89-SCL03	0.014	Nil	1430	<10	103	396
89-SCL04	0.003	Nil	950	<10	294	70

1) PROPERTY NAME: Cryderman (O' Sullivan Lake) Occurrence (40) DATE(S) VISITED:

2) ALTERNATE NAME(S):

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

pre1919 Claim TB 2730 was staked by R. Cryderman.

1920 The claim (TB 2730) was surveyed for patent (parcel 5281).

1921 Patented claim TB 2730 was held jointly by Barbara Cryderman (40 percent interest) and Horace Strong (60 percent interest).

1921-1988 The ownership of the patent is unknown. The record sheet for the patent does not show subsequent owners past B. Cryderman and H. Strong.

1988 A claim block (TB 973658 to 973672 inclusive) surrounding the original patented claim (TB 2730) was staked by L. Nabigon and subsequently transferred to Quillo Resources Inc. An airborne magnetometer and electromagnetic survey was conducted over the area.

1989 The status of the original showing is unknown.

5) LOCATION AND ACCESS:

N. T. S. 42 L 6/NE

General Location: The showing is located on Cryderman Peninsula on the western shore of O' Sullivan Lake, approximately 80 km north of Geraldton, Ontario.

Access: Access is via Highway #584 and Anaconda road north of Geraldton to O' Sullivan Lake. The occurrence is located 0. 8 km on the south side of Cryderman Peninsula and is accessible via boat from tourist outfitters located on the west end of Osulake Peninsula.

References: Ferguson et al. (1971)
Kindle (1932)
Moorehouse (1956)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry Northern Development and Mines, Thunder Bay

Map References:

Map 40f	Kowkash-Ogoki Area (Kindle 1932)
Map 1955-2	O' Sullivan Lake Area (Moorehouse 1956)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Onaman-Tashota Belt of the Wabigoon Sub-province. The property is underlain by mafic to intermediate metavolcanic rocks which are intruded by a northeasterly trending quartz porphyry dike.

7) DETAILED GEOLOGY AND MINERALOGY:

Kindle (1932) described the Russell Cryderman showing as follows:

"Narrow quartz veins fill the fissures in a sheared quartz porphyry dike that outcrops for 110 feet along the shore of O' Sullivan lake in the bay of the 103-chain portage. The country rock is greenstone, in which ankerite has developed across 30 feet at 10 feet west of the porphyry. The quartz veins in the dike are not more than a few inches wide. They strike 60 degrees and dip 75° S. The porphyry dike reappears on the east side of an island in the bay with a small showing of ankerite. The centre of the island is formed by a wide Keweenawan diabase dike, in which much epidote has formed. On the mainland the northern part of this dike cuts the greenstone 180 feet west of the Cryderman porphyry dike.

Close to the shore on the claim east of the porphyry dike, a felsite dike was found mineralized with pyrite and traversed by a narrow quartz vein."

8) CHEMICAL ANALYSES:

Kindle (1932) documented the following:

"Gold values reported from a 5-foot and a 4-foot channel sample in the ankerite zone were $6 and $20 respectively. Horace Strong is said to have panned gold in the porphyry dike."

In 1932, the price of gold was $23.46 per ounce. The $6 and $20 values convert to 0.26 and 0.85 ounce Au per ton respectively.

1) PROPERTY NAME: Currie Occurrence (41) DATE(S) VISITED:

2) ALTERNATE NAME(S): Currie Vein/Find
Gulf Lead Mines Ltd.

3) COMMODITY: MAIN: Au SECONDARY: Ag, Pb, Zn

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1923 Claim K.K. 514 staked by T. Currie.

1932 T.A. Johnson restaked K.K. 514 as K.K. 2239. No development work was done since the original find by T. Currie in 1923 (Kindle 1932).

1932-1933 Johnson Nipigon Mines Ltd. drilled close to 10 diamond drill holes on the Currie Occurrence during this period. No results or logs are available (Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

1938 An application for patent on claim K.K. 2239 was made by T.A. Johnson.

1949 Claim K.K. 2239 was transferred to Percy E. Hopkins.

1951 Claim K.K. 2239 was transferred to Albert P. Hopkins (90 percent interest, 10 percent interest retained by P.E. Hopkins).

1955-1956 Gulf Lead Mines Limited held an option on eight patented claims - K.K. 2272 to K.K. 2275, K.K. 2238, K.K. 2239, K.K. 2242 and K.K. 442 (Canadian Mines Handbook 1955, 1956).

At least two diamond drill holes (D.D. 6 and D.D. 7) were drilled from the north across the east-west strike of the Currie vein by Gulf Lead Mines Limited (Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

1966 The remaining 10 percent of the Currie claim (K.K. 2239) was transferred to Albert P. Hopkins from P.E. Hopkins.

1970 The surface rights only were transferred to John M. Stephens of Toronto, Ontario. Albert P. Hopkins retained the mineral rights of the patent claim K.K. 2239.

1975-1976 Duncan R. Derry Limited undertook a Mineral Exploration Programme (MEAP Contract GB-60) covering eight patent mining claims (known as the 'Hopkins Option', it includes K.K. 442, K.K. 2238, K.K. 2239, K.K. 2242 and K.K. 2272 to K.K. 2275 inclusive) optioned from Albert P. Hopkins. This project involved a joint venture agreement among Duncan R. Derry Limited, Dejour Mines Limited, Lynx-Canada Exploration Limited and Canadian Reynolds Metals Co. Ltd. The exploration program covered both the Currie and Johnson Occurrences and included linecutting, geological mapping, horizontal and vertical loop electromagnetic and magnetic surveys and surface geochemical and basal till sampling. Diamond drilling was planned but no results are available (Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

1983 Claim K.K. 2239 was transferred to TJN Gold Explorations Inc. There is no report of any work having been done.

1985 Claim K.K. 2239 was transferred to Muscocho Explorations Limited.

Current (1990) The Currie claim K.K. 2239 is presently owned (mining rights only) by Muscocho Explorations Limited.

5) LOCATION AND ACCESS: NTS 42L04/SE

General Location: The Currie claim K.K. 514 (now K.K. 2239) is located about 0.8 km (0.5 mile) west-northwest of the Tashota Mine which is situated approximately 4.6 km (3 miles) northwest of Onaman Lake. The Currie claim lies immediately north and adjacent to the Johnson claim K.K. 442.

Access: Proceed north on the Kinghorn (Camp 40) Road from Highway #11 to the Con Lake Road. Continue northeast from the Con Lake Road on the Mine Road for about 12 km (8 miles) to the Tashota Mine site. The Currie claim is about 0.8 km (0.5 mile) west-northwest of the Tashota Mine.

References: Gledhill (1925)
Kindle (1932)
Thurston (1980)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 34g Tashota-Onaman River Area (Gledhill 1925)
Map 40f Kowkash-Ogoki Area (Kindle 1932)
Map 2411 Onaman Lake (Thurston 1980)
Map 2102 Tashota-Geraldton Sheet (Pye et al. 1966)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Onaman-Tashota Belt of the Wabigoon Subprovince. Early Precambrian mafic and felsic metavolcanic rocks underlie the area in the vicinity of the Currie claim. Basaltic metavolcanics underlie most of the region in the immediate area of the showing and form a belt 5.6 km (3.5 miles) wide at its maximum width.

Intercalated within the mafic metavolcanic sequence is a sequence of predominantly felsic pyroclastic rocks extending over a strike length of 7.5 km (4.75 miles) and having an exposed width of 440 m (1400 feet). Minor intercalations of quartz-feldspar porphyry and rhyolitic flows are found at scattered localities in the mafic metavolcanics.

The metavolcanic belt is bordered to the northwest and southeast by composite batholiths of quartz monzonite to trondhjemite composition with biotite as the principal mafic mineral.

The granitic rocks are cut by northwest and north-northwest trending diabase dikes about 15 to 30 m (48 to 96 feet) thick (Thurston 1980).

7) DETAILED GEOLOGY AND MINERALOGY:

The Currie claim, K.K. 514 is described by Gledhill (1925) as follows:

"Currie Claim K. K. 514--This discovery was made in August, 1923, and was of interest because of the finding of a rich galena, sphalerite, pyrite vein. The break is in Keewatin greenstone and trends in a northeast direction across the claim. At the east end the vein is very narrow and has a little rusty quartz carrying a few specks of galena. T. Currie by careful prospecting followed the break westward and found that it widened in this direction. The break contains a feldspar-porphyry dike similar to that on K. K. 514...

There is some evidence that this vein is a replacement of a pyrite lens in the Keewatin rocks, the galena replacing the pyrite. The pyrite appears in the galena as rounded blebs, which lends support to the replacement theory.

The distance between claims K. K. 514 and 524 marks the width of the chief mineralized zone in this part of the camp."

Thurston (1980, p. 34) indicates that "Occurrences such as the Currie all consist of galena and sphalerite associated with pyrite in pyritic quartz veins filling shear zones, almost always in spacial association with feldspar porphyry dikes."

8) CHEMICAL ANALYSES:

Gledhill (1925) reported "...this ore is of special interest on account of its content of both gold and silver, the silver running as high as 40 ounces per ton and the gold from $5 to $6 per ton." In 1925 gold was valued at $20.67 per ounce. These values convert to 0.24 to 0.29 ounce Au per ton respectively.

Two diamond drill holes completed by Gulf Lead Mines Limited (1955-1956) across the Currie vein on claim K.K. 2239 yielded the following results:

Hole No.	Width (inches)	Au (oz/ton)	Ag (oz/ton)	Pb (%)	Zn (%)
D. D. 6	16	.01	1.14	--	--
D. D. 7	18.5	.05	10.06	10.30	11.32

(Gulf Lead Mines Limited 1955)

1) PROPERTY NAME: Cyril Knight Prospecting Company East Group Occurrence (42)

DATE(S) VISITED: August 1989

2) ALTERNATE NAME(S): Crooked Green Creek Prospect
MacFarlane Brothers "East" Group

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1934 W. & J. MacFarlane staked TB 14861 - 14866 in August for M.G. Cumming and E. Ross. The property was owned by Cyril Knight Prospecting Co. Ltd.

1935 Thirty days work was recorded on each claim in April. According to assessment files, this work involved mainly stripping of the veins and channel sampling.

1936 The claims were restaked as TB 22660 - 22665 in September. In October, the claims were transferred to D. Banks.

1937 In April, 120 days work was recorded on TB 22660, 22662 and 22663 while 938 days work was recorded on TB 22661, 22664 and 22665. The nature of the work is unknown.

1944 The claims were restaked as TB 30823 - 30831 (the claim boundaries changed) in July by C. Wickson.

1945 The claims were cancelled with no work recorded and were subsequently restaked as TB 31663 - 31671 by F. Coleman.

1946 The claims were cancelled in May with no work recorded and restaked as TB 34495 - 34503 by E. Alford in May. In November, 42 days work was recorded on TB 34495 - 34497.

1947 Claims TB 34495 - 34503 were cancelled in October. These six claims were restaked by F. Coleman (TB 37140 - 37145) in October.

1950 Claims TB 34495 - 34497 and 37140 - 37145 were cancelled.

1954 E. Ferland and J. Mosse staked TB 62069 - 62072 and TB 62073 - 62079 respectively in July.

1955 The claims were cancelled in December.

1959 J. Murchison staked TB 93050 - 93059 in January. In May, all interest was transferred to Fenwick Hedley.

1960 The claims were cancelled in February.

1970 P. Zatorsky staked TB 305146 - 305159 in December.

1971 In January, all interest was transferred to Phelps Dodge Corporation of Canada Ltd. Airborne magnetometer surveys were recorded as 41 days work on each claim.

1973 The claims were cancelled in February.

1974 N. Hibbart staked TB 404116 - 404121 in August. Fifty-percent interest was transferred to J. Anderson and R. Halverson who then transferred all interest to D. Clark.

1975 The claims were cancelled in September with no work recorded.

1981 N. Hibbart staked TB 603959 - 603962 and TB 603965 - 603966 in July.

1983 Two extensions were granted, yet the claims were cancelled in October with no work recorded. Paul Skalesky restaked the claims as TB 746741 - 746742 and TB 746745 - 746746 while W. Letang staked TB 476768 and TB 746772.

1985 W. Letang transferred all interest to P. Skalesky in June. Atlantic Mining Corporation (Podany Mining Corporation) optioned the property from P. Skalesky and his partners, J. Ternowesky and A. Baarts. An airborne VLF-EM was flown over the property in October and was recorded as 80 days work on each claim.

1986 Noranda Exploration Company Limited acquired the property through an option/joint venture agreement with Atlantic Mining Corporation. The property was mapped and recorded as 40 days geological work on each claim.

1987 In February, diamond drilling was undertaken on TB 746758 which was part of a large block of claims originally staked by P. Skalesky and W. Letang. Since the drilling was done on claims contiguous to the six claims of interest which cover the occurrence, 20 days work of diamond drilling could be applied to the claims. In March, all interest was transferred to Podany Mining Corporation.

1988 Podany Mining Corporation transferred all interest to A. Baarts.

1989 A total of 60 days work was applied to each claim. The work was done on TB 746758, a contiguous claim to the west.

5) LOCATION AND ACCESS: N. T. S. 42E12/NW

General Location: The property is located in the northwest corner of Irwin Township and the southwest corner of Pifher Township. The property is situated northwest of the junction of the Crooked Green Creek and the Sturgeon River.

Access: Access to the claim group is via Highway #801 which leads north from Highway #11, 9.6 km (6 miles) west of Jellicoe. Proceed 13.9 km (8.6 miles) N. of Highway 801. Turn left (west) onto the Camp 72 road. At 5.4 km (3.2 miles), you will cross the Crooked Green Creek Bridge. Continue west for 4.7 km (2.9 miles) to a junction in the road. At this point, you will be heading south. Turn left (east) onto the road and follow it south/southeast to another junction (1.4 km) (0.9 mile). The road you meet will be running east west. Turn left (east) and following this road for 1.4 km (0.9 mile). Another road to the east will branch off after 1.0 km (0.6 mile). Turn left (east) and follow this road for approximately 1.6 km. The property is located 4 km N. of the road.

References: Dal Bello (1986)
Knight (1934)
Laird (1937)
Mackasey (1975)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 45a	Sturgeon River Gold Area (Bruce & Laird 1936)
Map 1934c	Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)
Map 2294	Dorothea, Sandra & Irwin Twps. (Mackasey 1975)
Map P. 3078	Pifher Township (Kresz & Zayachivsky 1988c)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Onaman-Tashota Belt which is part of the Wabigoon Subprovince. The property is a felsic metavolcanic belt which consists of intermediate lithic tuffs and felsic crystal tuffs. This belt is intruded by the Elmhirst Lake Stock which is a granodiorite and quartz diorite intrusion and the Coyle Lake Stock, a granodiorite intrusion. North-south trending porphyritic diabase dykes are found throughout the metavolcanic belt.

7) DETAILED GEOLOGY AND MINERALOGY:

According to Laird (1937, p. 38) the "East" Group:

> "...is underlain by schistose tuffs and agglomerates resembling arkose, but Keewatin in age. The schisting of these rocks is east-west, and their attitude more or less vertical. A massive outcrop of rhyolite or quartz porphyry occurs near the northeast corner of claim TB 14866, and a porphyritic diabase dike, about 150 feet in width, strikes north across claim TB 14861 only a few feet west of the main showing. Several small quartz veins have been uncovered near the middle of claim TB 14861, but the only one containing gold is No. 1 vein. This vein has been stripped for 70 feet. It strikes east, dips 70 degrees S, and has an average width of 5 inches. The quartz is well-fractured and milky-white and carries a little pyrite in addition to the gold."

Dal Bello (1986), Project Geologist for Noranda, described the property as underlain by crystal and crystal lithic tuffs. A north-south trending mafic dike crosscuts the property. Narrow, erratic white quartz veins and veinlets found on the property carry minor pyrite mineralization and rare visible gold.

8) CHEMICAL ANALYSES:

The following are channel samples from a company report written by Knight (1934) for Cyril Knight Prospecting Co. Ltd.:

SAMPLE RESULTS

No.	Location	Description	Width (ins.)	Gold (oz.)
M19	11 feet west of picket line at chainage 291 feet across vein striking N 75 degrees W	Milky quartz, well fractured a little pyrite mineralization (schisted walls - volcanic fragmentals?)	3 1/2	nil
M20	6 feet west of chainage 294 feet on base line across a vein striking N 75 degrees W	1 inch of rusty quartz with 1 inch of rusty schist on each side of it	3	.01
M21	9 feet west of chainage 316 feet on base line across a short lens striking east and west	3 inch quartz on south end, then 6 inch schist and 4 inch quartz on north end. Quartz on both walls is milky and well fractured, not much mineralization in the quartz, but the schist between is rusty	13	nil
M22	4 feet 10 inches east of chainage 421 feet on base line, across a vein striking N 20 degrees W	White milky quartz well fractured, very little visible mineralization, well-defined walls, not frozen to walls	62	nil
M23	11 feet west of 625 feet on base line across a vein striking due east and west	Milky, well fractured quartz. A little pyrite at south wall	9	.64

No.	Location	Description	Width (ins.)	Gold (oz.)
M24	20 feet west of chainage 625 feet on base line on same vein as sample M23	Milky quartz, well fractured but very little visible sulphide	8	.02

Grab samples taken during an August 1989 property visit assayed the following:

Sample No.	Location	Au (oz/ton)	Ag (oz/ton)
89-SCK1	E of L138, 101+75N	0.159	0.98
89-SCK2	E of L138, 101+75N	trace	nil
89-SCK3	E of L138, 101+75N	0.018	nil
89-SCK4	W of L138, 102+00N	0.032	nil
89-SCK5	W of L138, 102+00N	trace	nil
89-SCK6	W of L138, 102+00N	nil	nil
89-SCK7A	W of L138, 102+00N	0.008	trace
89-SCK7B	W of L138, 102+00N	0.011	nil

1) PROPERTY NAME: Dome Occurrence (49) DATE(S) VISITED:

2) ALTERNATE NAME(S): Thorco Occurrence
Buffalo Beardmore
Sandenise Gold Mines
Broadview Gold Mines

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1934 TB 12354 was staked by H.W. Batho in April as part of a block of claims staked for Buffalo Beardmore Gold Syndicate. In July, 30 days work was recorded on the claim.

1936 A total of 80 days work was recorded between April and December.

1938 The claim was cancelled in May and restaked as TB 26486 by Maylor Hayne for Mrs. Harriot Hayne. In August, 30 days work was carried out.

1944 The claim was cancelled and restaked as TB 30807 in July by J. Lariviere. In September, all interest was transferred to Sandenise Gold Mines Limited.

1945 Thirty days work was filed in January.

1946 Eighty days work was filed in May.

1949 After two extensions, 80 days work was recorded in February. Ten days work was recorded in July. In October, all interest was transferred to Broadview Gold Mines Limited.

1951 After two extensions, 32 days geophysical work was recorded on the property in November. The claim was extended until 1954 and then cancelled.

1958 R. Halverson staked TB 91352 in June.

1959 The claim was cancelled with no work recorded in September.

1960 F. Oja Staked TB 97708 in March.

1962 The claim was cancelled and restaked by J. Kondrat in March as TB 103416.

1964 In June, the claim was cancelled with no work recorded.

1972 A. Douglas staked TB 348940.

1975 The claim was cancelled in February.

1979 D. Thorsteinson staked TB 518446 in May.

1980 Twenty-four days work was recorded on the claim. The work undertaken was mechanical, manual and bulldozing.

1981 In June, TB 518446 was cancelled and restaked by D. Thorsteinson as TB 602222.

1982 TB 602222 was cancelled and restaked as TB 406090 in June by J. Koski.

1983 In May, TB 406090 was transferred to D. Thorsteinson.

1984 A total of three trenches, all 30.5 m x 3 m x 3 m (100' x 10' x 10'), was stripped on the claim in February and recorded as 60 days work.

1985 In June, an electromagnetic survey, as well as geological mapping, were completed on the property by Thorco Gold Finders Limited. Sampling and manual stripping of the main showing was done.

1986 In July, a diamond drill hole was sunk on the property to a depth of 79.9 m (262 feet) by Thorco Gold Finders Limited. In August, D. Thorsteinson passed away.

1988 In February, 50% interest of D. Thorsteinson's claims was vested to Mona Thorsteinson (Holt) and 50% to Melody Thorsteinson (Macsemchuk). At this time, an extension was granted until November 23, 1988 to apply and pay for the lease. In November, another extension was granted on TB 406090 until November 23, 1989.

5) LOCATION AND ACCESS: N.T.S. 42E12/SW

General Location: The property is located in south central Summers Twp., approximately 2 km southwest of Beardmore, Ontario.

Access: Proceed east through the town of Beardmore to Highway #580. Turn left (north) and follow the highway to the pipeline. Turn left and follow the pipeline road for 4 km (2.5 miles). A short tractor road branches off the pipeline (to the west) and accesses the occurrence.

References:
Christianson (1947)
Erdic (1985)
Laird (1937)
Langford (1929)
Low (1949)
Marcotte & Webster (1983)
Peach (1952)
Thompson (1949)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 37k	Beardmore-Nezah Gold Area (Langford 1929)
Map 45a	Sturgeon River Gold Area (Bruce & Laird 1936)
Map P. 602	Summers Township (Mackasey 1970b)
Map 1934c	Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Beardmore-Geraldton Belt of the Wabigoon Subprovince. The property is underlain by a north-northeast trending band of metavolcanic rocks. The metavolcanics consist of basaltic to andesitic flows, tuffs and volcanic breccia. Iron formation occurs within the metavolcanics (Erdic 1985).

7) DETAILED GEOLOGY AND MINERALOGY:

According to a report (1949) by a mining engineer (C. N. Thompson) to Broadview Gold Mines Ltd., an outstanding vein was found on TB 31470(?) and had been stripped for over a length of 17.4 m (57 feet).

> "It is in the form of a Dome and both ends dip into low ground."

A 1947 report by T. Christianson on the Sandenise property in the Beardmore area states the following:

"A gold bearing zone on claim TB 30807 appears to be of considerable interest. The zone lays in sheared greenstone along banded lean iron formation. There appears to be different ages of quartz in the shear zone.

The south part of the zone exposed seems to be the most promising, as the rock there is heavier mineralized with arsenopyrite, which probably is responsible for the gold values.

This south part of the zone is bordered by a draw, striking parallel to the shear. The draw is about 100 feet wide."

The following is a more detailed description by Erdic (1985) for Thorco Gold Finders Limited:

"In the two northeastern claims, two bands of tuffs are intercalated with basalts and andesites. The tuff bands are 100 to 150 feet wide and can be followed for 2000 feet to the property boundary. The tuffs are usually fine- to medium-grained, exhibit a discrete alignment of lithic fragments and often contain disseminated pyrite in concentrations less than 5 percent. The tuffs are also characterized by their toughness and subconcoidal fracture. They can be magnetic as well.

The lithological unit of most economic potential is a 30 foot wide unit of oxide facies iron formation. It occurs within an andesite flow that is sheared and silicified at the contact. The iron formation is comprised of very siliceous to cherty beds, up to 4 inches wide, alternating with hematitic and carbonate-rich beds. Magnetite is not extremely pervasive. Beds of massive magnetite, not very common, were observed at L2W/2N. The magnetite occurs with or within yellow-brown, acicular grunerite crystals from 0.1 to 0.25 inches in diameter. Complex, tight isoclinal folding is very well developed within the iron formation. The iron formation, itself, shows evidence of being folded."

8) CHEMICAL ANALYSES:

A report by the consulting engineer (C.N. Thompson) to Broadview Gold Mines in 1949 records the following:

"At the west end a Grab Sample gave $30.41 gold per ton. A Channel Sample at this point, across 5.4 feet returned $9.64. Ten feet east a Channel Sample across 5.0 feet returned $5.39. Twenty-eight feet further east three 3-ft. Channel Samples across nine feet averaged $3.85, based on gold at $38.50 per ounce."

At $38.50 per ounce:

$30.41 = 0.79 oz Au/ton
$9.62 = 0.25 oz Au/ton
$5.39 = 0.14 oz Au/ton
$3.85 = 0.10 oz Au/ton

In 1984, grab samples assayed up to 1/3 of an ounce gold were reported (Erdic 1985).

1) PROPERTY NAME: Foisey Occurrence (56) DATE(S) VISITED: July, Sept. 1988

2) ALTERNATE NAME(S): Foisey Find, Fuesey Find

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1926 TB 6267 was staked by Frank Foisey in October.

1933 Frank Foisey restaked TB 6267 for Payson Weber of Shining Tree, Ontario in May to become TB 11048.

1934 A total of 80 days work was recorded.

1935: An option agreement is recorded for April. The property may have been optioned to Prospectors Airways Co. Limited.

1937: A total of 40 days were worked.

1938: An extension was granted until August 31 and then the claim was cancelled. The property was restaked as TB 26916 on September 1 by R. Hingst.

1939: Forty days work was recorded.

1940: Forty days work was recorded.

1943: The property came open for staking and Charles Tomlinson staked TB 30203 on Sept. 15.

1944: Thirty days work was recorded during the year.

1945: Forty days of work was recorded.

1950: The claim was cancelled.

1958: Charles Griffith staked TB 91332 on July 9.

1959: On January 23, the property was transferred to Sam Taylor.

1960: The property was transferred to G.T. Smith in January. Forty days geological work was recorded in August. Another 40 days work was recorded after this.

1962: Claim TB 91332 and adjoining claims were cancelled.

1981: Jean Paul Dupras staked TB 637133 in December.

1982: All interest was transferred to Farakel Co.

1983: Electromagnetic and magnetic surveys were conducted over the property.

1985: Claim TB 637133 and adjoining claims were cancelled.

1988: Claim TB 1069053 and other contiguous claims were staked by Frank Houghton in May. The property was jointly optioned to Murgor Resources Inc. and Freewest Resources Inc. in August.

1989: A ground geophysical EM and MAG survey was conducted over the claims in May. This work was filed as a total of 47 days work in June. Follow-up stripping and trenching was recorded as 100 days work in June also.

5) LOCATION AND ACCESS:

N. T. S. 42 E 13/SE

General Location: The property is located in the northeastern portion of Rickaby Township, approximately 15 km (9.3 miles) north-northeast of Jellicoe, and approximately 500 m (1640 feet) west of Dilla Lake.

Access: Travel 8 km (5 miles) east of Jellicoe on Trans-Canada Highway #11. Turn north onto the Kinghorn Camp 40 Road. Proceed north-northwest along the road for 22 km (13.7 miles). There is a tractor road cut on the north side of the Camp 40 Road west of the access road to Atigogama Lake. Follow this road for approximately 2 km (1.2 miles) to the showing.

References:

Burwash (1933)
Mackasey and Wallace (1978)
Mason et al. (1989)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:		
	Map 45a	Sturgeon River Gold Area (Bruce and Laird 1936)
	Map 1934c	Namewaminikan, Sturgeon River Area (Jameson 1934)
	Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)
	Map 2373	Elmhirst and Rickaby Twps. (Mackasey and Wallace 1978)

6) GENERAL GEOLOGY AND STRUCTURE:

Mason et al (1989) described the general geology as follows:

> "The Foisey Occurrence (Kaby and Dilla lakes area) is underlain by the Kaby Lake Stock. The Kaby Lake Stock consists of "massive pink to light grey granodiorite to trondhjemite with local occurrences of granite and quartz monzonite" (Mackasey and Wallace 1978). The intrusion is in contact with intermediate metavolcanic rock to the east and south of the Foisey Occurrence. Tuff breccia and breccia constitute the metavolcanics. Three lineament sets have been noted in the Kaby Lake Stock including a northeasterly, easterly and northwesterly set."

7) DETAILED GEOLOGY AND MINERALOGY:

Burwash (1933) reported the following during his property visit:

> "Claim TB 11048 west of Dillabough Lake has a fractured zone, in granite mainly. It is of good width and has been traced for over 950 feet. There is a fault displacement of about 30 feet, horizontally along a southwest-northeast plane at one point. The fractured material is mainly granite, but includes greenstone inclusions in the granite, lamprophyre dikes and feldspar porphyry dikes. These fragments are surrounded and partly displaced by quartz which fills the interstices between them and sometimes has a width 4-6 inches between the fragments. The mineralization is pyrite, chalcopyrite and molybdenite, and the quartz is mainly sugary in appearance."

"In some parts of this fracture zone feldspar occurs in the injected vein-matter and the vein takes on the character of a pegmatite. The strike of this vein is about 135 degrees (S45E). The lamprophyre dike which it intersects strikes N 80 degrees E. At the northern edge of the fracture zone a very large mass of the fractured and injected rock is exposed, the structural boundaries of which were not clearly observed."

The following description is from Mason et al. (1989), who visited the property in July of 1988.

"The Foisey (Main) Occurrence consists of brittley fractured and silicified granodiorite and quartz diorite. The occurrence, parallels the north-westerly lineament trend, strikes 135 degrees and is 140 m (460 feet) by 8 to 10 m (27 to 33 feet) wide. Mafic to intermediate metavolcanic rocks, in the form of xenoliths up to 50 m in diameter, and lamprophyre dikes occur on the property. Multiple generations of quartz veining have been injected into fractures in the granodiorite and quartz diorite. An open breccia texture has resulted. A second set of quartz veins, striking northerly, is intimately associated with the gold mineralization (M. Atkins, Geologist, Freewest Resources Inc., Montreal, personal communication, 1988).

Gold mineralization is associated with fine- to medium-grained, euhedral to subhedral pyrite and minor chalcopyrite and molybdenite. The pyrite is relatively ubiquitous but more readily is associated with fragments of granodiorite on the margins of discrete veins or very silicified granodiorite itself that displays potassium alteration. Typically one to two percent pyrite was noted. Five distinct gold occurrences have been found to date on the Foisey-Houghton claims including the Foisey (Main) Occurrence. The other four occurrences are named the a) North, b) Swamp (mylonite), c) Boundary, and d) 2 North (line). All occurrences strike 130 to 135 degrees."

8) CHEMICAL ANALYSES:

A June 1933 article from the Northern Miner (Resident Geologist's Files) reported gold assays up to $13 per ton, which converts to 0.45 oz/ton at $28.94/oz (1933 price of gold).

Samples taken from the sugary quartz assayed up to $6.75 per ton (0.20 ounce Au per ton) across 5 foot (1.5 m) widths. Selected grab samples from the point where the fracture zone traverses a lamprophyre dike, returned $12 to $18 per ton (0.41 to 0.62 ounce Au per ton), while channel samples carried from $4.50 to $7.50 per ton (0.16 to 0.26 ounce Au per ton) in gold (Burwash 1933). (All values are converted using 1933 gold price of $28.94 per oz).

Grab samples collected during property visits in 1988 assayed the following:

#	Au oz/ton	Au ppb	Ag oz/ton	As ppm	Mo ppm	Cu ppm	Pb ppm	Zn ppm
1	0.16		0.72					
2	<0.01		<0.10					
3	0.01		<0.10			2940		
4	<0.01		<0.10					
5	0.02		<0.10					
6	0.02		0.10					
7	0.01		<0.10					
8	0.01		<0.10					
9	0.02		<0.10					
10	<0.01		<0.10					
11	0.01		<0.10			1840		
12	0.01		<0.10			4500	22	27
13	<0.01		<0.10			2010	<10	< 5
14	0.01		<0.10					
15	<0.01		0.12			2260	<10	6
16	0.03		0.10					
17	0.62		2.91	1.0	64			
18	0.02	570	<0.10	2.0	22			
19	0.01		<0.10		86			
20	0.01		<0.10		24			
21	0.01		<0.10		<10			
22	0.27		0.71		<10			
23	0.01		<0.10		<10			
24	0.01		<0.10		<10			
25	0.35		1.89		430			
26	0.01		<0.10		<10			

Channel sampling by Freewest Resources Inc. assayed up to 5.4 m (18 feet) of 0.0593 ounce gold per ton (M. Atkins, Geologist, Freewest Resources Inc., Montreal, personal communication, 1988).

1) PROPERTY NAME: Hol-Lac Gold Mines Occurrence (63) DATE(S) VISITED: July 1989

2) ALTERNATE NAME(S): Captain Albert Johnson Claims (subsidiary of) Hollinger Gold Mines Ltd.

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1931-1932 Captain Albert Johnson staked claims TB 10279-10286, 10289-10291, 10293 and 10513-518. The claims were registered under the following names: Mrs. Matilda Johnson, Louis Johnson, Bona Johnson and Captain Albert Johnson. From June to August of 1932, 40 to 45 days work was recorded on each claim. In December, an option agreement was undertaken with Sudbury Diamond Drill Company.

1933 Forty to fifty-one days work of drilling were recorded on the claims. Eighteen days manual work was recorded on TB 10279-10286 in November.

1934 In June, Sudbury Diamond Drill Co. was released from the option agreement. The claims were transferred to Stanley Fitzgerald who optioned the claims to Hollinger Exploration Co. Ltd. In August, J.C. Brodeur staked TB 14129. In October, all interest was transferred to Hollinger Exploration Co. Ltd.

1935 Up to 400 days work was recorded on the individual claims. According to a Hollinger Expl. Co. report (Hol-Lac Gold Mines Limited 1951), drilling and surveying of the claims for patent was completed in 1935.

1937 In March, Hollinger Exploration Co. Ltd. formed Hol-Lac Gold Mines Limited to take over the claim block. The directors of Hol-Lac Gold Mines were D. Finlay, S. Robinson, R. Pepall, S. Hutchison and O. Partridge. The property was patented in May. A Hollinger Expl. Co. report (Hol-Lac Gold Mines Limited, 1951) states trenching was completed on TB 10291 in the summer of 1937.

1950 A ground magnetometer survey was completed on claims TB 10290, 10291 and 10513 to 10518.

1990 Homestake Canada Ltd. held the property.

5) LOCATION AND ACCESS: NTS 42E10/NW

General Location: The property is located in Ashmore Township between the north shore of Barton Bay and west shore of Hardrock Bay of Kenogamisis Lake.

Access: Access is by boat. Boat can be launched at the West Narrows on Kenogamisis Lake, situated on Trans-Canada Highway #11, 2.1 km (1.3 miles) east of Highway #584 (the turnoff to Geraldton). Proceed from the narrows along the north shore of Barton Bay. The main workings are on claims TB 10515 and 10291.

References: Bruce (1936b)
Horwood and Pye (1955)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 44d Little Long Lac Gold Area (Bruce 1936b)
1951-2 Township of Ashmore (Horwood and Pye 1955)
2102 Tashota-Geraldton Sheet (Pye et al. 1966)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Beardmore-Geraldton Belt of the Wabigoon Subprovince. Three main rock types trend NW-SE beneath the property. A metavolcanic belt is in contact on its south side with a metasedimentary belt of greywacke and slates interbedded with iron formation. The metavolcanic belt is intruded by a band of hornblende diorite. The Little Long Lac Fault cuts east-west across the property (Horwood and Pye 1955).

7) DETAILED GEOLOGY AND MINERALOGY:

According to Horwood and Pye (1955):

"The rock formations on the Hol-Lac property are principally Keewatin volcanics--massive, spherulitic, and pillowed lavas of intermediate or basic composition with occasional inter-flow bands of tuff and volcanic breccia--and dikes and sill-like masses of fine- to medium-grained hornblende diorite or gabbro. The volcanic rocks form a regional anticlinal structure of west-northwest trend, so that in the extreme northeastern and southwestern sections of the property they are overlain disconformably by clastic sediments of the Timiskaming series. The sedimentary rocks are chiefly fine- to medium-grained, coarsely bedded greywackes and slates. A few narrow bands of iron formation have been observed in outcrops and diamond-drill cores, however, and afford useful horizon markers. Conglomerate is not exposed at the surface. The youngest rock is Keweenawan diabase, which occurs in two prominent north-south dikes cutting transversely across the volcanic and sedimentary formations and the hornblende diorites, one in the western part of the property, the other in the eastern part. The eastern dike, which consists of massive quartz diabase, is the more persistent of the two and extends across the claim group from the north shore of Hardrock Bay to the large peninsula separating the main part of Kenogamisis Lake from its Southwest Arm; the western dike, on the contrary, consists of olivine diabase, and appears to pinch out in the greenstones north of the large diorite outcrops on claim T.B. 10291.

In the extreme southwest, the volcanic and sedimentary formations appear to have been intensely folded, for diamond-drilling here and on the Oklend claims suggests that the greenstones and iron formation bands delimit drag folds compatible with that formed by the arkose horizon on the Little Long Lac property. These drag folds plunge at an angle of about 50 degrees in a direction of S. 70°-75° W., along the north flank of the Barton syncline. They were apparently formed prior to the emplacement of the hornblende diorites, which in a few localities appear to cut across the folded structures, and also prior to the initial rupture along the Little Long Lac fault zone, which strikes east-west across the southern claims. This fault zone is believed to be a pre-ore structure. It also served as a locus for post-ore adjustments, because west of the Little Long Lac mine in Errington township it offsets a north-south dike of Keweenawan quartz diabase a distance of about 700 feet. On the Hol-Lac property the apparent horizontal separation along the strike of the fault, as suggested by

the interpretation of the disposition of the iron formation bands, is about 800 feet.

The most important mineralization reported is in the southwest corner of claim T. B. 10291, where three parallel shear zones with quartz-carbonate stringers have been exposed by trenching and stripping. The southernmost of the three zones has been traced on the surface for a distance of 230 feet in an east-west direction. According to the management, sampling indicated a grade of 0. 13 ounces of gold per ton across an average width of 9 inches for a length of 170 feet. The second zone is located 50 feet north and 200-250 feet east of the south zone. Over a length of 50 feet, its grade was estimated by the management to be 0. 09 ounces per ton across an average width of 27 inches. The third zone parallels the south zone, 160 feet to the north, and has been traced by trenching for 90 feet. As in the case of the other zones, however, the values proved to be low across narrow widths.

Several zones of quartz stringers were intersected in the drill holes bored in 1935. The most notable of these is localized within and along the north contact of the middle iron formation band on claim T. B. 10515. This zone, from two intersections, appears to strike about N. 70° W. Samples from one hole indicated a grade of 0. 06 ounces of gold per ton over a core length of 4. 0 feet; those from the other hole, which was collared 200 feet to the west, indicated a grade of 0. 18 ounces over a core length of 4. 0 feet."

8) CHEMICAL ANALYSES:

Grab samples taken from the occurrence trenches during a July 1989 property visit assayed the following:

Sample No.	Au (oz/ton)	Ag (oz/ton)
89SHL-01	0. 008	nil
-02	nil	nil
-03	nil	nil

1) PROPERTY NAME: Irwin Occurrence (65) DATE(S) VISITED: August 1989

2) ALTERNATE NAME(S): Irwin Showing (Lassila 1983)
East Knox
K. L. Exploration Co. (McVitte Graham Option)

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1934 J. Murchison staked TB 13752, 13753, 13755 and 13756 for himself and M. Leach in July. In October, 30 days work was filed on each claim.

1935 In April, all interest was transferred to J. Merrick who was the secretary/treasurer of K. L. Exploration Co. Ltd.

1936 The claims were cancelled and restaked as TB 22524, 22525, 22527 and 22529 by G. Karri for A. Cousineau, G. Karri and B. Marshall. In December, all interest was transferred to G. Leach.

1937 In March, 30 days work was filed.

1939 The claims came open and were restaked in July as TB 27555, 27556, 27565 and 27566 by E. Dwyer. In November, 30 days work was recorded on each claim.

1941 The claims were cancelled in September.

1944 In March, L. Kenty staked TB 30617 and 30620 which covered the original four claims. In August, 40 days work was recorded on each claim.

1946 In March, 40 days work was recorded on each claim.

1947 In March, 40 days work was recorded on each claim.

1948 In February, L. Kenty passed away. In April, all interest in the claims was vested to M. Kenty.

1950 After two extensions, all interest was transferred to F. Coleman.

1954 After numerous extensions, the claims came open. In December, W. Coleman staked TB 64601 and 64602.

1955 In June, all interest was transferred to J. J. Gray.

1957 After one extension, the claims were cancelled with no work recorded on them.

1959 J. Oster staked TB 95287 and 95288 in August.

1960 The claims were cancelled with no work recorded and restaked as TB 99847 and 99848 in October.

1961 The claims were cancelled with no work recorded.

1972 A Ressanen staked TB 337579 - 337580 in August.

1973 The claims came open in October with no work recorded.

1974 R. Halverson staked TB 385497 and 385498 in June. In July, all interest was transferred to D. Clark.

1976 Twenty days work was applied to each claim for drilling on a contiguous claim to the east. In August, the claims were cancelled.

1981 In April, R. Koivisto staked TB 602190. In September, all interest was transferred to Metalore Resources Ltd.

1982 In December, 60 days work for diamond drilling was applied to the claim. A drill hole (82-3) was sunk 92 m (307 feet).

1983 In August, a total of 58 days work was applied to the claim. Ground magnetometer and VLF-EM surveys as well as detailed mapping were completed over the claim.

1984 In April, a memorandum to agreement between Brookbank-Sturgeon Mines Ltd. (now Ontex Resources Ltd.) and Metalore Resources Ltd. was filed. In November, an airborne EM survey was counted as 40 days work on the claim. In October and November, 10 diamond drill holes were drilled on the claim. From available drill logs (only 8 of the 10), a total of 438 m (1436 feet) was drilled.

1985 In January, a diamond drill hole was sunk to 151 m (494 feet). Permission to survey was issued to B. Maskell Ltd. in January. In August, two days work for an airborne radiometric survey was applied to the claim.

1986 In January, 40 days work was applied to the claim when the survey plan was filed. The survey plan was approved in October. In July, a certificate of interest proceeding was commenced by Ontex Resources Ltd.

1989 Three extensions have been granted for time to apply and pay for lease until April 12, 1990.

1990 Ontex Resources Ltd. was awarded by the Supreme Court of Ontario most of Metalore Resources Ltd.'s claims excluding the Irwin Occurrence.

1991 Status of the property awaits an appeal decision (Ontex Resources Ltd. vs. Metalore Resources Ltd.).

5) LOCATION AND ACCESS: N.T.S. 42E12/NW

General Location: The property is located in NE Irwin Township, east of Windigokan Lake.

Access: Proceed east through Beardmore on Trans-Canada Highway #11 to Windigokan Lake Road. Turn left (north) and follow for 8.6 km (5.3 miles). Turn right (east) onto bush road and follow for 366 m (1200 feet). Follow grid line 22+00 south from the road for approximately 53-61 m (175-200 feet). The trenches are on both sides of the grid line.

References: Laird (1937)
Lassila (1983)
Mackasey (1975)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 45a	Sturgeon River Gold Area (Bruce & Laird 1936)
Map 1934c	Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)
Map 2294	Dorothea, Sandra & Irwin Townships (Mackasey 1975)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Beardmore-Geraldton Belt of the Wabigoon Subprovince. The property is underlain by an easterly striking unit of mafic volcanics. The contact between this unit is directly north of the showing. Two sets of faults are evident in the area. A primary east-west striking system has formed faults along the contacts between the mafic volcanic, polymictic metaconglomerate unit and another east-trending metasediment unit further north. A secondary (younger) southerly striking fault system produces right lateral (southerly) cross fault offsets. This secondary faulting has caused approximately 2,000 feet of southerly displacement of the metaconglomerate-volcanic contact from the Brookbank Zone east to the Irwin Showing (Lassila 1983).

7) DETAILED GEOLOGY AND MINERALOGY:

Lassila (1983) describes the Irwin Showing as a:

> "30 foot thick section of white and pinkish-red quartz breccia, in part moderately well pyritized and locally fracture filled with specular hematite. This "silicified" zone lies within the andesite close to the metasediment contact and is very similar to the gold-bearing "silicified alteration zone" along the Brookbank Zone. Four 35 to 40 year old trenches were located in this area (recently designated as the "Irwin Showing")..."
>
> "The full lateral extent of this breccia zone has not been determined, but is known to exist at least between lines 18E and 23E. A description of the drill core across the breccia zone of the "Irwin Showing" follows:
>
> The quartz breccia zone which was intersected between 70 feet and 114 feet in DDH82-3, is approximately 30 feet in true width. It is extremely fractured and at its north edge includes a four foot section where the breccia has been intensely flow foliated and crenulated along the main zone of fault slippage. Immediately south of the fault a narrow three foot "sliver" of silicified mafic volcanics, "mixed" with quartz breccia, has been incorporated into the main breccia zone. Main components of the breccia include white quartz injection, pinkish-orangy-red silification, disseminated pyrite (3% to 8%), and locally, specular hematite as "crosscutting" fracture filling within the reddish silicified breccia.

The origin of the quartz breccia remains unclear. No other nearby similar zones are evident. It exists fault wedged between andesite, but close to the volcanic-sediment contact which lies to the north. That the breccia zone is fault related is self evident, but comments on the cause and source would be purely speculative. It does bear many similarities to the "altered silification zone" intersected by the drill holes across the Brookbank Zone. The lithological and structural settings are also very alike."

8) CHEMICAL ANALYSES:

Grab samples taken by Lassila in 1983 assayed:

Number	Au (oz/ton)	Ag (oz/ton)
1	0.089	--
2	0.172	0.091

Grab samples taken by authors during property visit assayed:

Number	Location	Au (oz/ton)	Ag (oz/ton)
1	Main Trench	0.054	0.05
2	Main Trench	0.068	0.04
3	West Trench	nil	trace
4	West Trench	0.003	nil
5	East Trench	0.002	nil
6	East Trench	0.002	nil
7	East Trench	0.0181	0.12

Samples taken on Metalore drill holes on claim 602190 assayed the following:

Drill Hole No.	Date	Length of Sample (feet)	Au (oz/ton)
82-3	Dec. 82	1	0.012
		4	0.005
		4	0.006
		5	0.008
		3	0.013
		5	0.011
		3	0.012
		5	0.013
		3	0.010
		2' 5"	0.011
		3' 5"	0.018
		5	0.016
		4' 5"	0.014
		5' 5"	0.029
		7	0.026
		7	0.024
		1' 5"	0.018
		5	0.023

Drill Hole No.	Date	Length of Sample (feet)	Au (oz/ton)
84SE-2	Nov. 84	3	0.106
		2' 5"	0.082
		3	0.046
		3' 1"	0.008
		3	0.157
		3	0.297
		3	0.094
		2	0.046
		2' 6"	0.046
		2' 8"	0.038
		2' 3"	tr
84-28SE1	Nov. 84	3' 4"	0.078
		3' 1"	0.127
84-26SE4	Nov. 84	3	tr
		3	0.002
		3	0.006
		3	0.002
		3	?
		3	0.008
		3	0.012
		3	0.002
		3	0.024
		3	0.026
		3	0.012
		3	?
		3	tr
		3	0.042
		2' 9"	0.042
		2' 9"	0.006
		2' 8"	0.050
84-26SE3	Nov. 84	2' 6"	0.02
		2' 1"	0.03
		2	?
		2' 3"	0.044
84-26SE2	Nov. 84	3' 6"	0.05
		2	0.03
		3	0.22
		2' 5"	0.02
		4	0.03
		2	0.08
		3	0.05

1) PROPERTY NAME: Johnson Occurrence (68) DATE(S) VISITED:

2) ALTERNATE NAME(S): K. K. 442
Johnson Find
Johnson-Nipigon Mine
Hopkins Option

3) COMMODITY: MAIN: Au SECONDARY: Ag, Cu, Pb, Zn

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1923 Claim K. K. 442 was staked by Thomas A. Johnson.

1924-1929 T. A. Johnson conducted a large amount of stripping over the claim area (Gledhill 1925 and Kindle 1932).

1932-1933 Johnson Nipigon Mines Ltd. carried out extensive surface prospecting and completed 9 diamond drill holes on the Johnson Occurrence (claim K. K. 442). No logs are available (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

1935 A patent was granted to T. A. Johnson for claim K. K. 442.

1949 Claim K. K. 442 was transferred to Percy H. Hopkins.

1951 Claim K. K. 442 was transferred to Albert P. Hopkins (90 percent interest, 10 percent interest retained by P. E. Hopkins).

1955-1956 Gulf Lead Mines Limited held an option on eight patent claims (Hopkins group) including K. K. 2272 to K. K. 2275, K. K. 2238, K. K. 2239, K. K. 2242 and K. K. 442 (Canadian Mines Handbook 1955, 1956). No record of work on this claim was found.

1966 The remaining 10 percent of the Johnson claim (K. K. 442) was transferred to Albert P. Hopkins from P. E. Hopkins.

1970 The surface rights only were transferred to John M. Stephens of Toronto, Ontario. Albert P. Hopkins retained the mineral rights of patent claim K. K. 442 (Land Titles Office records, Thunder Bay).

1975-1976 Duncan R. Derry Limited undertook a Mineral Exploration Programme (MEAP Contract GB-60) covering eight patent mining claims (known as the 'Hopkins Option', it includes K.K. 442, K.K. 2238, K.K. 2239, K.K. 2242 and K.K. 2272 to K.K. 2275 inclusive) optioned from Albert P. Hopkins. This project involved a joint venture agreement among Duncan R. Derry Limited, Dejour Mines Ltd., Lynx-Canada Explorations Ltd. and Canadian Reynolds Metals Co. Ltd. The exploration program covered both the Currie (K.K. 2239) and Johnson (K.K. 442) occurrences. It included linecutting, geological mapping, horizontal and vertical loop electromagnetic and magnetic surveys and surface geochemical and basal till sampling. Diamond drilling was planned but no results are available (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

1983 Claim K.K. 442 was transferred to TJN Gold Explorations Inc. There is no report of any work having been done.

1985 Claim K.K. 442 was transferred to Muscocho Explorations Limited.

Current
(1990) The Johnson claim K.K. 442 is presently owned (mining rights only) by Muscocho Explorations Limited.

5) LOCATION AND ACCESS: NTS 42L04/SE

General Location: The Johnson occurrence is located approximately 0.8 km (0.5 mile) west of the Tashota-Nipigon Mine shaft. The Tashota-Nipigon Mine is located approximately 4.6 km (3 miles) northwest of Onaman Lake. The Johnson claim (K.K. 442) lies immediately south of the Currie claim (K.K. 2239).

Access: Access is via the Camp 40 (Kinghorn Road) off Highway 11 and north to the Con Lake Road. Continue northeast from the Con Lake Road for about 12 km (8 miles). The Johnson claim is about 0.8 km (0.5 mile) west of the Tashota-Nipigon Mine shaft.

References: Gledhill (1925)
Kindle (1932)
Thurston (1980)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 34g Tashota-Onaman Gold Area (Gledhill 1925)
Map 2411 Northern Onaman Lake (Thurston 1980)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Onaman-Tashota Belt of the Wabigoon Subprovince. Early Precambrian mafic and felsic metavolcanic rocks underlie the area of the Johnson Occurrence. Basaltic metavolcanic rocks underlie most of the region in the immediate area of the showing and form a belt 5.6 km (3.5 miles) wide at its maximum width.

Intercalated within the mafic metavolcanic sequence is a sequence of predominantly felsic pyroclastic rocks extending over a strike length of 7.5 km (4.75 miles) and having an exposed width of 440 m (1400 feet). Minor intercalations of quartz-feldspar porphyry and rhyolitic flows are found at scattered localities in the mafic metavolcanics (Thurston 1980, p. 3).

The metavolcanic belt is bordered to the northwest and southeast by composite batholiths of quartz monzonite to trondhjemite composition with biotite as the principal mafic mineral (Thurston 1980, p. 4).

The granitic rocks are cut by northwest and north-northwest trending diabase dikes about 15 to 30 m (48 to 96 feet) thick (Thurston 1980, p. 4).

7) DETAILED GEOLOGY AND MINERALOGY:

Gledhill (1925, p. 83) describes the Johnson Occurrence as follows:

"Johnson Claim, K.K. 442--A great deal of stripping has been done on this claim, especially on a large band of pyrite and quartz. The structural break is occupied by quartz veins and a feldspar-porphyry dike. The general schistosity strike is N. 66° E., and the dip is 80° towards the north.

One mineralized vein system 50 feet wide is made up of brecciated vein quartz and greenstone. The ore minerals are pyrite, chalcopyrite, and pyrrhotite. Some of the chalcopyrite bands are half an inch wide. The large quartz pyrite lens carries traces of gold. The chalcopyrite-quartz mineralization carries much higher values in gold than the pyrrhotite-quartz mineralization."

Thurston (1980, p. 34) indicates that "Occurrences such as the Johnson... all consist of galena and sphalerite associated with pyrite in pyritic quartz veins filling shear zones, almost always in spacial association with feldspar porphyry dikes."

8) ECONOMIC FEATURES:

The Johnson Occurrence is petrologically and mineralogically similar to the past-producing Tashota-Nipigon Mine. The Johnson vein may represent the westward extension of this Au-Ag-Cu past producer, since it lies only 0.8 km (0.5 mile) due west of the Tashota Mine shaft (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

9) CHEMICAL ANALYSES:

Compilation work conducted by Duncan R. Derry Limited (Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay) indicated results from extensive trenching and drilling (a total of 9 holes) conducted by Johnson Nipigon Mines Ltd. from 1932 to 1933. These are as follows:

"The best drill intersections were recorded in d.d.h. #7, assaying 0.19 oz. Ag/ton, tr. Au over 1.7 ft. and 9.68 oz. Ag/ton, 0.06 oz. Au/ton over 1.8 ft. Collar locations for Holes 7 and 6 are unknown. Mineralized intersections in Holes 1-3, 6, 8 and 9 were assayed for gold only and returned nil to 0.005 oz. Au/ton.

Results from these holes were taken from abbreviated logs. Logs and and assay results for Holes 4 and 5, as well as original logs for all of the 9 holes put down, are unavailable. The best of available assays from surface grab samples from a 12 ft. by 15 ft. trench over the showing is 2.54 oz. Ag/ton, tr. Au."

1) PROPERTY NAME: Lac-Teck Gold Mines Occurrence (82) DATE(S) VISITED: August 1988

2) ALTERNATE NAME(S): Canadian Nickel Co. Ltd.

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1934 In October, A. Rabidoux staked TB 17758-17765 for the following people: Mary Papineau, Leo Harri, Blanche Papineau and himself.

1935 In June, A. Rabidoux staked TB 19555-19556. Thirty days work was recorded on TB 17758-17765 in July and on TB 19555-19556 in August.

1936 In March, all interest was transferred to R. Hardy (president Lac-Teck Gold Mines Limited). In September, between 40 and 80 days work was recorded on the claims.

1938 A further 40 days work was recorded in June.

1940 The claims were cancelled in November, and some were restaked immediately. Wallace Reid staked TB 28637 (formerly 17758) and TB 28636 (formerly 19556). Arthur Brisebois staked TB 28700-28702 (formerly 17759-17761). George Papineau staked TB 28805 (formerly 19555).

1941 Claims TB 28636 and 28637 were cancelled in September. At this time, 30 days of work were recorded for TB 28700-28702. TB 28805 was cancelled in October.

1943 In June, TB 28700-28702 were cancelled.

1944 In March, W.H. Cranston staked TB 38581-38583 (formerly 22805, 28636, 28637), TB 30584-85 (formerly 28700-701) and TB 30586-30589 (formerly 17762-17765).

1945 In March, all interest in the above claims was transferred to H. Van Wert. All claims were cancelled in October. In November, R.G. McKelvey, William D. Loudon and A.E. Cranston staked TB 32636-381 (formerly 30586-88), 32639-40 (formerly 30581, 30582) and 32641-645 (formerly 30583-85, 28702 and 30589).

1946 TB 32645 which William D. Loudon staked was the only claim on which work is recorded. In November, 40 days work was recorded.

1947 In September, all claims were cancelled except TB 32645. At this time, W. D. Loudon staked TB 36827-29 (formerly 32639-41). In December, 55 days work was recorded on TB 32645.

1949 TB 36827-29 were cancelled in October.

1950 In January, TB 32645 was cancelled. W. Davidowich staked TB 39537-38 (formerly 32642-43), TB 39539 (formerly 36829), TB 39542-43 (formerly 32645, 32636) and TB 39540, 39544 (formerly TB 56827-28).

1952 All the above claims were cancelled. In February, W. Davidowich restaked TB 39542 as TB 43492. No work was recorded when the claims were cancelled in 1953.

1954 P. Dufresene staked TB 58167, 58170 (originally 19555-56) in March. The claims were cancelled in November with no work recorded.

1970 David Walsten staked TB 276562-65 (originally 17760, 61, 64, 65) in June. In August all interest was transferred to Canadian Nickel Company Limited.

1971 In May, a diamond drill hole was sunk to a depth of 185 m (606 feet) on TB 276564.

1975 The claims were cancelled.

1981 Thorwald Johansen staked TB 613563, 613525 in August. The claims were cancelled in October 1982.

1983 Thorwald Johansen staked TB 686887-88 (restaking TB 613563 & 613525) in April. The claims were cancelled in June of 1984. TB 786255 may be part of the original claim block. This claim was staked by David Thorsteinson in April. In August he transferred his interest to Camel Oil and Gas Ltd. This claim was cancelled in Jan. of 1986.

1986 Patrick McQuire, Jr. staked TB 907326-37 in April. Also in April, all interest was transferred to Noranda Exploration Co. Ltd.

1987 The property was part of a block mapped in detail (1:50 000) in May. At the same time, a detailed humus geochemical survey was undertaken, as follow up on magnetometer and VLF anomalies outlined in January of 1987. In November, two diamond drill holes totalling 219 m (719 feet) were drilled on TB 907330, and a 155 m (509 foot) diamond drill hole was sunk on TB 907333.

5) LOCATION AND ACCESS:

N. T. S. 42 E 15/SW

General Location: This property is located in Fulford Township north of the town of Geraldton approximately 10 km (6.2 miles). The claims are bordered by Dionne Lake on the west, the power line on the south, and the Highway 584 to the east.

Access: Proceed north on Highway #584 through the town of Geraldton. Once the highway crosses the Northern Ontario Natural Gas Pipeline, the property is located directly west of the highway, and extends west to Dionne Lake.

References:
Beakhouse (1989)
MacDonald (1943)
McDonough (1987)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 50f	Hutchison Lake Area (MacDonald 1943)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)
Map 2513	Grenville Lake Area (Beakhouse & Chevalier 1989)
Map P. 2593	Fulford & McQuesten Twps. (Beakhouse & Chevalier 1983)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Beardmore-Geraldton Belt of the Wabigoon Subprovince. Beakhouse (1989) described the general geology:

"Mafic metavolcanic rocks in the Dionne Lake metavolcanics include predominant massive and pillowed mafic flows with minor pillow breccia and hyaloclastite. The colour of the mafic metavolcanic rocks is highly varied and correlates in a general way with intensity of secondary alteration. The freshest rocks have a dark green color with a black weathered surface while the most altered rocks have a light, waxy-green fresh surface and weathered surface that is very light in colour and approaches white in the most severely altered rocks. Both fine and medium grained varieties are present and the medium grained rocks are thought to be thick flows rather than sills because intrusive relationships have not been identified and, rarely, medium grained rocks are observed to grade upwards into massive and pillowed mafic flows. Most rocks are equigranular and, when present, plagioclase phenocrysts are generally less than 1 millimetre in longest dimension."

"The felsic metavolcanic rocks consist principally of tuffs and subordinate lapilli tuff and tuff breccia (fragment size classification after Fisher, 1966). Flows have not been recognized and porphyry dikes are volumetrically minor. Most of the felsic metavolcanic rocks are grey to waxy, green coloured on the fresh surface and have buff coloured weathered surfaces. The exception to this occurs where carbonate alteration is extensive and imparts a rusty brown colour to the rock. Fragments tend to be more resistant that the matrix and stand out in relief on the weathered surfaces."

7) <u>DETAILED GEOLOGY AND MINERALOGY</u>:

MacDonald (1943) originally described the property as follows:

"Most of the property is drift-covered. Sheared fragmentals and tuffs are present in the southern part of claim TB 19556 and the northeastern part of 17762. A narrow quartz vein is present in the northeastern part of claim TB 17762. Andesite in the central part of claim TB 17758 contains a carbonate zone with a maximum width of 10 feet, which is in part, sheared and rusted."

According to Beakhouse (1989):

> "The property lies astride an inferred contact between fragmental felsic volcanic rocks to the south and altered, massive and pillowed mafic flows to the north. Results of diamond drilling in the western part of the property (Canadian Nickel Company Limited - Dionne Lake (8)) and the presence of a weak aeromagnetic anomaly indicates that ironstone occurs at least intermittently along the contact."

The following descriptions (McDonough 1987) are of three diamond drill holes drilled in November of 1987, and indicate the geology underlying the drift-covered portion of the property.

> "Hole NF-87-6 Line 43+00E/1+50S
>
> Again, VLF with accompanying mag and humus anomalies were the target to be tested. This hole encountered a silicified graphitic lapilli tuff unit between 60.40 and 62.55 meters. Mineralization in the unit is 2-3% sulphides disseminated and in stringers. The bulk of the mineralization is hosted in the units that lie above and below this graphitic zone. The hole is collared in a silicified lapilli tuff/breccia consisting of elongated siliceous fragments within fine grained, sheared, silicified matrix. The matrix also becomes locally graphitic. There is mineralization at the top of the hole with both pyrite and pyrrhotite in the 2-5% range. As the unit continues there are localized zones of semi-massive pyrite and pyrrhotite over a very small width. Below the graphitic zone described earlier, the silicified lapilli tuff/breccia continues as does the mineralization. Graphite is still present in the matrix. Mineralization increases locally. From 71.14 to 73.30 meters, pyrite content is 5-8%, while pyrrhotite is in the 10-15% range. A possible fault zone is intersected between 79.64 and 83.64 meters. It is characterized by chlorite and sericite alteration and minor serpentine. The hole was stopped at 107 meters.

Hole NF-87-7 Line 39+00E/1+00S

Exposure on surface of a chert-magnetite iron formation, coupled with VLF, magnetometer and humus anomalies were the target for this hole. It was collared in the chert-magnetite iron formation and encountered mineralization immediately (20-25% semi-massive pyrite). Initially there was exclusively pyrite mineralization, but around 30 meters pyrrhotite begins to appear. Hematite is also present. Alteration is chlorite and sericite with some epidote. The magnetite is very fine grained (disseminated) to coarser crystals (in contact with vein rocks). Chert is often brecciated. Graphite occasionally appears in the matrix. The rock is convoluted and folded; the core shows traces of interference folding. Along with the appearance of pyrrhotite the rock becomes more graphitic, or vice versa, indicating an association between the two. The unit is mineralized throughout.

The chert-magnetite iron formation gives way to a silicified felsic lapilli tuff/breccia with pyrite replacement of the matrix. Mineralization occurs in stringers within the matrix and at the contact between the siliceous angular to sub-rounded fragments and the matrix. Locally the pyrite content is 70-75%, but overall average is about 15-25%. The felsic lapilli tuff/breccia has frequent interbeds of a cherty intermediate tuff. These subunits are frequently brecciated with pyrite forming along fractures. Otherwise they are poorly mineralized.

Near the bottom of the hole another unit appears briefly. It is an intermediate (possibly chlorite-altered felsic) lapilli tuff. Initially well mineralized (pyrite 15% over 0.7 m), sulfide content dissipates down the unit. This gives way, again, to the intercalated felsic lapilli tuff/breccia and intermediate tuff unit. Once again it is well mineralized with pyrite making up the bulk of the sulfides. (Overall pyrite 20-25% with pyrrhotite 0.5-1.0%). The excellent pyrite and pyrrhotite mineralization explains the VLF anomaly while the presence of massive magnetite and pyrrhotite is the reason for the mag response.

Hole NF-87-8 Line 46+00/1+10S

This hole was drilled along strike of Hole NF-87-7. Although there were VLF and humus anomalies present, its value is in assisting in the interpretation of the rocks of NF-87-7. Hole 8 was collared in a sheared intermediate to chlorite-altered (polymictic) lapilli tuff. The matrix of which displays heavy chlorite alteration along with sericite and some carbonate (dolomite). Fragments are both felsic and mafic. Mineralization is poor in this unit.

This unit gives way to an altered felsic lapilli tuff/breccia. The fragments in this unit show reaction rims from the dolomite alteration. The matrix also shows carbonate, as well as, sericite alteration. Small stringers of concentrated chlorite also appear in matrix, some are associated with pyrite mineralization. This unit is cut by a small fault zone. The rock is fractured and contains sericite and possibly talc alteration. This break was the source of the VLF conductor.

The rock below the fault is highly silicified and is very similar to the host of the mineralization in Hole NF-87-7. This rock is brecciated with intense carbonate and sericite alteration of matrix. It is also silicified. Mineralization is minor (average at best, 5% over 1 meter) compared to what was seen in this unit in the previous hole. This rock indicates the replacement nature of the pyrite mineralization in Hole 7.

The next unit intersected is a felsic lapilli tuff. It is fine to medium grained and quite cherty. It is not well mineralized, but there is some disseminated pyrite near the bottom of the unit."

8) CHEMICAL ANALYSES:

MacDonald (1943) reported low gold values from a sheared carbonate zone.

During a property visit (1988) no old trenches or workings were located. Two samples (1 and 2) were collected from a shear zone within mafic metavolcanics exposed in minor surface outcrop. The samples were carbonatized and contained minor pyrite. The third sample was collected from a carbonatized vein within a rock face directly east of Highway #584.

Number	Au oz/ton	Ag oz/ton
1	<0.01	<0.10
2	<0.01	<0.10
3	<0.01	<0.10

1) PROPERTY NAME: Lake Bearskin Prospecting Syndicate Occurrence (85)

DATE(S) VISITED: Not Found

2) ALTERNATE NAME(S):

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1934 R. Cryderman staked TB 12759 for G. Scagel in May. In June, all interest was transferred to R. Wallace. In September, 30 days work was recorded on the claim.

1936 The claim was cancelled in June, and was restaked by J. Culbert for P. Cryderman (TB 21200). In September, 70 days work was recorded on the claim.

1939 In June, 40 days work was recorded on the claim. In December, all interest was transferred to F.C. Cryderman.

1940 The claims were cancelled.

1944 E. Rissanen staked TB 30658 in April. All interest was transferred to H. Oaks, president of Lake Bearskin Mining Syndicate Limited. Between August and November, 112 days work was recorded on the claim. The work involved surface development and 5 x-ray drill holes.

1950 The claims were cancelled in December.

1960 H.C. Cross staked TB 99851, the southern portion of which covers part of the ground which was part of TB 30658.

1961 The claim was cancelled in January, with no work recorded.

1972 A.E. Rissanen staked TB 336762 in July.

1974 The claim was cancelled in February. F. Swanson staked TB 384320 in March.

1975 In February, all interest was transferred to D. Clark.

1977 The claim was cancelled in April.

1982 G. Chilian staked TB 674943 in November. In December, all interest was transferred to Metalore Resources Ltd.

1984 An airborne geophysical E-M survey was flown by Terraquest for Metalore. Forty days of work was recorded on the claim in November.

1985 Permission to survey the claim was issued to B. Maskell Ltd. in January. In August, 40 days work was recorded on the claim from an airborne radiometric survey.

1986 The survey plan was filed in January and approved in October.

1988 An extension for applying and paying for a lease on the claims was granted until November 30, 1989.

5) LOCATION AND ACCESS:

N. T. S. 42 E 12/NW

General Location: The property is located in eastern Irwin Township, on the east/southeast side of a small unnamed lake, approximately 0.8 km (0.5 mile) north of the west end of Bearskin Lake.

Access: Drive north onto the Windigokan Lake Road at Highway 11 and follow for 8.6 km (5.3 miles). Turn east onto a bush road and follow for 1 km (0.6 mile). At this point, proceed south for approximately 396 m (1300 feet) to the central west shore of the small lake. Hike from this point around the north tip of the lake, and down the east side of the lake to the south end. Although the old maps show workings on the southeast side of the lake, nothing was found on our traverse.

References:

Laird (1937)
Mackasey (1975)
Oaks (1944)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 45a	Sturgeon River Gold Area (Bruce and Laird 1937)
Map 1934c	Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)
Map 2294	Dorothea, Sandra & Irwin Townships (Mackasey 1975)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Beardmore-Geraldton Belt of the Wabigoon Subprovince. The property is underlain by an easterly trending sub-belt of mafic metavolcanics, dominated in the property area by amygdaloidal volcanic rocks.

7) DETAILED GEOLOGY AND MINERALOGY:

Oaks (1944) mapped the property in the vicinity of the lake as underlain by lavas, with minor intrusions of diorites and quartz diorites. A quartz vein trending northwest, as well as a smaller one trending west are located on the east side of the lake.

According to the December 1945 Canadian Mining Journal, "spectacular amounts of visible gold" was found in "mineralized narrow quartz stringers." The shear zones these veins are in strikes northwest under the lake.

8) CHEMICAL ANALYSES:

The following assays are from the map drawn by Oaks (1944) for Lake Bearskin Mining Syndicate Limited.

DDH1 - 1.21 ounces Au/ton over 17 inches
DDH2 - 0.02 ounce Au/ton over 2 feet, 2 inches; 0.01 ounce over 2 feet 9 inches
DDH4 - 0.02 ounce Au/ton over 12 inches
DDH5 - 0.01 ounce Au/ton over 15 inches.

The following are samples adjacent or from the trench on the property.

BH1 - 0.05 ounce Au/ton over 9 inches
BH2 - visible gold
BH3 - 0.05 ounce Au/ton over 2 feet 6 inches
BH4 - 0.02 ounce Au/ton over 2 feet 6 inches
Bulk sample - 0.16 ounce Au/ton

1) PROPERTY NAME: Larson Occurrence (88)

DATE(S) VISITED: June, July, Sept. 1989

2) ALTERNATE NAME(S):

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

Note Burwash's (1933) original report discusses the Larson claims yet does not give number(s) for the claims. However, an article in the Fort William Daily Times-Journal (April 28, 1934, p. 15) (Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay) indicates the main Larson claim as being TB 11113. The following history will trace this claim.

1933 TB 11113 was staked in June by L. Almquist for J. A. Moore. In September, 30 days work was filed. Burwash's (1933) map indicates three trenches on the claim.

1934 In May, an option agreement was filed on the claim abstract. There are no names of who optioned the property. It is possible to suggest that perhaps "Larson" has something to do with the option as there is no mention of Larson in the abstracts, yet the claims are called the "Larson claims" by Burwash. In June, 50 days work was recorded on the claim.

1935 In February, 50% interest was transferred to Brennan-Kenty Bros. Prospecting Co. Ltd.

1936 The claim came open sometime in 1936.

1937 TB 24693 was staked by J. L. Kenty for H. Burch in March. In April, 30 days work was recorded on the claim. In September, all interest was transferred to C. Griffiths.

1939 Forty days work was recorded in April.

1940 Forty days work was recorded in April.

1941 Forty days work was recorded in April.

1942 A total of 50 days work was recorded in April.

1943-1950 Numerous extensions were granted on the property until it was cancelled in March 1950. C. Griffiths restaked the claim as TB 40069 in March.

1951 Forty days work was recorded on the claim in March.

1952-1953 Extensions were granted on the property.

1954 In October, 80 days work was recorded.

1956 The claim was cancelled in February.

1958 The claim was restaked as TB 91497 in July.

1959 In January, all interest was transferred to S. Taylor.

1960 In January, S. Taylor transferred all interest to G. T. Smith who transferred all interest to W. Huston and Sturgeon Basin Mines Ltd. The property was mapped in detail and eight trenches were excavated during July. This was recorded as 70 days on the claim abstract. In October, three drill holes totalling 103 m (337 feet) were sunk on the claim. In December, this was recorded as 10 days work.

1962 The claim was cancelled in May after one extension.

1971 TB 304058 was staked in October by M. Nelson.

1972 The claim was cancelled in November with no work recorded.

Note The exact position of the claim cannot be determined between the 1972 and 1980 claim map. However, it can be narrowed down to four claims: TB 637125 - 637126 and TB 535174 - 535175.

1980 C. Mortimer staked TB 535174 - 535175. In May, all interest was transferred to H. Craibbe.

1981 H. Craibbe transferred all interest to Canadian Gold & Metals Inc. who transferred interest to 466735 Ont. Ltd. In October, power stripping was completed on adjacent claims which resulted in 20 days work being recorded on the claims. In December, J. P. Dupas staked TB 637125 - 637126.

1982 In May, TB 637125 - 637126 were transferred to Farakel Co. In October, TB 535174 - 535175 were cancelled and restaked as TB 674464 - 674469 by H. Craibbe.

1983 In January, a total of 40 days work for geophysical EM, VLF and Mag was recorded on TB 637125 - 637126. In June, TB 674464 - 674469 were transferred to 466735 Ont. Ltd. In August, TB 637125 - 637126 recorded 20 days work acquired by drilling on contiguous claims to the south. In November, TB 674464 - 674469 were cancelled and restaked as TB 780665 by H. Craibbe.

1984 TB 780665 - 780670 were cancelled in December and restaked as 813340 - 813341 by J. Koski.

1985 TB 637125 - 637126 were cancelled in April. In June, TB 813340 - 813341 were transferred to Kidd Resources Ltd.

1986 In March, a total of 30 days work for geophysics (Mag) was recorded on TB 813340 - 813341. In April, E. Sicard staked TB 916263 - 916264 (formerly 637125 - 637126). In August, all interest was transferred to Daimler Resources Inc. In December, 80 days work was recorded on TB 916263 - 916264 and 50 days work on TB 813340 - 813341 for airborne geophysics (Mag and EM).

1987 Forty-six days work was recorded on TB 916263 - 916264 and 140 days work on 913340 - 913341 for diamond drilling in October. The drilling was not done on these actual claims.

1988 In September, a memo of agreement between Monte Carlo Gold Mines Ltd. and Daimler Resources Inc. is recorded on the abstract for TB 916263 - 916264.

5) LOCATION AND ACCESS: N. T. S. 42E13/SE

General Location: The property is located in Rickaby Township, northwest of Atigogama Lake and southwest of Dilla Lake.

Access: Travel 8 km (5 miles) east of Jellicoe on Trans-Canada Highway #11. Turn north onto Camp 40 Road. Proceed north-northwest along the road for 20 km (12. 5 miles). The claims are located approximately 0. 8 km (0. 5 mile) north of the road.

References: Bruce (1937a)
Burwash (1933)
Mackasey and Wallace (1978)
Quon (1960)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 45a	Sturgeon River Gold Area (Bruce and Laird 1936)
Map P. 802	Rickaby Township (Mackasey and Wallace 1973b)
Map 1934c	Namewaminikan-Sturgeon River Area (Jameson 1934)
Map 2373	Elmhirst & Rickaby Township (Mackasey & Wallace 1978)

6) GENERAL GEOLOGY AND STRUCTURE:

The Larson claims are located in the Onaman-Tashota Belt and are underlain by the Kaby Lake Stock. The Kaby Lake Stock consists of "massive pink to light grey granodiorite to trondhjemite with local occurrences of granite and quartz monzonite" (Mackasey and Wallace 1978). Intruding intermediate metavolcanic rocks (tuff breccia and breccia) occur to the south of the claims. Three lineament sets within the Kaby Lake Stock trend northeasterly, easterly and northwesterly respectively.

7) DETAILED GEOLOGY AND MINERALOGY:

Burwash (1933) describes the property as follows:

> "These claims staked by Larson to the west of Atigogama Lake have a well sheared and superficially weathered zone in the granite which carries finely divided molybdenite and molybdenum ochre. The molybdenite is in cracks in the quartz which fills the interstices between granite fragments in a crushed zone."

Quon (1960) describes the claims covering the property as follows:

"The detailed geological mapping carried out by the present investigator shows that the area is composed mainly of granite; however, in addition to the granitic rock which is predominant in the area there are also numerous small andesitic dikes, chlorite schists and minor quartz diorite, small sericite-chlorite dikes and one small outcrop of pyroxenite. Bruce, in the table of formations in his report, states that the granite belongs to the post-Timiskaming series. Most of the rocks observed in the property cut the granite and therefore appeared to be younger than the granite. A table of formations of the rock in the property is given as follows:

Chlorite schist, andesitic dike, sericitic-chlorite dike and pyroxenite.-------
Intrusive contact------- Quartz-diorite and Granite."

The following is his description of the structure:

"The andesitic dike, chlorite schist, and sericitic-chlorite dike indicates the possibility of the existence of two sets of fractures in the property. These fractures are striking north to northwest or north to northeast. The dikes may infer as injected into tensional fractures in the granite."

Quon (1960) describes the trenches bordering on claims TB 91497 and 91328 as follows:

"All trenches, particularly trench No. 1 and No. 2, need further excavation of the loose rocks before any satisfactory results in sampling and mapping can be obtained.

Trench No. 3 consists mainly of grey granite. Some of the feldspar in the granite appears to be altered to sericite. Recognizable chlorite is also observed in few granite samples. A quartz vein about 2 feet wide is located at the northeast end of the trench in the sheared chlorite schist and is striking at an angle of N 67 degrees W and dipping 89 degrees SW. Approximately 1% of pyrite was observed in the quartz. Two additional sheared chlorite schists are striking N 15 degrees W and dipping steeply to the SW. The chlorite schists are less than three inches in width. Most of the samples obtained from this trench have less than 0.1% pyrite.

Trench No. 4 shows an andesitic dike of 1/2 foot in width which occurs at the eastern end of the trench in contact with the altered chloritic and sericitic granite. The dike is striking N 18 degrees W. The granite in this trench is of a pinkish colour, some of which shows a rusty iron stain. The iron stain surface is apparently from the weathering of the pyrite. The pyrite which occurs in the granite in this trench is generally less than 1%.

Trench No. 5 is still in the process of excavation for observation.

Trench No. 6 consists of pink granite. The quartz in the granite is not as abundant as in the other trenches. Small lenses of quartz are seen in this trench with two narrow zones of highly altered granite. Most of the granitic rock in this trench show rusty iron stained surfaces. Disseminated cubic crystals of pyrite occur in the rock from 1% - 1.5%.

Trench No. 7 shows that most of the granite is sericitized or slightly chloritized. Some of the granitic rocks show a weathered surface with iron stain. Cubic crystals of pyrite occur from 1% - 1.5% in the granite. A quartz vein is located at the northeast section of the trench and it is about 1/2 foot in width and contains a small amount of pyrite."

During property visits, it was noted by the authors that the property is underlain by predominantly pink granites and minor diorites. Andesitic dykes crosscut the granite and in many places xenoliths of metasediments were found contained within the granites. Quartz veins were minor and when found were thin stringers with sparse mineralization.

Two sets of trenches were found on the property. One trench on claim TB 813340 trends 100 degrees and is approximately 30 feet long. The second set is a series of trenches ranging from 20 to 50 feet in length and trend 60 to 70 degrees. These trenches were found on TB 813339. All trenches are infilled with vegetation. The southernmost trench was the only one which had significant mineralization associated with the granite and ran surprisingly high values (see next section).

8) CHEMICAL ANALYSES:

Burwash (1933) reported the most mineralized portion of the vein assayed at $4.60 gold per ton over a width of 15 inches. (In 1933, gold was valued at $28.94 per ounce; $4.60 converts to 0.16 ounce Au/ton).

The following sample results are from the geological map (Quon 1960) of the trenches excavated by Sturgeon Basin Mines Ltd.

Trench Number	Au (oz/ton)	Width of Sample (feet)
1	0.05	6
	nil	7
2	0.02	4
	nil	4
	0.02	7
3	0.02	5
	0.01	5
	nil	5
	nil	5
	nil	5
	0.02	5
	0.01	3
	0.02	5
	0.06	2
	0.03	5
4	nil	5
	0.02	5
	0.01	5
5	nil	5
	nil	5
	nil	5
	nil	5
	0.02	5
6	0.01	5
	nil	6
	0.03	5
	0.02	4
	0.04	5
	nil	7
	nil	5
	0.05	5
	0.01	6
	0.03	6
	0.07	6
7	0.04	5
	0.04	6
	0.01	5
	nil	5

Most of these samples were taken within the granite

During the 1989 property visits, two different sets of trenches were found. On the first visit, two grab samples, collected from a trench located just east of the claim line between TB 916263/813340 and just north of the #2 post of 916263 and #3 post 913340, assayed the following:

Number	Au (oz/ton)	Ag (oz/ton)
1	0.035	nil
2	0.022	trace

During the second visit, a series of trenches were located on claim TB 813339. Two grab samples from rusty float, adjacent to the most southerly trench, assayed the following:

Number	Au (oz/ton)	Ag (oz/ton)
1	0.086	0.16
2	0.123	0.29

1) PROPERTY NAME: Long Lac Superior Occurrence (western property) (93) DATE(S) VISITED: August 1988

2) ALTERNATE NAME(S):

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1935 Long Lac Superior Syndicate was formed in May. It was headed by J. Adair. J. Adair staked TB 19912 - 19915 in September. TB 19912 was staked for himself while the other three claims he staked for Dr. W.J. Henry Right. Dr. Henry Right transferred all his interest to J. Adair shortly after they were staked. A dispute was filed against the claims, yet the claims were awarded to Long Lac Superior Syndicate. Due to the dispute, 31.5 days work had to be completed in December. The company report (Adair 1936) for 1935 states a comfortable cabin large enough for six men was built on the property.

1936 Newspaper reports (Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay) note that J. Adair was opening his camp on the property next to the Wilport in the spring. Equipment was going into the property, as well as a crew of eight to ten people. Surface work was carried out. In August, a company report (Adair 1936) states that work on the claims was difficult due to heavy over-burden. Deep trenching failed to show any results where extensions of the Wilport veins were expected. The late frost and early season caused too much water for deep trenching. Forty-five days work was recorded for the claim in July.

1937 Forty-one days work was recorded.

1939 In March, 40 days work was recorded. The property was then transferred to A.W. Burt in trust for Long Lac Superior Syndicate. In June, a survey plan was filed. Forty-two days work was recorded.

1941 An extension was granted until August 1942.

1942 In August, application for lease was applied for and the papers were forwarded to the Department of Mines.

1942-1975 Claim maps for these years show the property as being leased. According to an assessment report filed by Golden Crown Resources, Long Lac Superior held a ten-year lease on the property until 1952 when Leitch Gold Mines Limited acquired the lease and renewed it through to 1972. In 1972, Teck Corporation Ltd. leased the claims.

1980 Joseph McDermott staked TB 582578 - 582580 in October. Two extensions were granted for the property, yet no work was recorded when it was cancelled in January 1983.

1983 David Thorsteinson staked TB 685283 - 685285 in February. In December, all interest was transferred to Bernard Boos.

1984 Work was filed for geophysical and geochemical surveys and linecutting in November. In the assessment files, Golden Crown Resources Ltd. held the above claims. There is no mention of any kind of agreement between Boos and Golden Crown Resources Ltd. on the claim sheet. According to the assessment files, from October to November 1984, soil sampling and an EM-16 geophysical survey were carried out. The claims were cancelled in March 1986.

1986 Melvin Rentz staked TB 940364 - 940366 in November.

1987 In June, there was a mention of a memorandum of an agreement between W. Cox, M. Rentz and J. McMahon. In November, power stripping was done on the property.

1988 M. Rentz transferred all interest to Nipigon Gold Resources. In July, airborne EM and Mag was completed over the property.

5) LOCATION AND ACCESS: N.T.S. 42E12/NW and 52H9/NE

General Location: The property is located 3 km (1.9 miles) north of Beardmore in Summers Township.

Access: Proceed east through Beardmore on Trans-Canada Highway #11. Turn north onto Highway #580. Proceed west along #580. The eastern boundary of the property is at approximately 4.3 km (2.7 miles). Approximately another kilometre (0.6 mile) down the highway, there is a road to the south which permits access to the westernmost part of the property.

References: Adair (1936)
Hainsworth (1985)
Laird (1937)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 37k	Beardmore-Nezah Gold Area (Langford 1929)
Map P602	Summers Township (Mackasey 1970b)
Map 1934c	Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is situated within the Beardmore-Geraldton Belt of the Wabigoon Subprovince. The property is underlain by an east-northeast trending belt of metasediments composed predominantly of greywackes, siltstones and argillites. This belt is intruded to the east by a westward-dipping diabase sheet.

7) DETAILED GEOLOGY AND MINERALOGY:

The property contains minor outcrop of metasediments; greywacke, siltstone and argillite. These metasediments exhibit a schistosity trending southwest-northeast and dipping 80 degrees to the south. Where bedding is found, it also trends approximately southwest-northeast and dips 80 degrees to the south. A small band of iron formation (trending northeast) cuts the southern portion of the property (Mackasey 1970b).

The company report by Adair (1936) of Long Lac Superior Syndicate reports a vein was uncovered for some distance, yet no gold was found. Laird (1937) states a few quartz veins were uncovered near the eastern boundary of claim TB 19913. Mackasey's 1970 map of Summers Township shows no quartz veins on the property. During the property visit in 1988, two quartz veins were found near the western edge of the property. The veins were up to 0.3 m (1 foot) wide and approximately 1.8 to 2.4 m (6 to 8 feet) along strike. There were minor sulphides present in the quartz veins and in the metasediments.

8) CHEMICAL ANALYSES:

The 1935 Long Lac Superior Syndicate Annual Report records "one assay of $3.50*, as an average sample across 1.2 m (4 ft.)".

*(0.10 ounce Au per ton at 1935 price of $35.15 per ounce Au)

Assay on a sample taken during 1988 property visit is as follows:

Sample No.	Au (oz/ton)	Ag (oz/ton)
1	<0.01	<0.01

1) PROPERTY NAME: Macjoe Sturgeon Occurrence (98)

DATE(S) VISITED: August 1989

2) ALTERNATE NAME(S): Jomac Gold Syndicate Ltd.
Quebec Sturgeon River Mines
Sturgeon River Gold Mines

3) COMMODITY: MAIN: Au SECONDARY: Ag

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1934 In July, E. Rigotte staked TB 13931 to 13933. In October, A. Cunningham, F. Marshall and C. Moorehead staked TB 16726-16734 for Jomac Gold Syndicate Limited. In November, all interest was transferred to Macjoe Sturgeon Gold Mines Ltd. According to the Northern Miner (Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay), a few veins had been found on the property. Twelve men were on the property stripping, blasting and trenching veins. Winter quarters were erected on the property.

1935 In the summer season, 300 days work was recorded on each claim. According to Laird (1937), "5,000 feet of diamond-drilling in 30 short holes and 20,000 feet of stripping and trenching was completed". A total of 38 quartz veins were found on the property.

1936 In April, all interest was transferred to F. R. Marshall.

1940 All interest was transferred back to Macjoe Sturgeon Gold Mines in June. No work is recorded on the claims between 1936 and 1940.

1942 In May, all interest was transferred to A. L. Bishop and was taken over by Sturgeon River Gold Mines Limited. The claims went to lease in this year. The mine operating on the main Sturgeon River Gold Mines block was shut down in October due to labour shortages as a result of the war. All operations, including the mill clean-up, ceased by October 31. Buildings and equipment were kept in good repair with the intention of re-opening the mine when conditions improved.

1944-1945 A group of 58 claims was staked in Irwin Township, west of the main property, of which one-third interest belonged to Sturgeon River Gold Mines Limited and two-thirds interest to Coniagas Mines Limited. A magnetometer survey was conducted over the new property and diamond drilling was done in 1945.

1947 Further exploration work was carried out on the western property with no encouraging results and the claims were allowed to lapse.

1950 Ten claims were purchased from Mic Mac Exploration Limited, bringing the total number of claims in the Sturgeon River property to 35.

1955-1956 The company changed its name to Sturgeon River Mines Ltd. The mill was dismantled late in the year and the equipment was sold in 1956.

1964 The company name was changed to Quebec Sturgeon River Mines Ltd.

1967 The property was sold to Coniagas Mines Limited to cancel a debt owed to them.

1972-1973 Jupiter Minerals Inc. was formed to hold the original Sturgeon River gold property. Quebec Sturgeon held 95% interest in the new company and Coniagas held the other 5%. Trenching, electromagnetic and magnetometer surveys, and geochemical work were carried out on the property to assess the base metal potential and to re-evaluate the gold potential. It was stated that re-opening the mine would only be feasible if the price of gold rose above $100/ounce. A planned diamond drilling and gold re-evaluation program was deferred as the parent company decided to concentrate its efforts on a more viable property.

1975 Jupiter Minerals Inc. changed its name to Phoenix Gold Mines Limited.

1984 The Quebec Sturgeon River Mines property consists of 35 leased claims (TB 13392 - TB 13400, TB 13403, TB 13641 - TB 13647, TB 13931 - TB 13933, TB 16726 - TB 16734 and TB 25967 - TB 25972). TB 13931 - 13833 and TB 16726 - 16734 represent the original Macjoe Sturgeon property. A major exploration program, involving linecutting, detailed geophysical surveys (magnetometer, VLF and IP), geological mapping, basal till sampling, stripping and

trenching, was initiated. The latter part of the season was spent diamond drilling. Drilling was mainly on the original Sturgeon River block, however, drilling was also undertaken to test the original veins #21, 23, 24 and 25 on the Macjoe block.

1985 Work continued on all 35 leased claims in the form of geological mapping, magnetometer and VLF surveys, basal till sampling, stripping, trenching and channel sampling. During this season, the Marge Vein (85-M-1) was discovered in the NE portion of the original Macjoe Sturgeon block on TB 13931.

1986 Work in 1986 concentrated on the Marge Vein. The vein was exposed for approximately 300 m and channel sampled. The Allard and "F" vein were located in the area of the Marge Vein. Surface stripping was conducted on veins in the western portion of the Macjoe Block on the M-2 vein.

1988 Placer Dome Inc. optioned the property from Phoenix Gold Mines. The Marge Vein was diamond drilled.

1989 Placer Dome dropped the option.

5) LOCATION AND ACCESS: N. T. S. 42E12/NW

General Location: The property is located in SE Pifher and NE Irwin townships on the south side of the Sturgeon River.

Access: Access to the claim group is via Highway #801, which leads N. from Highway #11, 9.6 km (6 miles) west of Jellicoe. Proceed 10.35 km (6.4 miles) N. on highway 801. Turn west onto a bush road and follow for 2.4 km (1.5 miles) to a junction, with an overgrown bush road. This point represents the east boundary of the Macjoe claim group.

References: Koskitalo (1985)
Laird (1937)
Mackasey (1975)
Mason & White (1986)
Patterson et al. (1987)
Beardmore-Geraldton Resident Geologist's Files, Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 45a	Sturgeon River Gold Area (Bruce & Laird 1937)
Map 1934c	Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)
Map 2294	Dorothea, Sandra & Irwin Townships (Mackasey 1975)
Map P. 3078	Precambrian Geology of Pifher Township (Kresz & Zayachivsky 1988c)

6) GENERAL GEOLOGY AND STRUCTURE:

The Macjoe Sturgeon property is located within the Onaman-Tashota Belt of the Wabigoon Subprovince. The property is underlain by intermediate to felsic metavolcanics, which are intruded by the Elmhirst Lake Stock (granodiorite and quartz diorite) to the north and the Coyle Lake Stock (porphyritic granodiorite to granodiorite) to the east. Archean mafic dikes and late Precambrian diabase dikes also intrude the metavolcanics (Patterson et al. 1987).

7) DETAILED GEOLOGY AND MINERALOGY:

According to Laird (1937):

"The northern half of the group is underlain by medium-grained, light-weathering granodiorite, this being a salient from a large area of granite lying to the northeast in Elmhirst Township. The southern half of the group is underlain largely by massive, light-weathering rhyolite flows, rhyolite fragmental types, and greenish schistose lavas and tuffs. The occurrence of tourmalinized tuff in the west central part of claim T.B. 16730 has already been mentioned above in the general description of the rock types. Outwardly this rock has the appearance of volcanic ejectamenta with dense, black, rounded and angular fragments scattered throughout a greyish siliceous matrix, such as one might expect near the site of a volcanic cone. Under the microscope, however, the black material is seen to be tourmaline, and the rock probably owes its origin to a replacement phenomenon, as suggested earlier in this report. Both the Algoman and Keewatin types are intruded by narrow "chlorite" or "green dikes," porphyry dikes, and a few narrow diabase dikes.

Quartz leads were uncovered on nine of the claims, their occurrence being noted in both the granodiorite and Keewatin types. In all, 38 quartz veins were found, but only 4 of these, Nos. 21, 23, 24 and 25 demanded further attention. These veins, closely grouped near the boundary between claims TB 16726 and 16727 strike in a general northeast direction and are approximately parallel. Veins No. 21, 23 and 24 occur entirely within the granodiorite; vein No. 25 passes from granodiorite into rhyolite flows and agglomerate.

On surface, vein No. 21 has a maximum width of 6 inches and has been exposed for 250 feet. Diamond-drill holes in low ground to the south, however, have indicated the extension of the vein in this direction for another 150 feet. It has been traced in the opposite direction to the east boundary of the property, where it passes into the property of Sturgeon River Gold Mines. The quartz is strongly fractured parallel to the strike and contains varying quantities of pyrite, chalcopyrite, and galena, and a little visible gold.

Vein No. 23 has a maximum width of 12 inches and an average width of 6 inches; it has been exposed for about 300 feet. The quartz is strongly fractured parallel to the strike and carries moderate quantities of pyrite and galena. Thin flakes of visible gold occur in tiny fractures near the margins of the vein.

Vein No. 24 is a lens-like mass of quartz with a maximum width of 6 feet but narrowing down to 2 inches in places. The quartz is rusty in spots and carries moderate quantities of pyrite concentrated mainly in longitudinal, sericite-filled fractures parallel to the strike. The gold values here are said to be low.

Vein No. 25 is the most important thus far exposed on the property both as regards magnitude and mineralization. Like most of the veins in this area it is narrow but remarkably persistent as to length being exposed in a long trench for more than 1,000 feet. It pinches and swells in characteristic manner, ranging from 6 to 18 inches in width over much of its length, but widening to 3 feet in places. The average sampling width is probably abut 10 inches. Where the vein passes from the granodiorite into the rhyolite fragmental, the wall rock for 2 feet on either side of the vein is perceptibly altered to a reddish, cherty, well-pyritized type, which, however, is said to yield no gold values. In places, fairly heavy concentrations of pyrite, chalcopyrite, galena, and sphalerite were observed.

Specks of visible gold are commonly seen, especially where galena and sphalerite are prominent constituents of the vein matter."

In 1985, the Marge Vein was located on TB 13191, one of the northern claims. The following description is by Mason and Hine, in Patterson et al. (1987):

"The Marge Vein (85-M-1), located 480 m (1,575') north of the old shaft, discovered and worked in 1985, was the site of detailed surface exploration during 1986. Assay results from the 1985 program indicated an average grade of 0.727 ounce gold per ton over an average width of 35.66 cm (14") for a length of 152 m (L. Koskitalo, Project Geologist, Phoenix Gold Mines Limited, Toronto, personal communication, 1986). The Marge Vein has now been exposed for approximately 300 m (984'). The vein is boundinaged, hosted in an altered granodiorite (a portion of the Elmhirst Lake Stock) and strikes approximately 040 degrees with a variable dip. The vein ranges up to 1.2 m (3.9') in width. Channel sampling during 1986 returned comparable widths and assay values relative to the 1985 program. The northeastern end of the Marge Vein assayed 1.51 ounces gold per ton over 0.91 m (3'), the vein continues under overburden.

Small scale features display sinistral strike slip motion. Two generations of quartz are present within the vein; an initial quartz vein has been brittley fractured and healed with a second generation of hydrothermal silica fluid. Sutures can be noted into the wallrock. Local sericite alteration is present in the vein walls, and xenoliths of metavolcanic are present along the trend of the vein.

The Allard Vein, which is located approximately 75 m (246') north of the Marge Vein and the "F" Vein. Both host visible gold.

Surface stripping was conducted on veins in the western portion of the Macjoe Block. The M-2 vein is a lenticular quartz vein up to 1 m (3.3') wide hosted in a felsic lapilli-tuff. Tourmaline has selectively replaced clasts within the lapilli-tuff resulting in a tourmaline alteration halo extending up to 2 m (6.6') from the vein.

The vein strikes 170 degrees but has little or no tourmaline within it. The implied sequence of formation is as follows:

1. volcanism
2. tectonism producing a fracture
3. tourmalinization about the fracture
4. hydrothermal activity producing the quartz vein
5. diabase dike intruded within and conformable to the vein"

A shipment of ore comprising of four samples from veins Nos. 21, 23 and 25 having a combined weight of 180 kg (397 pounds) was sent to the testing and research laboratories of the Canada Department of Mine and Resources in September of 1935 by Macjoe Sturgeon Gold Mines Limited. The following text is from part of the report (Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay):

> "Character of the Ore. Specimens were selected from each sample and 24 polished sections were prepared, 6 from each sample. These were examined microscopically for the purpose of determining the character ore. The microscopic examination of all four samples fails to reveal any significant differences except for slightly varying proportions of metallic minerals. The description of the ore, therefore, will be based on the study of all sections.
>
> The gangue is largely milky-white quartz. Locally the quartz is mottled green to brown by impurities, these being chloritic material and iron oxides, respectively. A small amount of yellowish brown carbonate occurs as stringers and small patches in the quartz. The metallic minerals present are: pyrite, sphalerite, chalcopyrite, galena, "limonite", covellite, pyrrhotite, and native gold. Pyrite is sparingly disseminated as medium to small grains and cubic crystals, and is present in all stages of alteration to "limonite". Sphalerite occurs as small masses and grains; it contains tiny dots of chalcopyrite and is associated with patches of chalcopyrite and galena. Irregular grains and stringers of chalcopyrite are common in quartz and are usually associated with sphalerite and galena; chalcopyrite is replaced to some extent by covellite and "limonite". "Limonite" rims and veins pyrite and chalcopyrite and occurs along veinlets in quartz; much of the quartz is stained yellowish brown "limonite". A very small amount of covellite occurs as local replacements of chalcopyrite and galena. Traces of pyrrhotite are present as tiny grains in pyrite.

Native gold is present in irregular grains and discontinuous stringers in quartz, either alone or associated with chalcopyrite and/or galena, and as small rounded grains in pyrite. Most of the gold in the pyrite appears to be independent of fractures, but occasionally grains lie along fractures in the pyrite."

The following results were published in the Northern Miner (1935, August 1, p. 17) (Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay):

On the No. 25 Vein (1935, Au at $35.15 per ounce)

Block A - 26.2 m (86') long 25.4 cm (10") wide - $7.96 average 0.22 Au oz/ton

Block B - 10.7 m (35') long 33.0 cm (13") wide - $22.78 average 0.65 Au oz/ton

Block C - 9.8 m (32') long 16.2 cm (6.37") wide - $10.25 average 0.29 Au oz/ton

Block D - 13.4 m (44') long 30.1 cm (11.87") wide - $5.47 average 0.16 Au oz/ton

In 1935, four bulk samples were shipped to the Canadian Department of Mines and Resources testing and research laboratories. The results were as follows:

No.	Loc.	Gold oz/ton	Ag oz/ton	Cu %	Arsenic %
1	Vein 25 (low grade)	0.10	0.21	Nil	0.02
2	Vein 21 (low grade)	1.15	0.21	0.04	Trace
3	Vein 25	1.58	1.81	0.02	Nil
4	Vein 23	0.44	1.43	0.02	Nil

A composite sample made up of all samples assayed 0.83 oz Au/ton and 1.04 oz Ag/ton (Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay).

According to Laird (1937) a few channel assays on Vein No. 25 indicated gold values of an ounce or more per ton over vein width.

Diamond drill hole SR84-16 (Koskitalo 1985) drilled in 1984 to test veins Nos. 23, 24 and 25 gave the following results:

Split core samples	Sludge samples
.044 ounces over 0.55 m (1.8′)	.002 from 87.5-90.5 m (187′-297′)
.004 ounces over 0.49 m (1.6′)	.056 from 130.1-133.2 m (427-437′)
.102 ounces over 0.24 m (0.8′)	

In 1985, the best results (Patterson et al. 1987) on claim TB 13931 in the NE Macjoe block on the new "Marge" vein showed:

0.727 oz gold over 0.36 m (1.17′) average width for 154 m (505′)

0.514 oz gold over 0.36 m (1.19′) average width for 296.9 m (974′)

During an August 1989 property visit, the following results were obtained:

Sample No	Location	Au oz/ton	Ag oz/ton
89-SMS-1	Vein M-23, east of road	Trace	Nil
89-SMS-2	Vein M-24, east of road	0.011	Nil
89-SMS-3	Vein M-23, west of road	Nil	Nil
89-SMS-4	Vein M-23, west of road	Nil	Nil
89-SMS-5	Vein M-25, top of hill	0.059	0.66

1) PROPERTY NAME: Mathe Occurrence (103) DATE(S) VISITED:

2) ALTERNATE NAME(S): Ewald Rentz Find

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1925 Felix Mathe staked TB 4818 in July. Permission to do assessment work from October 1, 1925 to April 15, 1926 was granted.

1931 One-quarter interest was transferred each to S. Dillabough and D. Walker. Fifty-three days work were recorded in May.

1932 Two-hundred days work was filed in November.

1934 Both D. Walker and F. Mathe transferred their interest in the property to S. Dillabough. An option agreement was filed; no names or companies are mentioned though.

1936 A survey was filed. Papers were forwarded to the department for a lease.

1938-1956 The claim maps for these years show TB 4818 as a leased property.

1950 In December, the surface rights along with parts of a 20.1 m (66 foot) reserve along the Blackwater River were patented to the Improvement District of Beardmore.

1958 On the bottom of the 1958 claim map, there is a note that in March, TB 4818 became open/cancelled. From claim maps dated 1960 to present, TB 4818 is shown with a patent symbol for surface rights only. From the following claims staked, it appears that the mining rights became open in 1958.

1960 Mrs. Anja Oja staked TB 99713 on TB 4818 (MRO). Extensions were granted until July, 1962.

1962 All interest was transferred to R.V. Oja. Eighty days work was recorded in June. One diamond drill hole totalling 48.8 m (160 feet) had been drilled and sampled on the claim in May. The claim was cancelled in April of 1963.

1963 James Myslicki staked TB 106908 (MRO) in April. The claim was cancelled in June of 1964 with no work recorded.

1972 John Petrick staked TB 377110 (MRO) in August. Extensions were granted until the end of August in 1974. Towards the end of August, 160 days work involving 2 diamond drill holes totalling 79.9 m (262 feet) was recorded.

1975 John Petrick passed away in September.

1978 John Nelson staked TB 465854 in June (MRO). Dredging along the banks and bottom of the Blackwater River was carried out.

1980 All interest was transferred to Kevin Jesseau in July, who then transferred all interest to Albert Hopkins. A large block of claims (under option to Hanna Mining Co.) including TB 465854 had a geochemical survey conducted on it. Humus samples were taken along grid lines at every 91.4 m (300 feet). Anomalous gold and arsenic values occurred on TB 465854.

1981 Albert Hopkins transferred all interest to Pancontinental Mining (Canada) Ltd. Airborne EM, magnetics and resistivity Dighem surveys were flown in July. Mapping of a large block of property, including TB 465854 was carried out from September to November. Extensions were granted until 1984.

1984 Power stripping, as well as 4 trenches were dug out on the claim during July and August.

1986 An extension was granted for applying and paying for a lease.

1987 In June, a survey plan for mining rights only was filed and approved. In September an option agreement between Pancontinental Mining (Canada) Ltd. and Norben Gold Resources Inc. was formed.

1988 In June, an extension was granted for applying and paying for a lease. In July, Pancontinental Mining transferred 45% interest to Norben Gold Resources Inc.

5) LOCATION AND ACCESS:

N. T. S. 42 E 12/SW

General Location: The property is approximately 0. 5 km (0. 3 mile) northeast of the town of Beardmore. The Blackwater River runs through the northern portion of the property.

Access: Proceeding north through Beardmore, turn right on the first road to the east. At 0. 4 km (0. 2 mile) the road crosses the power line. At this point, there is a gate on the road, as the road enters the Ateba Mines property. Permission must be obtained to go on the Ateba Mines property. Proceed down this road 0. 6 km (0. 4 mile). At this point you will be approximately 100 m (334 feet) southeast of the #2 claim post of TB 465854. The occurrence is located about 100 m (334 feet) to the northwest of the #2 post.

References:
Grant & Oja (1962)
Higgins (1980)
McBride (1982)
Nelson (1979)
Pancontinental Mining (Canada) Ltd. (1984)
Petrick (1974)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 37k	Beardmore-Nezah Gold Area (Langford 1929)
Map P. 602	Summers Township (Mackasey 1970b)
Map 1934c	Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the southern Metavolcanic Belt, in the southern portion of the Beardmore-Geraldton Belt.

"The belt is composed of a complex sequence of fine-grained volcanic tuffs, agglomerates, basalts, and gabbroic rocks with lesser cherty iron formations, ankeritic exhalite and slatey tuffs. Clastic sedimentary rocks flank the volcanic sequence on both the north and south. The sedimentary rocks are similar in both areas and in the past have been interpreted as stratigraphically equivalent." (McBride 1982).

The northern portion of the claims are underlain by metasedimentary rocks.

7) DETAILED GEOLOGY AND MINERALOGY:

"Outcrop is located on the southern portion of the claim, south of the CNR. Fine grained medium to dark tuff, exhibiting poor to moderate schistosity has iron carbonate, and calcium-magnesium carbonate associated with it. Outcrops of tuffaceous material with an extremely well developed cleavage, as well as minor outcrops of diabase west of the volcanics are also found on the property. The contact between the metavolcanics and metasediments is found on the northernmost outcrop. The sedimentary rocks contain chert and iron carbonate." (McBride 1982).

A 1978 report by Albert Hopkins (Beardmore-Geraldton Resident Geologist's Files) states that a grab sample taken by Ewald Rentz was well mineralized by pyrite, and contained sparse chalcopyrite.

The geochemical sampling conducted by Hanna Mines (Higgins 1980) showed anomalous gold and arsenic values near the outcrop on TB 465854. Higgins reported the arsenic anomaly "occurs adjacent to known iron formation and arsenic bearing quartz veins." The anomalous gold values may be derived from hydrothermal fluids from within the fault contact.

Diamond drill hole logs on the property report quartz and carbonate veins with arsenopyrite, pyrite, graphite and chalcopyrite (Grant and Oja 1962), as well as narrow quartz stringers and minor quartz veins with minor sulphides (Petrick 1974).

8) CHEMICAL ANALYSES:

The chemical analyses are divided into two separate sections: sediment samples and rock samples.

Sediment Samples

Name	Year	Au (oz/ton)	Description
John Petrick	1956	12.87	Dark coloured magnetite sand (machine concentrate)
	1962		
	#1	0.03	surface bank sample
	#2	0.03	surface bank sample
	#3	10.42	machine concentrate
	#4	12.65	machine concentrate
A. Hopkins	1978		
	#1	<10 ppb	fine grained silt 300 m east of curling club
	#2	<10 ppb	silt above high water mark 400 m east of curling club
Eric Nelson	1978		
	#5	trace	Dredged from bottom and
	#6	nil	banks of river (sand &
	#7	nil	gravel)
	#8	6.0	
	#9	0.06	
	#10	0.05	
	#11	11.2	

The aforementioned information was included in J.E. Nelson's report (1979).

Nelson (1979) reported the following:

> "Gold is confirmed to be present in the sand and gravel of the river bottom and banks. The sulphide is usually present in minor amounts in practically all cases. Very little free gold was found. However where it is present it gave a good concentrate. The gold present is known to come from tailings of the Northern Empire Mine. It also is probably present in the sand as a placer. Further work is now being performed to check this. In nearly all concentrates fine sulphides were found with no visible free gold. These concentrates assayed about 0.05 oz/ton Au. Locations were found with free gold present, they ran up to 11.2 oz/ton Au. Unconcentrated sand ran as high as 0.06 oz/ton Au."

Higgins (1980) reported the following:

Hanna Gold Mines	1980	Au (ppb)	samples are
	#1	19	located in
	#2	34	the SE
	#3	3	corner of
	#4	5	TB 465854

Samples of well washed alluvial sand, taken from 3 bulldozer trenches in the centre of the claim assayed the following:

1984	Au(oz/ton)	Ag(oz/ton)	Cu(ppm)	Zn(ppm)	Pb(ppm)
#1	trace	<0.05	6	24	8
#2	trace	<0.05	8	23	8
#3	trace	<0.05	5	18	5
#4	trace	<0.05	6	40	5
#5	trace	<0.05	5	21	8
#6	trace	<0.05	6	25	5

[Pancontinental Mining (Canada) Ltd. 1984]

Rock Samples:

The following results were recorded by Nelson (1979)

Name	Year	Au (oz/ton)	Description
John Petrick	1962		
	#5	0.40	Vein material
	#6	0.12	Vein material
Eric Nelson	1978		
	R-1	0.02	River sample
	R-2	0.08	River sample
	PR-1	nil	?

Albert Hopkins (Beardmore-Geraldton Resident Geologist's Files) reported a grab sample taken by Ewald Rentz on a surface outcrop (which appear to be the western extension of the Empire vein) assayed 0.07 oz/ton Au.

1) PROPERTY NAME: McFarlane-Manion Occurrence (106) DATE(S) VISITED: June 1989

2) ALTERNATE NAME(S):

3) COMMODITY: MAIN: Au SECONDARY: Ag, Pb, Zn

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1916 Mr. McFarlane staked TB 2722. A 3.4 m (11 foot) pit was sunk on a vein on the property.

1917-1956 The history and development of the property during this time period could not be traced.

1957 KK 18053 was staked by A. Holliday in July.

1958 In March, all interest was transferred to Polly Pond Mining Co. Ltd. The claim was cancelled in June of 1960.

1959-1987 The property was open for staking.

1988 Charlie Paul staked TB 1036052-54 in July.

1989 Charlie Paul staked TB 1036055-61 adjoining the above three claims in March. To date, work has involved mainly stripping of veins and cleaning out of pits on the property.

5) LOCATION AND ACCESS: NTS 42 L 6/SW

General Location: The property is directly north of the Canadian National Railway in Gzowski Township, approximately 6.4 km (4 miles) east of the former Redmond Station.

Access: The property is accessible by C.N.R. Prior arrangements must be made to leave Nakina and be dropped off at the site, just west of Wilgar Creek. The closest station point to the east is Kowkash.

References: Hopkins (1916)
Hopkins (1917)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 25a Kowkash Gold Area (Hopkins 1916)
26a Kowkash Gold Area, 2nd Edition (Hopkins 1917)
34g Tashota-Onaman River Area (Gledhill 1925)
P2311 Howard Falls Area, Southern Half (Amukun et al. 1979b)
2102 Tashota-Geraldton Sheet (Pye et al. 1966)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located in the northeastern portion of the Onaman-Tashota Metavolcanic Belt, which is part of the Wabigoon Subprovince. The showing is located within a NW-SE trending belt of metasediments dominated by mudstones and wackes. This belt of sediments forms an anticline. In the northern section of the property, a NW-SE trending fault separates the metasediments from a belt of mafic to intermediate coarse-grained metavolcanics. Mafic dykes cut the belt of metasediments. (Amukun et al. 1979)

7) DETAILED GEOLOGY AND MINERALOGY:

According to Hopkins (1916) a quartz-calcite vein 0.6 to 3 m (2 to 10 feet) wide striking south 70° east was found within Keewatin greenstone. The vein dips 70° to the north. A 1.3 cm (1/2 inch) vein of galena was found near the footwall of the pit sunk on the vein.

The following description of the property was noted by Gerry White, staff geologist for the Beardmore-Geraldton District, during the 1989 property visit:

"The property contains twelve pits and/or trenches under study by the present claim holders. Most of these past and present workings, including the old McFarlane-Manion "shaft" sunk between 1915 and 1916, are centered on claims TB 1036054 and TB 1036055 just north of Wilgar Creek. The unit of primary interest is a ribbon-banded composite vein system striking 130° AZ (ranging from 128° AZ to 135° AZ) and dipping roughly 70° NNE. It is exposed in a series of pits and trenches along this trend for approximately 330 m and varies in width from 30 cm to 1.9 m at its widest. Two additional quartz veins or vein systems are exposed running parallel to the main unit, one to the northeast and the other to the southwest located on the south side of Wilgar Creek. However, these veins are exposed at only one location at present, and are much narrower (30 cm and less), and appear less continuous than the main system. Both are consistent with the main trend and strike 130° AZ.

The primary vein system is best exposed northwest from the old shaft or No. 6 pit, as it is known by the present owners. It has been stripped for approximately 15 m with a consistent average width of 1.5 m and is as wide as 1.9 m in places. The vein consists of two main components; to the north a 60 to 75 cm wide unit of massive coarse granular bull white quartz in contact to the south with a quartz vein breccia zone from 90 cm to 1.2 m wide. The quartz vein breccia contains altered black argillitic fragments up to 50 cm (average 5 cm) with 3% quilts and patches of chalcopyrite and fine-disseminated pyrite. Chlorite-sericite slips were also noted within the quartz in association with the fragments. At the bottom of the 4.5 m shaft (1.5 by 1.5 m square) sunk down on the vein system by the original owners, a flat-lying seam from 2-5 mm of massive sphalerite and galena was noted. These two minerals were not observed in any of the other exposures on the property. Mineralization outside the vein exposure in the shaft area is generally sparse, i.e. 1% to <1% pyrite. Only minor sulphide iron staining was noted.

The composite nature of the vein system is indicative of two age generations of quartz material along the same fracture or shear zone. The massive bull white quartz vein appears to be later or younger in age with right angle veinlets of this material cross-cutting the quartz vein breccia unit.

The surrounding host rock is a fine-grained dark grey to black argillite often showing a banded nature in association with the shear zone of the main quartz vein system. A medium-grained feldspar porphyry dike was also noted adjacent to the main vein in one of the trenches."

8) CHEMICAL ANALYSES:

Three assays on the main pit from Hopkins (1916) were as follows:

	Au (oz/ton)	
hanging wall	nil	
centre	.06	($1.20 at $20.67/oz)
footwall	.29	($6.00 at $20.67/oz)

The following are analyses from samples taken during 1988-1989 by Ministry of Northern Development and Mine staff and property owners. Locations are claims TB 1036052 to TB 1036057.

Location: Pit/Vein System #1

Sample #	Au ppb	Au oz/ton	Ag oz/ton	Cu ppm	Pb %	Zn %
H-13274		0.005				
H-13275		0.005				
H-13270		0.02				
H-13271		0.01				
H-13272		0.01				
H-13273		trace				
89SMM5		0.01	3.71			
89SMM6		<0.01	0.16		2.4	
89SMM9		0.04	<0.10		0.045	
89MMM5	20		0.58	128	2.16	1.27
89MMM6	165		0.17	277	0.78	3.18
89MMM7	340		0.35	2870		
89MMM8	520		0.29	1370	1.06	0.68
89MMM14	104		0.32			
89MMM15	85		0.29			
89MMM16	835		0.17			
89MMM17	1216		0.26			
89MMM10	58					
89MMM11	143					
89MMM12	1089					
89MMM13	604					
89MMM14a	47					
89MMM15b	<10					
89MMM55	1720		15 ppm	170	0.31	0.86
89MMM56	165		41 ppm	425	11.30	7.13
89MMM57	580		8 ppm		0.47	0.70
89MMM58	20					
89MMM59	2380		13 ppm			2.2

Location: Pit/Vein System #2

Sample #	Au ppb	Au oz/ton	Ag oz/ton
6911	20		
13276		0.005	0.75
13277		0.015	0.19
13278		0.002	
13279		0.010	0.14
6919		0.002	
89MMM16	69		
89MMM17	34		
89MMM50	22		
89MMM51	230		
89MMM52	26		
89MMM53	33		

Location: Pit/Vein System #3

Sample #	Au ppb	Zn %
6909	50	
6912	500	1.0
89MMM18	35	
89MMM19	21	

Location: Pit/Vein System #4

Sample #	Au ppb	Au oz/ton	Ag oz/ton	Cu ppm
6917		0.002		
6918		0.040		
89SMM4		0.02	1.06	
89SMM4a		<0.01	<0.10	
89SMM5		<0.01	<0.10	
89SMM6		<0.01	<0.10	
89MMM3		0.01		
89MMM9	50		1.13	2.07
89MMM18	366		0.70	
89MMM20	25			
89MMM21	57			
89MMM22	17			
89MMM23	24			
89MMM24	47			
89MMM25	331			
89MMM26	<10			

Location: Pit/Vein System #5

Sample #	Au ppb	Au oz/ton	Ag oz/ton	Cu ppm	Pb %	Zn %
89MMM4	270		0.06	695	0.10	0.20
89MMM27	81					
89MMM28	178					

Location: Pit/Vein System #6

Sample #	Au ppb	Au oz/ton	Ag oz/ton	Cu ppm	Pb %	Zn %
13280		0.035				
13281		nil				
13282		nil				
13283		0.002				
89MMM1	820		1.487	435	8.0	2.43
89MMM2	18		0.087			
89SMM1		0.08	2.10	1430	19.4	9.5
89SMM2		0.03	0.87			
89SMM3		0.02	0.10	755		
89SMM7		0.01	0.19			
89SMM1a		0.01	0.77			
89SMM2a		<0.01	<0.10			
89SMM3a		0.01	0.65			
89MMM19	937		0.49			
89MMM29	36					
89MMM30	25					
89MMM31	13					
89MMM32	15					
89MMM33	69					
89MMM41	350		23 ppm	540	2.54	4.3
89MMM42	970		78 ppm	750	9.20	7.8
89MMM43	1680		70 ppm	750	10.50	7.8
89MMM44	170		45 ppm			0.289
89MMM45	90		26 ppm			
89MMM46	90		10 ppm			0.194
89MMM47	135		19 ppm	177	3.64	0.99
89MMM54	160		2 ppm	54	0.086	0.175
89MMM60	2500		211 ppm			0.97

Location: Pit/Vein System #7

Sample #	Au ppb
89MMM34	<10
89MMM35	49
89MMM36	91
89MMM37	<10
89MMM38	<10
89MMM39	<10
89MMM40	<10

1) PROPERTY NAME: McLellan Long Lac Gold Occurrence (108) DATE(S) VISITED: not found

2) ALTERNATE NAME(S):

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1935 S. McBurnie and Lloyd Nelson staked TB 19546 - 19551 in June. S. Pileggi staked TB 19734 - 19736 adjoining the above claims in July.

1936 Thirty days work was recorded on each claim by April. In June, all interest was transferred to Ross McLellan. In July, a permit was issued and 57 days work was recorded in September.

1937 In February, all interest was transferred to McLellan Long Lac Gold Mines Limited. In October, 47 days work was recorded.

1938 In October, 30 days work was recorded. This work, done in 1937 and 1938, could correspond to the development work mentioned by MacDonald (1943): 61 m (200 feet) of trenching and digging of a pit.

1939 The claims were transferred back to Ross McLellan.

1940 The claims were cancelled in the fall. Albert Hopkins staked TB 28594, 28680 and 28681 (restaking 19734 - 19736) shortly after W. D. Loudon staked TB 28576 - 28578 (restaking 19546 - 19548) and J. P. Daoust staked 28757 - 28759 (restaking TB 19549 - 19551).

1941 TB 28680 and 28681 were cancelled in September. TB 28594 had 30 days work filed on it in July. TB 28757 - 28759 had 40 days work filed in August while TB 28577 - 28579 recorded 45 days work in November.

1942 In August, 40 days work was recorded on TB 28757 - 28759 and TB 28577 - 28579. TB 218577 - 218579 were transferred to F. P. Daoust. TB 28594 was cancelled in December.

1946 Art Carpenter staked TB 33444 - 33445 (originally 19734 - 19735) in February. In May, all interest was transferred to J. M. MacIntosh.

1950 TB 28576 - 28578, TB 28757 - 28759 and TB 33444 - 33445 were cancelled in December after numerous extensions, yet no work was recorded.

1958 Joseph Oster staked TB 91046 - 91051 in June. Kenneth Zeran staked TB 91036 and J.W. Siver staked TB 91192 - 91195 in June.

1959 All claims were cancelled.

1986 Edward Nabigon staked TB 907357, 907358, 907363 - 907366 and 907371 - 907372 in April. At this time, all interest was transferred to Noranda Exploration Co. Ltd. Patrick Pelletier staked TB 925701, 925706, 925707 and 925712 in May. Robert Neel staked 928341 and 928342 in May.

1987 The claims held by Noranda were mapped in detail in May 1987 as well as a detailed humus geochemical survey was undertaken. These were performed to follow up on magnetometer and VLF anomalies outlined in January 1987. In December, a diamond drill hole was sunk on TB 907358 and 907366. An airborne geophysical electromagnetic and magnetometer survey was completed over the other claims.

5) LOCATION AND ACCESS: N.T.S. 42E14/SE

General Location: The property is located in southwestern Fulford Township north of the westernmost shore of Dionne Lake above 4.8 km (3 miles) west of Highway #584.

Access: Proceed north through Geraldton on Highway #584. Turn left at Greta Lake Road. Follow this road for almost one kilometre (0.6 mile). Follow bush road to left for 2 km (1.2 miles). Once this road ends, a trail will continue west. Follow this trail for 2.4 km (1.5 miles) where it turns south and then branches. The outcrop is located south of this trench.

References: Beakhouse (1989)
MacDonald (1943)
McDonough (1987)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 50f	Hutchison Lake Area (MacDonald 1943)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)
Map 2513	Grenville Lake Area (Beakhouse & Chevalier 1989)
Map P. 2593	Fulford & McQuesten Townships (Beakhouse & Chevalier 1983a)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Beardmore-Geraldton Belt of the Wabigoon Subprovince. The property is underlain by the Dionne Lake metavolcanics. (see Lac-Teck Property write-up for description of Dionne Lake metavolcanics).

7) DETAILED GEOLOGY AND MINERALOGY:

MacDonald (1943) described the property as follows:

> "The exposed rocks on the property are volcanics, most of which are massive, fine- to medium-grained andesites. The showing, situated on claim TB 19736 consists of a moderately sheared carbonate zone in andesite. The shear zone contains narrow quartz stringers over a maximum width of 10 feet and is exposed in a trench for 200 feet. The wall rock contains disseminated pyrite and ankerite; the quartz veins contain pyrite, pyrrhotite, chalcopyrite, galena, ankerite, and tourmaline. One 3-inch quartz vein is much more heavily mineralized than the other veinlets. A similar carbonate shear zone occurs in a pit 450 feet west of the trench. Quartz veinlets are present over a width of 4 feet. The largest one, which is 8 inches wide, shows two ages of quartz, an early white quartz and a late blue quartz. The same minerals as those in the trench to the east are present, but the mineralization is irregular and sparse."

When Beakhouse (1989) visited the property in 1982, no veining or mineralization was noted, yet numerous overgrown trenches were located.

The following descriptions (McDonough 1987) are of two diamond drill holes drilled in November 1987 and indicate the geology underlying the drift-covered claims:

"Hole NF-87-4 Line 14+00E/4+50N

A strong VLF with an accompanying mag anomaly coincide with the Burrows River Fault. The hole begins in non-descript flows and tuff. The tuffs become more altered (mainly chlorite) downhole. At 76 m a 14.5 meter wide fault zone was intersected. Chlorite, sericite and talc alteration were observed. No mineralization was seen. The anomalies were caused by ionized water within the fault zone. The remainder of the hole is in intermediate tuffs and flows, all highly chloritized. The hole was stopped at 130 metres.

Hole NF-87-5 Line 8+00E/1+40N

Drilled to a depth of 107 m, this hole tested a VLF/Mag/humus anomaly. It was collared in a chlorite altered intermediate flow. Blue chloritoid alteration is present throughout. Mineralization is sparse within this unit. Below this, the hole intersects an ultramafic dyke similar to those seen in NF-87-2. There appears to be an association between these dykes and the blue chloritoid alteration of host rock. At 60.58 meters a graphitic intermediate tuff is intersected. Sulphide mineralization is weak. Graphite content is initially 30-40%, but lessens down unit. Within a tuffaceous unit further down the hole another graphitic interbed is encountered. Here the mineralization averages 10% over 1 meter. Here again the blue-chloritoid alteration occurs giving the unit peculiar bluish caste. (No ultramafic dykes were intersected in this area of the hole). This hole likely intersects the strike extension of the same package of rocks seen in hole NF-87-2. The hole continued through a section of intermediate tuffs and flows before it was stopped."

1) PROPERTY NAME: Missing Link Occurrence (111) DATE(S) VISITED: August 1988

2) ALTERNATE NAME(S):

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1935 E. H. Tomlinson & Richard Cochrane staked claims TB 20359 to TB 20363 in November.

1936 In July, a total of 78 days work was recorded on each claim.

1937 In July, 40 days work was recorded on each claim. No record of the type of work can be found.

1938 In June, all interest in the claims was transferred to Alex Farrant (Tarrant?). At this time, A. Farrant staked claims TB 26619 to TB 26621 adjacent to the other claims. In June, 40 days work was recorded on TB 20361 and TB 20362. In September, 62 days work was recorded on TB 26619 to 26621.

1939 Thirty days work was recorded on TB 26619 to TB 26621.

1940 TB 20359, TB 20360 and TB 20363 were cancelled in January.

1941 TB 20361 and TB 20362 were cancelled in February.

1944 TB 26619 to TB 26621 were cancelled in July. Claims TB 30814 to TB 30822 were restaked over original claims in July.

1945 One-hundred and forty-six days work was recorded on claims TB 30814 and TB 30819 - TB 30821 in November.

1946 Claims TB 30815 - 30818 and TB 30822 were cancelled in February with no work recorded.

1950 Claims TB 30814, TB 30819, TB 30820 and TB 30821 were cancelled in May.

1986 Nolan Cox staked a block of 148 claims covering the property previously staked. In December, 1/3 interest was transferred to D. Thorsteinson and M. Watson each. Numerous old trenches and pits were found in the vicinity of the original claims. In August, D. Thorsteinson passed away.

1988 In February, D. Thorsteinson's 1/3 interest was vested to Mona and Melody Thorsteinson. In November, a total of 80 days work was applied to each claim for an airborne EM and MAG survey.

1989 Over twenty days work was applied to each claim for trenching, linecutting, mapping and sampling.

1990 In February, all interest was transferred to Homestake Mineral Development Company.

5) LOCATION AND ACCESS: NTS 42E14/SW

General Location: The property is located in southwest Lapierre Township directly north-northwest of Jory Lake (see claim map G-65).

Access: Proceed east through Jellicoe on Trans-Canada Highway #11. Turn north onto Kinghorn Road. Proceed north on Kinghorn Road for 8 km (5 miles). Turn east onto bush road and follow for 0.4 km (0.25 mile). A cut trail heads south from the bush road. To the east off this trail are the old trenches and to the west are new trenches.

References: Laird (1937)
Mason et al. (1989)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 1934c Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 45a Sturgeon River Gold Area (Bruce and Laird 1936)
Map 2102 Tashota-Geraldton Sheet (Pye et al. 1966)
Map P.1191 Legault Twp. (Mackasey et al. 1976b)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is located within the Onaman-Tashota Metavolcanic Belt of the Wabigoon Subprovince. The property is situated very near to the boundary between the Onaman-Tashota and Beardmore-Geraldton Belt, which is delineated by the Paint Lake Fault.

The following description is from Mason et al. (1989):

"The Jory Lake-Lapierre Township area is underlain by intermediate to mafic metavolcanic rocks in fault contact with metasediments to the south. Metasediments consist of polymictic conglomerate and feldspathic sandstone (Mackasey et al. 1976b). Regional foliation trends approximately 080° and younging directions in pillows west of Jory Lake is to the south. A major (080°) lineament extends through Jory Lake and may be the the eastern extension of the Paint Lake Fault--a major transcurrent fault."

7) DETAILED GEOLOGY AND MINERALOGY:

The following description is from Mason et al. (1989):

"Gold mineralization is associated with sheared and altered, mafic metavolcanics north of Jory Lake known as the Missing Link Occurrence. The shear zone is estimated to be 60 m (200 feet) to 90 m (300 feet) wide with present exposure. Disseminated, foliation-parallel, euhedral pyrite and arsenopyrite, within zones of both shearing and quartz-carbonate veining, host the gold mineralization. Pervasive carbonatization and more local and erratic silicification are also present. An altered diorite unit may be present apparently within the limits of the shear zone."

8) CHEMICAL ANALYSES:

The following results are reported in Mason et al. (1989):

"The North zone, Shaft Pit, and Baseline Trenches have been sampled to date. The North Zone strikes 085° and dips 061°S. The property vendor has received assay values of up to 0.256 ounce gold per ton across 1.8 m (6 feet) on the North zone (Nolan Cox, Prospector, Beardmore, personal communication, October 5, 1988)."

Assay results from visits by the authors and resident geologist are as follows:

Sample #	Au oz/ton	Ag oz/ton
88SML-1	0.02	0.26
88SML-2	0.01	<0.10
88SML-3	<0.01	<0.10
88SML-4	<0.01	<0.10
88SML-5	<0.01	<0.10
88SML-6	<0.01	<0.10
88SML-7	<0.01	<0.10
88SML-8	0.08	<0.10
88SML-9	0.07	<0.10
88SML-10	<0.01	<0.10
88SML-11	0.12	<0.10
88SML-12	0.14	<0.10
88MNC-1	<0.01	<0.10
88MNC-2	0.03	<0.10
88MNC-3	0.01	<0.10
88MNC-4	<0.01	<0.10
88MNC-5	<0.01	<0.10
88MNC-6	<0.01	<0.10
88MNC-7	<0.01	<0.10
88MNC-8	<0.01	<0.10
88MNC-9	<0.01	<0.10
88MNC-10	<0.01	<0.10
88MNC-11	<0.01	<0.10
88MNC-12	0.01	<0.10
88MNC-13	0.03	<0.10

Sample #	Au ppb	Ag ppm	Cu ppm	Pb ppm	Zn ppm
89MON-9	8	<2	28	20	31
89MON-10	570	<2	31	<10	40
89MON-11	210	<2	19	<10	34

1) PROPERTY NAME: Nordic Sturgeon Occurrence (119) DATE(S) VISITED: August 1989

2) ALTERNATE NAME(S):

3) COMMODITY: MAIN: Au SECONDARY:

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

Note Laird (1937) indicates Nordic Sturgeon held a group of 9 unsurveyed claims (TB 16091-16099), with the main showing located near the middle of the east side of Nordic Lake. Claim maps for this time period indicate these claims are directly west of Nordic Lake. However, Nordic Sturgeon Gold Mines Ltd. staked an additional 3 claims (TB 19496-19498) directly adjacent to the original 9 claim block, and covering the east shore of Nordic Lake. The following history will trace the 3 claims east of Nordic Lake.

1934 M. Johnson, M. Dorgan and J. Watts staked TB 16091 to 16099 in September. All interest was transferred to M. Daniels in October.

1935 E. Hargreaves (director of Nordic Sturgeon Gold Mines Ltd.) staked TB 19496-19498 in May. In July, all interest was transferred to M. Daniels. Thirty days work was recorded on each claim in July. According to Laird (1937), test pits and 6 cross-trenches were excavated on the main showing, east of the lake.

1937 The claims were cancelled in November with no further work recorded.

1938 In May, TB 19498, at the southeast end of the lake, was restaked as TB 26410 by W. Hayne. In August, 30 days work was recorded on the claim.

1940 The claim was cancelled in June.

1941-1962 No claims were staked on the east side of Nordic Lake.

1963 W. Cooper staked TB 109627-109629 in November.

1965 The claims were cancelled with no work recorded on them.

1966-1982 No claims were staked along the east shore of Nordic Lake.

1983 M. Cowan staked TB 768676 and 768677 in May. In October he also staked TB 732030 and 732031. These four claims covered the east side of Nordic Lake.

1984 In August, geological mapping as well as a ground magnetic survey was undertaken on the claims. This work was recorded as 20 days geophysical work. On TB 768677 and 732030, 20 days geological work was applied, and 40 days work was applied to TB 768676 and 732031. An old trench, believed to be the original Nordic Sturgeon trench was located during mapping of the property.

1985 In June, TB 768677 was cancelled and restaked by M. Cowan as TB 846380. In November, TB 732030 was cancelled. However, in December it was reinstated and given an extension to file a work report until January 6, 1986. In September, an airborne magnetic, electromagnetic and VLF survey was flown over the claims.

1986 This survey was recorded as 60 days work on each claim in January.

1987 In June, power stripping was completed on TB 768676, and was applied as 20 days work to TB 768676, and TB 732031, and as 40 days work to TB 732030.

1988 In May, all interest was transferred from M. Cowan to Metalore Resources Limited.

1989 In February, 20 days work was applied to TB 768676 for diamond drilling on TB 963859, a contiguous claim held by Metalore north of Knox Lake. Extensions have been granted on the claims for filing of work.

5) LOCATION AND ACCESS:

N. T. S. 42 E 12/NW

General Location: The property is located in southeastern Irwin Township on the east side of Nordic Lake.

Access: Proceed east through Beardmore on Highway #11 to Windigokan Lake Road. Turn left (north) onto the road and follow for 4.9 km (3 miles). The property is on the west (left) side of the road.

References:
Cowan (1984)
Laird (1937)
Mackasey (1975)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 45a	Sturgeon River Gold Area (Bruce & Laird 1936)
Map P. 481	Irwin Township (Mackasey 1968a)
Map 1934c	Namewaminikan, Sturgeon River Area (Jameson 1934)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)
Map 2294	Dorothea, Sandra & Irwin Twps. (Mackasey 1975)

6) GENERAL GEOLOGY AND STRUCTURE:

The property is situated in the easterly trending Beardmore-Geraldton Belt of the Wabigoon Subprovince. The property is underlain by an east trending mafic metavolcanic belt, composed dominantly of andesitic and basaltic types. Amygdaloidal as well as pillow lavas are present throughout the belt, and generally have been moderately deformed. The lavas vary from dark green to greyish green and are generally fine-grained. These rocks have been metamorphosed under greenschist facies conditions (Mackasey 1975).

7) DETAILED GEOLOGY AND MINERALOGY:

Laird (1937) describes the occurrence as follows:

> "Test pits and 6 cross-trenches expose a shear zone in greenstone, 6 feet wide and about 200 feet long. It strikes N 15 degrees W and dips 70 degrees S. In places the schist carries abundant pyrite and is intersected by quartz veins up to 18 inches in width. In one trench there is much massive pink calcite in vugs and unusual quantities of massive graphite developed along shear planes. A short quartz lens in the most easterly pit carries considerable pyrite, chalcopyrite and carbonate."

The following excerpts are from a report on the geology of the claims by Cowan (1984).

> "...the entire property is underlain by a sequence of metavolcanic rocks of basaltic to andesitic composition, including massive, structureless flows, amygdaloidal lava, and minor amounts of pillow lava, volcanic breccia, pyroclastic breccia, and silicified tuff. No major structures are evident from the field mapping."
>
> "The metavolcanic rocks comprise a monotonous sequence of mainly massive and structureless flows of basaltic to andesitic composition. The flows are often amygdaloidal but this texture is extremely variable even within a single outcrop. Pillow lava was observed only at one location*, at 200E/570S, in an excellent exposure on the east side of the Windigokan Lake Road. The lava here strikes east-northeasterly and dips vertically, with flow tops to the south."
>
> "Pyrite is not common in the metavolcanics and when it does exist is generally in very sparse quantities. It is most abundant as fine disseminations in the silicified tuff."
>
> *Subsequent power stripping on TB 768676 in 1987 has exposed another pillow lava sequence.

8) CHEMICAL ANALYSES:

Grab samples taken by Laird (1937) contained no gold when assayed.

Cowan (1984) reports:

> "Several grab samples of lava and tuff mineralized with sparse pyrite were assayed and showed negligible gold contents. The best assay obtained was 0.006 oz/ton gold, on a grab sample taken at 220W/760S, along the south shore of Nordic Lake. The sample comprised silicified mafic volcanic rock with sparse pyrite and a trace of galena in a 1 mm wide glassy white quartz seam."

Grab samples taken by the authors during a 1989 property visit assayed:

Number	Au oz/ton	Ag oz/ton	Cu ppm	Ni ppm
1	<0.01	<0.10	520	30
2	<0.01	<0.10	214	38
3	<0.01	<0.10	197	44
4	<0.01	<0.10	287	6

1) PROPERTY NAME: Peddle Occurrence (126) DATE(S) VISITED: July 1988

2) ALTERNATE NAME(S): Pedlar Property

3) COMMODITY: MAIN: Au SECONDARY: Ag

4) DEVELOPMENT, HISTORY AND OWNERSHIP:

1933 J. Peddle staked claim TB 11257. Thirty days work was recorded on the claim.

1935 Forty days work was recorded on the claim.

ca 1937 Claim TB 11257 was cancelled (exact date unknown). There is no record of restaking until 1981.

1981 J. P. Dupras staked claims TB 637115/637126 which cover the area originally staked by Peddle.

1982 In May all interest was transferred to Farakel Co.

1983 In January geophysical EM, VLF and Mag surveys were conducted over the property.

1985 The claims were cancelled.

1986 E. Sicard staked TB 916262-70. TB 916265 covers the original area staked by Peddle. In August, all interest was transferred to Daimler Resources Inc. In December a total of 80 days work was recorded for airborne geophysical E.M. and Mag.

1987 In October 40 days work for diamond drilling were applied to the claim. The drilling was carried out on a contiguous claim.

1988 In September a memo of agreement between Monte Carlo Gold Mines Limited and Daimler Resources Inc. was filed.

5) LOCATION AND ACCESS: NTS 42E13/SE

General Location: The property is located in northeastern Rickaby Township, approximately 15 km (9.3 miles) north of Jellicoe.

Access: Travel 8 km (5 miles) east of Jellicoe on Trans-Canada Highway #11. Turn north onto Kinghorn (Camp 40) Road. Proceed north-northeast along this road for 22 km (13.7 miles) to a tractor road cut on the north side of the road. Follow this road north for approximately 1.2 km (0.7 mile) and then via claim lines to the west for approximately 0.7 km (0.4 mile).

References: Burwash (1933)
Mackasey and Wallace (1978)
Beardmore-Geraldton Resident Geologist's Files, Ontario Ministry of Northern Development and Mines, Thunder Bay

Map References:

Map 45a	Sturgeon River Gold Area (Bruce and Laird 1936)
Map 1934c	Namewaminikan Sturgeon River Area (Jameson 1934)
Map 2102	Tashota-Geraldton Sheet (Pye et al. 1966)
Map 2373	Elmhirst and Rickaby Townships (Mackasey and Wallace 1978)
Map P.802	Rickaby Township (Mackasey and Wallace 1973)

6) GENERAL GEOLOGY AND STRUCTURE:

The Peddle Occurrence is located in the Onaman-Tashota Belt of the Wabigoon Subprovince. The property is underlain by the Kaby Lake Stock which consists of "massive pink to light grey granodiorite to trondhjemite with local occurrences of granite and quartz monzonite (Mackasey and Wallace 1978). Three lineament sets trending northeasterly, easterly and northwesterly have been noted within the Kaby Lake Stock.

7) DETAILED GEOLOGY AND MINERALOGY:

The only description of the Peddle vein is given by Burwash (1933) as follows:

"A large vein staked by J. Peddle on TB 11257 strikes 155° and carries gold although no sulphide is visible."

During a 1988 property visit by the authors, what is believed to be the northern extension of the Peddle vein was located on claim TB 1068900. Two vein types were noted: (1) a narrow "bull quartz" milky white vein; and (2) a fracture system of sugary quartz resembling the character of the veins in the Foisey property. Less than

1% pyrite was noted within the fracture system. The host rocks (granodiorite and quartz diorite) were not as silicified as the host rocks on the Foisey property.

8) CHEMICAL ANALYSES:

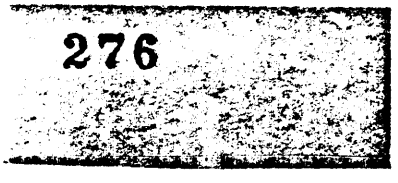
Samples taken during a property visit (July 1988) by Ministry of Northern Development and Mines staff assayed the following:

Sample No.	Description	Au oz/ton	Ag ppm	Mo ppm
MFH-42	hematized rock	0.01	--	--
MFH-47	altered granodiorite,	0.01	<0.10	33
MFH-48	sugary quartz veining	0.02	<0.10	<10

BEARDMORE-GERALDTON HISTORICAL RESEARCH PROJECT MINERAL DEPOSITS

(Refer to Figure 9 in Back Pocket for Locations)

	PAST PRODUCER PROPERTY DESCRIPTION GOLD/MINERAL OCCURRENCE	
1.	Adair Occurrence	Au, Ag
2.	Adel Lake Occurrence	Au, Cu
3.	Adelaide Gold Mines (Neelin-Braggan) Occurrence	Au
4.	Agaura (Barnum-Green) Occurrence	Au, Ag
5.	Airways Occurrence	Au
6.	Anglo-Beardmore Gold Mines Occurrence	Au
7.	Antler Gold Mines Occurrence	Au
8.	Ateba Mines, Inc.	Au
9.	Au-Lac Mines Occurrence	Au
10.	Ballina Lake Occurrence	Au
11.	Bankfield Mine	Au
12.	Banner Occurrence	Au
13.	Barker Prospecting Syndicate Occurrence	Au
14.	Big Long Lac Occurrence	Au
15.	Birch Bay Occurrence	Au
16.	Brengold (Brenbar) Mine	Au
17.	Brennan-Kenty Occurrence	Au
18.	Brookbank Prospect	Au
19.	Buffalo-Beardmore Occurrence	Au
20.	Burrows Lake (Nakina Molybdenite) Prospect	Mo
21.	Bush Lake Gold Mines Occurrence	Au
22.	Camdeck Occurrence	Au



23.	Cameron-Picotte Gold Prospect	Au
24.	Canada Mines Syndicate Occurrence	Au
25.	Caramat Gold Mines Occurrence	Au, Cu, Ag
26.	Central Long Lac Occurrence	Au
27.	Chemalloy Occurrence	Mo, Au
28.	Chimo Gold Mines Occurrence	Cu, Au
29.	Chipman Lake Occurrence	Cu, Mo, Ag, Au, Zn, N
30.	Clear Lake Gold Mines Occurrence	Au
31.	Cline (Paulpic) Prospect	Au
32.	Coleman-Gray Prospect	Cu, Ni, Au
33.	Colter Township Occurrence	Au
34.	Coniagas Occurrence	Au
35.	Consolidated Louanna Mine	Au
36.	Copper Jim Prospect	Cu, Au, Ag
37.	Craskie-Vega Prospect	Au
38.	Crooked Green Creek Prospect	Cu, Au, Ag
39.	Cryderman Occurrence	Au
40.	Cryderman (O' Sullivan Lake) Occurrence	Au
41.	Currie Occurrence	Au
42.	Cyril Knight Prospecting Co. East Group Occurrence	Au
43.	Dajaty Occurrence	Au
44.	Dalton Occurrence	Au
45.	Dawson Occurrence	Au
46.	Devanney (Tash-Orn) Occurrence	Au
47.	Dik-Dik Mine	Au, Ag
48.	Dodds Occurrence	Au
49.	Dome Occurrence	Au

50.	Dougall Occurrence	Au
51.	Dubrex Occurrence	Au
52.	Dunlop Consolidated Mines Occurrence	Au
53.	Empire Contact (Gold Fields) Occurrence	Au
54.	Eva Lake Gold Mines Occurrence	Au
55.	Exploration Banque-Or (Chowder Lake) Occurrence	Au
56.	Foisey Occurrence	Au
57.	Fox (Ralph Lake) Occurrence	Au
58.	Golden Long Lac Syndicate Occurrence	Au
59.	Green Lake Mines (Chellew) Occurrence	Au
60.	Greenoaks Mine	Au, Ag
61.	Gwyn Beardmore Gold Mines Occurrence	Au
62.	Hard Rock Mine	Au, Ag
63.	Hol-Lac Gold Mines Occurrence	Au
64.	Hutchison Lake Mine	Au, Ag
65.	Irwin Occurrence	Au
66.	Jarvela Occurrence	Au
67.	Jellicoe Mine	Au, Ag
68.	Johnson Occurrence	Au, Ag, Cu, Pb, Zn
69.	Jorsco Prospect	Au, Ag, Cu
70.	K.L. Explorations (Cherbourgh-Knox) Occurrence	Au
71.	Keemle Gold Mines Occurrence	Au
72.	Kenogamisis Gold Mines Occurrence	Au
73.	Kenogamisis Prospect	Au
74.	Kenty Occurrence	Au, Mo
75.	Killeon Occurrence	Au
76.	King Dodds Occurrence	Au

77.	Kipper-Cameron Occurrence	Au
78.	Kipper Tashota Occurrence	Au, W
79.	Kipper Tashota Occurrence	Au, W
80.	Knapp-Hendrickson Occurrence	Au
81.	Lac Development Co. Occurrence	Au
82.	Lac-Teck Gold Mines Occurrence	Au
83.	Lafayette Longlac Occurrence	Au
84.	Lafayette Longlac Prospect	Au
85.	Lake Bearskin Prospecting Synd. Occurrence	Au
86.	Lake St. Marie Occurrence	Au
87.	Langmuir Long Lac Occurrence	Au
88.	Larson Occurrence	Au
89.	Lawrence McKirdy Occurrence	Au
90.	Leitch Mine	Au, Ag
91.	Little Long Lac Mine	Au, Ag
92.	Lofquist Occurrence	Au
93.	Long Lac Superior Occurrence	Au
94.	Long Lac Superior Occurrence	Au
95.	Longlac (Hayne) Occurrence	Mo, Cu
96.	Loudon, Daoust, McBurnie Occurrence	Au
97.	MacFarlane Long Lac Occurrence	Au
98.	Macjoe Sturgeon Occurrence	Au, Ag
99.	MacLeod-Cockshutt Gold Mine	Au, Ag
100.	Magnet Consolidated Mine	Au, Ag
101.	Maki Occurrence	Au
102.	Maloney Sturgeon Mine	Au, Ag
103.	Mathe Occurrence	Au

104.	Maudegascon Gold Mines Occurrence	Au
105.	McCall Occurrence	Cu, Au
106.	McFarlane-Manion Occurrence	Au, Ag, Pb, Zn
107.	McKenzie Occurrence	Au
108.	McLellan Long Lac Occurrence	Au
109.	McLellan Long Lac (Longacre) Prospect	Au
110.	Milestone Prospect	Au, Ag, Zn
111.	Missing Link Occurrence	Au
112.	Montmorr Occurrence	Au
113.	Montmorr Occurrence	Au
114.	Montmorr Occurrence	Au
115.	Mosher Long Lac Mine	Au, Ag
116.	Muriel Lake Occurrence	Cu, Ag, Au
117.	National Mines Occurrence	Au
118.	Newman (New Athena) Prospect	Cu, Ag, Au
119.	Nordic Sturgeon Occurrence	Au
120.	Northern Empire Mine	Au, Ag
121.	Oklend Occurrence	Au
122.	Oklend Occurrence	Au
123.	Oliver Severn Occurrence	Au
124.	Ontario Cryderman Occurrence	Au
125.	Partners Occurrence	Au
126.	Peddle Occurrence	Au, Ag
127.	Portage (Longacre) Long Lac Occurrence	Au
128.	Price-McLeod Occurrence	Au
129.	Ralph Lake (Blacksmith) Occurrence	Au
130.	Ralph Lake (Delbridge) Occurrence	Au

131.	Ralph Lake (Delbridge) Occurrence	Au
132.	Ralph Lake (Dominion) Occurrence	Au
133.	Roche Long Lac Occurrence	Au
134.	Sand River Gold Mine	Au, Ag
135.	Shields-Morrow Occurrence	Au
136.	Smith-Elliot Occurrence	Au
137.	Smith-Morrison (Pichette) Occurrence	Au
138.	Sogemines Development Co. (Zmudzinski) Occurrence	Au, Mo
139.	Solomons Pillars Prospect	Au
140.	Spooner Prospect	Au
141.	Springer Sturgeon Occurrence	Au
142.	Strathcona Occurrence	Au
143.	Sturgeon River Mine	Au, Ag
144.	Talmora Long Lac Mine	Au, Ag
145.	Tashota-Nipigon Mine	Au, Ag, Cu
146.	Theresa Gold Mine	Au, Ag
147.	Tom Johnson (Dorothea) Occurrence	Au
148.	Tom Montgomery Occurrence	Au
149.	Tombill Mine	Au, Ag
150.	Tombill Prospect	Au
151.	Tyson (Amorada) Prospect	Au
152.	Vanguard Long Lac Occurrence	Au
153.	Vega Occurrence	Au
154.	Walterson Occurrence	Au
155.	Ward-Morrow (Bellex) Occurrence	Au
156.	Wascanna Prospect	Au
157.	Watson Lake (Dajaty) Occurrence	Au

158.	Wells-Johnson Occurrence	Au
159.	Wenzoski Occurrence	Au
160.	West-Side Longlac Occurrence	Au
161.	Westman Occurrence	Au
162.	Wilkinson Lake Prospect	Au
163.	Windigo Peti Occurrence	Au
164.	Windigokan Sturgeon Occurrence	Au

CONVERSION FACTORS FOR MEASUREMENTS IN ONTARIO GEOLOGICAL SURVEY PUBLICATIONS

Conversion from SI to Imperial			Conversion from Imperial to SI		
SI Unit	*Multiplied by*	*Gives*	*Imperial Unit*	*Multiplied by*	*Gives*
		LENGTH			
1 mm	0.039 37	inches	1 inch	25.4	mm
1 cm	0.393 70	inches	1 inch	2.54	cm
1 m	3.280 84	feet	1 foot	0.304 8	m
1 m	0.049 709 7	chains	1 chain	20.116 8	m
1 km	0.621 371	miles (statute)	1 mile (statute)	1.609 344	km
		AREA			
1 cm^2	0.155 0	square inches	1 square inch	6.451 6	cm^2
1 m^2	10.763 9	square feet	1 square foot	0.092 903 04	m^2
1 km^2	0.386 10	square miles	1 square mile	2.589 988	km^2
1 ha	2.471 054	acres	1 acre	0.404 685 6	ha
		VOLUME			
1 cm^3	0.061 02	cubic inches	1 cubic inch	16.387 064	cm^3
1 m^3	35.314 7	cubic feet	1 cubic foot	0.028 316 85	m^3
1 m^3	1.308 0	cubic yards	1 cubic yard	0.764 555	m^3
		CAPACITY			
1 L	1.759 755	pints	1 pint	0.568 261	L
1 L	0.879 877	quarts	1 quart	1.136 522	L
1 L	0.219 969	gallons	1 gallon	4.546 090	L
		MASS			
1 g	0.035 273 96	ounces (avdp)	1 ounce (avdp)	28.349 523	g
1 g	0.032 150 75	ounces (troy)	1 ounce (troy)	31.103 476 8	g
1 kg	2.204 62	pounds (avdp)	1 pound (avdp)	0.453 592 37	kg
1 kg	0.001 102 3	tons (short)	1 ton (short)	907.184 74	kg
1 t	1.102 311	tons (short)	1 ton (short)	0.907 184 74	t
1 kg	0.000 984 21	tons (long)	1 ton (long)	1016.046 908 8	kg
1 t	0.984 206 5	tons (long)	1 ton (long)	1.016 046 908 8	t
		CONCENTRATION			
1 g/t	0.029 166 6	ounce (troy)/ ton (short)	1 ounce (troy)/ ton (short)	34.285 714 2	g/t
1 g/t	0.583 333 33	pennyweights/ ton (short)	1 pennyweight/ ton (short)	1.714 285 7	g/t

OTHER USEFUL CONVERSION FACTORS

	Multiplied by	
1 ounce (troy) per ton (short)	20.0	pennyweights per ton (short)
1 pennyweight per ton (short)	0.05	ounces (troy) per ton (short)

Note: Conversion factors which are in bold type are exact. The conversion factors have been taken from or have been derived from factors given in the Metric Practice Guide for the Canadian Mining and Metallurgical Industries, published by the Mining Association of Canada in co-operation with the Coal Association of Canada.

BEARDMORE-GERALDTON HISTORICAL RESEARCH PROJECT

LEGEND

■ Gold Mine (Past Producer) ✱ Property Description ● Gold/Mineral Occurrence

■ 1. Adair Occurrence Au,Ag
✱ 2. Adel Lake Occurrence Au,Cu
● 3. Adelaide (Neelin-Braggan) Occurrence Au
✱ 4. Agaura (Barnum-Green) Occurrence Au,Ag
● 5. Airways Occurrence Au
✱ 6. Anglo Beardmore Gold Mines Occurrence Au
● 7. Antler Gold Mines Occurrence Au
■ 8. Ateba Mines, Inc. Au
● 9. Au-Lac Mines Occurrence Au
✱ 10. Ballina Lake Occurrence Au
■ 11. Bankfield Mine Au
✱ 12. Banner Occurrence Au
● 13. Barker Prospecting Syndicate Occurrence Au
● 14. Big Long Lac Occurrence Au
● 15. Birch Bay Occurrence Au
■ 16. Brenbar Mine Au
● 17. Brennan-Kenty Occurrence Au
● 18. Brookbank Prospect Au
✱ 19. Buffalo-Beardmore Occurrence Au
● 20. Burrows Lake (Nakina Molybenite) Prospect Mo
✱ 21. Bush Lake Gold Mines Occurrence Au
● 22. Camdeck Occurrence Au
✱ 23. Cameron-Picotte Occurrence Au
● 24. Canada Mines Syndicate Occurrence Au
✱ 25. Caramat Gold Mines Occurrence Au
● 26. Central Long Lac Occurrence Au
● 27. Chemalloy Occurrence Mo,Au
● 28. Chimo Gold Mines Occurrence Cu,Au
✱ 29. Chipman Lake Occurrence Cu,Mo,Cu
● 30. Clear Lake Gold Mines Occurrence Au
● 31. Cline (Paulpic) Prospect Au
● 32. Coleman-Gray Prospect Cu,Ni,Au
● 33. Colter Township Occurrence Au
● 34. Cornelgas Occurrence Au
■ 35. Consolidated Louanna Mine Au
● 36. Copper Jim Prospect Cu,Au,Ag
● 37. Craskie-Vega prospect Au
● 38. Crooked Green Creek Prospect Cu,Au,Ag
● 39. Cryderman Occurrence Au
✱ 40. Cryderman (O'Sullivan Lake) Occurrence Au
✱ 41. Currie Occurrence Au
✱ 42. Cyril Knight Prospecting Occurrence Au
● 43. Dajaty Occurrence Au
● 44. Dalton Occurrence Au
✱ 45. Dawson Occurrence Au
● 46. Devanney (Tash-Orn) Occurrence Au
■ 47. Dik-Dik Mine Au,Ag
● 48. Dodds Occurrence Au
✱ 49. Dome Occurrence Au
● 50. Dougall Occurrence Au
● 51. Dubrex Occurrence Au
● 52. Dunlop Consolidated Mines Occurrence Au
● 53. Empire Contact (Gold Fields) Occurrence Au
● 54. Eva Lake Gold Mines Occurrence Au
● 55. Exploration Banque-Or Occurrence Au
✱ 56. Foley Occurrence Au,Cu
● 57. Fox (Ralph Lake) Occurrence Au
● 58. Golden Long Lac Syndicate Occurrence Au
● 59. Green Lake Mines (Chelliew) Occurrence Au
● 60. Greenoaks Mine Au,Ag
● 61. Gyyn Beardmore Occurrence Au
■ 62. Hardrock Mine Au,Ag
✱ 63. Hol-Lac Gold Mines Occurrence Au
■ 64. Hutchison Lake Mine Au,Ag
✱ 65. Irwin Occurrence Au
● 66. Jarvella Occurrence Au
■ 67. Jellico Mine Au,Ag
✱ 68. Johnson Occurrence Au
● 69. Jorsco Prospect Au,Ag,Cu
● 70. K.L.Explorations (Cherbourgh-Knox) Occurrence Au
● 71. Keemle Gold Mines Occurrence Au
■ 72. Kenogamisis Gold Mines Occurrence Au
● 73. Kenogamisis Prospect Au
● 74. Kenty Occurrence Au,Mo
● 75. Killeon Occurrence Au
● 76. King Dodds Occurrence Au
● 77. Kipper-Cameron Occurrence Au
● 78. Kipper-Tashota Occurrence Au,W
● 79. Kipper-Tashota Occurrence Au,W
● 80. Knapp-Hendrickson Occurrence Au
● 81. Lac Development Co. Occurrence Au
✱ 82. Lac Teck Gold Mines Occurrence Au
● 83. Lafayette Longlac Occurrence Au
● 84. Lafayette Longlac Prospect Au
✱ 85. Lake Bearskin Prospecting Occurrence Au
● 86. Lake St. Marie Occurrence Au
● 87. Langmuir Long Lac Occurrence Au
✱ 88. Larson Occurrence Au
● 89. Lawrence-McKirdy Occurrence Au
■ 90. Leitch Gold Mine Au,Ag
■ 91. Little Long Lac Mine Au,Ag
● 92. Lofquist Occurrence Au
✱ 93. Longlac Superior Occurrence Au
● 94. Long Lac Superior Occurrence Au
● 95. Longlac (Hayne) Occurrence Mo,Cu
● 96. Loudon(Daoust-McBurnie Occurrence Au
● 97. MacFarlane Long Lac Occurrence Au
✱ 98. Macjoe Sturgeon Occurrence Au
■ 99. MacLeod-Cockshutt Gold Mine Au,Ag
■ 100. Magnet Consolidated Mine Au,Ag
● 101. Maki Occurrence Au
■ 102. Maloney Sturgeon Mine Au,Ag
✱ 103. Mathe Occurrence Au
● 104. Maudegascon Gold Mines Occurrence Au
● 105. McCall Occurrence Cu,Au
✱ 106. McFarlane-Manion Occurrence Au
● 107. McKenzie Occurrence Au
✱ 108. McLellan Long Lac Occurrence Au
● 109. McLellan Long Lac (Longacre) Prospect Au
● 110. Milestone Prospect Au,Ag,Zn
✱ 111. Missing Link Occurrence Au
● 112. Montmorr Occurrence Au
● 113. Montmorr Occurrence Au
● 114. Montmorr Occurrence Au
■ 115. Mosher Long Lac Mine Au,Ag
● 116. Muriel Lake Occurrence Cu,Ag,Au
● 117. National Mines Occurrence Au
● 118. Newman (New Athona) Prospect Cu,Ag,Au
✱ 119. Nordic Sturgeon Occurrence Au
■ 120. Northern Empire Mine Au,Ag
● 121. Okland Occurrence Au
● 122. Okland Occurrence Au
● 123. Oliver-Severn Occurrence Au
● 124. Ontario Cryderman Occurrence Au
● 125. Partners Occurrence Au
✱ 126. Peddle Occurrence Au
● 127. Portage (Longacre) Longlac Occurrence Au
● 128. Price-McLeod Occurrence Au
● 129. Ralph Lake (Blacksmith) Occurrence Au
● 130. Ralph Lake (Debridge) Occurrence Au
● 131. Ralph Lake (Delbridge) Occurrence Au
● 132. Ralph Lake (Dominion) Occurrence Au
● 133. Roche Long Lac Occurrence Au
■ 134. Sand River Gold Mine Au,Ag
● 135. Shields-Morrow Occurrence Au
● 136. Smith-Elliot Occurrence Au
● 137. Smith-Morrison (Richette) Occurrence Au
● 138. Sogemines (Zmudzinski) Occurrence Au,Mo
● 139. Solomons Pillars Prospect Au
● 140. Spooner Prospect Au
● 141. Springer Sturgeon Occurrence Au
● 142. Strathcona Occurrence Au
■ 143. Sturgeon River Mine Au,Ag
■ 144. Talmora Longlac Mine Au,Ag
■ 145. Tashota-Nipigon Mine Au,Ag,Cu
● 146. Thomas Mine Au,Ag
● 147. Tom Johnson (Dorothea) Occurrence Au
● 148. Tom Montgomery Occurrence Au
■ 149. Tombill Mine Au,Ag
● 150. Tombill Prospect Au
● 151. Tyson (Amorada) Prospect Au
● 152. Vanguard Long Lac Occurrence Au
● 153. Vega Occurrence Au
● 154. Walterson Occurrence Au
● 155. Ward-Morrow (Belleo) Occurrence Au
● 156. Wascanna Prospect Au
● 157. Watson Lake (Dajaty) Occurrence Au
● 158. Wells-Johnson Occurrence Au
● 159. Wenzoski Occurrence Au
● 160. West-Side Longlac Occurrence Au
● 161. Westman Occurrence Au
● 162. Wilkinson Lake Prospect Au
● 163. Windigo Pete Occurrence Au
● 164. Windigokan Sturgeon Occurrence Au

Scale 1:253,440 or 1 Inch to 4 Miles