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Sage, R.P., Breaks F.W., Troup, W.R., Jordan G.W. 1973. Geological series, Operation Pickle Lake, Achapi Lake-Misehkow River, District of Kenora (Patricia Portion); Ontario Division of Mines, Preliminary Map P.809, scale 1:126 720.

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 $\frac{\text{Location:}}{52^{\circ}30^{\circ}\text{N, and by Longitudes }89^{\circ}00^{\circ}\text{ and }92^{\circ}00^{\circ}\text{W, comprising approximately }13,500^{\circ}$ square miles. Mapping was conducted by helicopter-supported reconnaissance and ground traversing in selected areas. Outcrop density is generally sparse except in the southwestern part of the map-area. The project area was previously mapped under the Federal-Provincial "Roads to Resources" program (Carruthers 1961; Emslie 1961,1962; Jackson 1961).

General Geology: Parts of several subprovinces of the Superior Province are covered by the map-area. The northern part lies within the God's Lake Subprovince and incorporates the following, generally southeast-striking, metavolcanic-metasedimentary belts: (1) Upper Windigo Lake Belt, (2) Horseshoe Lake Belt, (3) Forester Lake Belt, and (4) WigwascenceLake Belt.

The southern part of the project area lies predominantly within the Uchi Lake Subprovince, Several east-west- to northeast-striking metavolcanicmetasedimentary belts are notable here: (5) Pashkokogan Lake-Misehkow River Belt, (6) Snowflake Lake Belt, (7) Osnaburgh Lake-Pickle Lake Belt, (8) Dempster ake-Pickle Lake Belt, (9) Pickle Lake Belt, (10) Meen Lake-Dempster Lake Belt. (11) Bamaji Lake-Jacknife Lake Belt, (12) Lang Lake Belt, (13) Zionz Lake Belt, (14) Jackpine Lake Area, and (15) Lake St. Joseph Belt.

In addition, the Otoskwin River mafic pluton (16) was investigated. Many of the boundaries between the above belts are mutually coalescing and hence are arbitrary, selected only for mapping convenience. Extremities of the belts have been previously indicated (Ayres et al. 1970). Geological and boundary modifications have been made in most of the metavolcanic-metasedimentary belts of the Uchi Lake Subprovince. Along the southern margin of the map-area, particularly in the southeastern part of the project area, a small part of the English River

Upper Windigo Lake Belt (1): The Upper Windigo Lake Belt is traceable 15 miles along the Windigo River through and north of Upper Windigo Lake. Except for minor outcrops of amphibolite on Nango Lake, the eastern and southeastern parts of the belt are inferred from aeromagnetic data due to pervasive cover of swamp and glacial material. Mafic metavolcanics predominate throughout the belt but

a thin conglomerate-greywacke unit lies in the centre of the belt. A narrow, isolated, faulted segment of the Upper Windigo Lake Belt is found to the west at nearby Shinbone Lake and is comprised of amphibolite and conglo-

merate-greywacke metasediments. Mapping of this area verified the work of Economic Geology: This belt has received very little exploration attention.

Prospecting possibilities have been previously discussed by Satterly (1939). Geophysical attention may be warranted in this belt especially between Nango and

Sasiginaga Lakes because of an almost total absence of outcrop. Horseshoe Lake Belt (2): This belt is traceable for approximately 20 miles from just east of Sasiginaga Lake through the east arm of Horseshoe Lake and along Mapamisk Creek where it is truncated by a northwesterly trending fault. Best exposures are found along the eastern arm of Horseshoe Lake where nearly vertically dipping bedded quartzites, arkose, greywacke, and chloritic schist orm a continuous unit along the southern shore. Along the northern shore of the eastern arm, sheared, in many places pillowed, chloritic intermediate metaolcanics occur in fault contact with bordering granitic rocks. To the west and south of Horseshoe Lake a large pluton of metagabbro has engulfed much of the etavolcanic-metasedimentary sequence. Exposures in the eastern part of the belt are very poor, with limited exposures of amphibolite along Wapamisk Creek. ron formation also occurs in this area as indicated from aeromagnetic data and

by diamond drilling (D.A. Sawyer, personal communication, Great Plains

Development Company of Canada Limited, 1972).

Economic Geology: Regional prospecting for gold and silver was undertaken by Rio Tinto Canadian Exploration Limited during the early 1960s in the Horseshoe Lake Belt as well as the Forester Lake Belt. Several gold-silver occurrences within the shear zones were investigated at this time. A massive pyritepyrrhotite zone, about 27 feet in total thickness, located at the southwestern end of Horseshoe Lake, occurs between chloritic pillowed mafic metavolcanics and elsic lapilli-tuff units. One shallow hole drilled by Rio Tinto in 1962 sclosed only minor 'values' in gold, silver, and copper (unpublished file, Rio Tinto Canadian Exploration Limited, Toronto). Great Plains Development Company of Canada Limited presently (1972) controls a large block of claims in the Horseshoe Lake Belt. A grab sample of massive, medium-grained metagabbro ocated near the southwestern end of Horseshoe Lake and containing disseminated grains of chalcopyrite was submitted to the Mineral Research Branch, Ontario division of Mines, for analysis and was found to contain 0.2 percent copper. Anomalously high copper 'values' from this pluton were also recorded by the Geological Survey of Canada as a result of a recommaissance lithogeochemical survey (Carruthers and Holman 1964).

The Forester Lake Belt (3): This belt represents a southern extension of the North Caribou Belt. Exposures are generally limited, and confined to a great extent to Forester, Boyce, Sage, and Neawagank Lakes areas. Mafic metavolcanics in the form of stretched pillowed and massive to gneissic amphibolite represent the dominant rock types. Many narrow quartz veins and lenses commonly occur throughout. Several occurrences of intermediate volcanic tuff were also noted. A quartz porphyry dike of variable width (2 to 30 feet) was observed north of Forester Lake and along the creek draining into the eastern end of Sage Lake. Metasediments form a continuous unit along the northern boundary of the belt. East of Neawagank Lake the limits of the belt are interpreted from aeromagnetic data (ODM-GSC Aeromagnetic Maps 937G, 947G) as widespread overburden

Economic Geology: Earliest prospecting centered around a staking rush in the early 1940s precipitated by the discovery of favourable gold 'values' within an arsenopyrite mineralized shear zone just east of Sage Lake (Resident Geologist's Files, Ministry of Natural Resources, Red Lake). The numerous quartz veins Canadian Exploration Limited held claim groups at the western ends of both Forester and Sage Lakes in 19621. Recently very little exploration attention has

Wigwascence Lake Belt (4): This belt is thought to be a deeply eroded section of a former metavolcanic belt and largely consists of isolated relict blocks of amphibolites within granitic mobilizate. Only one east-west-trending narrow continuous band of amphibolite was noted; this band is mainly outside of the

Pashkokogan Lake-Misehkow River Belt (5): This belt is composed predominantly of mafic metavolcanics, which display primary structures in many places. Local units of intercalated metasediments occur and near the northern margin, aeromagnetic data (CDM-GSC Aeromagnetic Maps 9226, 9326) in corroboration with limited exposures, indicate the presence of iron formation. From aeromagnetic interpretation and scattered outcrop data a felsic to intermediate metavolcanic unit is thought to exist south of the Misehkow River. This unit is about 3 miles wide where it crosses the Misehkow River south of Lowry and Woodilee Lakes. To the west the felsic metavolcanics continue into the Pashkokogan Lake area where previous mapping by Goodwin (1965) has documented similar rocks Isolated felsic volcanic outcrops display a well-defined pyroclastic structure. Metamorphic grade of the metavolcanics and metasediments increases from upper greenschist facies to lower amphibolite facies towards Pashkokogan Lake. xposures of the Pickle Lake diabase dike (200-300 feet wide) occur at Atikokiwan Lake and Coles Lake.

Outcrop data indicates that the Pashkokogan Lake-Misehkow River Belt does not connect with aeromagnetically inferred metavolcanics in the Snowflake Lake area. From limited pillow top data it is postulated that the belt is dominated by a major synclinal structure. To the south, rocks of this belt are in possible sheared contact with metasediments of the English River Subprovince. Economic Geology: An iron prospect having a calculated tonnage of 71,160,000 tons to the 500-foot depth and averaging 21.0 percent iron has recently been outlined by Sturdy Mines Limited in the Misehkow River area1. Considerable diamond drilling has been carried out in the Lowry Lake-Pashkokogan Lake area mainly by Selco Exploration Company Limited and Canadian

Snowflake Lake Belt (6): The shape and limits of this belt have been interpreted from aeromagnetic data (ODM-GSC Aeromagnetic Map 943G). Only one outcrop was located in this belt. This exposure is on the Albany River and consists of massive mafic metavolcanics, a thin felsic to intermediate tuff unlit, and a 30-foot wide unit of banded iron formation.

Economic Geology: A 30-foot wide composite oxide-sulphide facies iron formation is well exposed along the Albany River within the Snowflake Lake belt. A 1-inch to 6-inch massive pyrite zone is present along the base of the iron formation. A composite sample of the exide factor iron formation was submitted for partial analysis to the Mineral Research Branch of the Ontario Division of Mines and was found to contain 22.8 percent Fe, 60.7 percent SiO2, 0.16 percent P2O5, 0.22 percent S, and trace amounts of gold. Qualitative emission spectrographic determinations disclosed no significant concentrations of any important trace element in samples of the oxide or sulphide facies iron formation.

Osnaburgh Lake-Pickle Lake Belt (7): This belt merges to the south with the Lake St. Joseph Belt and to the north with the Pickle Lake Belt. Pillowed amphibolitized mafic metavolcanics constitute the predominant lithology. pillow structures generally are in such a deformed state that structural interpretation of the belt is difficult. At Osnaburth House exposures of isolated pillow breccia with interpillow bombs more felsic in composition, are apparent. Along Highway 599, 80 miles north of Savant Lake (south of the map-area) a spectacular exposure of volcanic breccia with fine-grained felsic fragments in a medium- to coarse-grained mafic matrix is present. Several small isolated coarse-grained metagabbroic masses are also present.

Minor, intercalated, in many places interdigitating metasediments occur between the pillowed flow units especially in the Osnaburgh House area. At the water-level control dam, cast of Osnaburgh House, along the eastern shore of Lake St. Joseph, exposures of well developed andalusite-sillimanite porphyroblasts are noteworthy.

Economic Geology: Very few sulphide mineral occurrences have been documented within this belt and prospecting has generally been minimal although UMEX (Union Miniere Explorations and Mining Corporation Limited) has recently been

active in the Couheemoskog Lake area1.

Dempster Lake-Pickle Lake Belt (8): This belt consists of two units of metavolcanics and metasediments separated by granitic rocks south of Ochig Lake. Towards the east, this belt merges with the Osnaburgh-Pickle Lake Belt and to the west it coalesces with the Meen Lake-Dempster Lake Belt, Mafic metavolcanics predominate with local intercalations of metasediments of probable greywacke composition. Metasedimentary units consisting of biotite-quartzfeldspar schist occur on Carpenter Lake, Annimwash Lake, Wincott-Kasagiminnis Lakes, and Whitmore Lake. A 250-foot thick conglomerate unit occurs on Wincott Lake. A granitic pluton has been delineated on Duffell Lake. Because of poor exposure, the extent and shape of this belt is, to a large degree, based on aeromagnetic data (ODM-GSC Aeromagnetic Maps 913G, 923G). Stratigraphic

Economic Geology: Known sulphide mineral occurrences are few. Near Bancroft Lake, the Koval-Ohman gold prospect was investigated during 1953-1954 by Hasaga Gold Mines Limited. Eighty-seven drill holes, totalling 20,885 feet, outlined 149,000 tons averaging 0.19 ounces gold per ton and 41,000 tons averaging 0.14 ounces gold per ton1. No development has since taken place.

information is insufficient to permit a meaningful structural interpretation.

Pickle Lake Belt (9): The Pickle Lake Belt is characteristically ramiform consisting of a number of branches and lobes of metavolcanics of predominantly mafic composition. One branch extends east of the former Pickle Crow Mine site to the First and Second Loon Lakes and gradually merges eastward with a gmatitic zone. A second branch of the metavolcanics extends north to July Falls and a third extends north of Tarp Lake. To the south the Pickle Lake Belt merges with the Osnaburgh Lake-Pickle Lake Belt. Southwesterly it appears to taper gradually, and is probably connected with metavolcanics southeast of and contorted banded iron formation are widespread near the Pickle Crow Mine

At July Falls on the Kawinogans River a mafic intrusive stock of gabbroquartz diorite is notable. Several small masses of ultramafic rocks have been delineated, largely by diamond drilling, in the Kapkichi Lake area by Kapkichi Nickel Mines Limited and by UMEX. Mafic metavolcanics, minor metagabbro, and a thin unit of felsic to intermediate metavolcanics occur at the southern end of Kawinogans Lake. Possibly the latter is continuous with a felsic sequence mapped in the Dempster Lake area.

Economic Geology: From 1935 until its closing in 1966, the Pickle Crow Gold Mine produced 1,446,214 ounces of gold and 168,757 ounces of silver for a total value of \$52,376,169 (Ferguson et al. 1971, p.202-203). From 1935 to 1951 the nearby Central Patricia Gold Mine produced a total of 621,806 ounces of gold and 58,349 ounces of silver for a value of \$22,920,236 (Ferguson et al. 1971 p.200-202). An important copper-nickel discovery, north of Kapkichi Lake, was recently announced by UMEX (Northern Miner 1971a) percipitating a large staking rush (Northern Miner 1971b). Approximately twelve million tons of potential ore to a vertical depth of 1,500 feet have thus far been substantiated averaging 1.68 percent copper and 0.18 percent nickel (C. Bowdidge, UMEX Corp., personal communication, 1972). A three-compartment vertical shaft is presently being excavated in order to more fully evaluate the orebody at depth. Previously, UMEX had outlined, by ground geophysical surveys and diamond drilling several lenticular ultramafic masses situated along Kapkichi Lake, homogeneously mineralized with disseminated pyrrhotite, chalcopyrite, cubanite, and pentlandite. The largest mass (measures 2,000 feet by 1,000 feet and 800 feet in thickness) grades on the average 0.45 percent copper and 0.12 percent nickel (T. Verbeek, UMEX, personal communication, 1972).

Meen Lake-Dempster Lake Belt (10): The rocks of this belt are mainly foliated to massive mafic metavolcanics, which locally display elongated pillows and pyroclastic zones. The belt progressively tapers and becomes increasingly migmatitic west of Meen Lake. To the east it coalesces with the Bamaji Lake-Jacknife Lake Belt (11) and with the Dempster Lake-Pickle Lake Belt (8). Very small areas of felsic to intermediate metavolcanics range compositionally from siliceous rhyolite to rocks composed primarily of saussuritized feldspar and range texturally from massive rocks to pyroclastic breccias, with ash and lapilli-tuff most common. On the basis of aeromagnetic data (ODM-GSC Aeromagnetic Maps 903G, 904G, 913G, 914G) and scattered outcrops, a unit of felsic to intermediate metavolcanics is interpreted as extending from Meen Lake to Kaminiskag Lake. Metasediments consisting mainly of conglomerate and greywacke occur in the southern part of the belt. A particularly spectacular exposure of

Iron formation occurs within this belt. The best exposure is situated on the north shore of Jacknife Lake and consists of alternating bands of chert and metagreywacke, with low magnetite contents concentrated in the chert bands. One occurrence of ultramafic rock was mapped on a small island in an unnamed lake between Jacknife and Kaminiskag Lakes. Southwest of Relyea Lake a massive quartz-feldspar porphyry unit is thought to be intrusive. Granitic stocks occur on Graniteboss Lake and Kawashe Lake.

conglomerate occurs on Billett Lake.

be an isoclinally folded syncline.

belt and 4 miles west of Senior Lake.

From limited pillow top data and graded bedding this belt is postulated to

Economic Geology: Very little exploration has been recorded in this belt. orsco Explorations Limited investigated iron formation on Meen Lake in 19601. Presently UMEX and Cochenour Willans Gold Mines Limited are investigating the economic possibilities in the general area.

Bamaji Lake-Jacknife Lake Belt (11): This east-west- to northeast-trending belt is connected with the Lake St. Joseph Belt at Johnston Bay to the south and the Meen Lake-Dempster Lake Belt to the north. It is not continuous with a narrow (less than 1 mile wide) extension of the Birch-Uchi Lake Belt to the west. The boundaries of the belt are only slightly modified from those shown by Emslie (1961). The area had also been previously mapped by Harding (1935). The belt consists predominantly of mafic to intermediate metavolcanics. Metasediments, predominantly conglomerate, are locally concentrated along the

southern margin of the belt grading westward into migmatites within the Bamajilackstone Lake granitic batholith. A prominant metasedimentary unit consisting f greywacke and arkose is found north of Fry Lake and extends northward close to the margins of the belt. Felsic to intermediate pyroclastics occur just north of Fry Lake and as far

westward as Kaginot Lake. Similar pyroclastics are also found close to the southern margin of the belt on Bamaji Lake. Small bodies of metagabbro occur locally along the southern margins of the

A large feldspar porphyry body approximately 2 miles by 1/2 mile in dimensions is located in the southeastern corner of Fry Lake. Foliations within the belt trend east-west, are steeply dipping, and generally parallel the bedding. North of Fry Lake the foliations and bedding

The extension of the Birch-Uchi Lake Belt and the Bamaji-Jacknife Lake Belt are separated by granitic rocks in the vicinity of Senior Lake. Foliation data suggests that the Birch-Uchi Lake Belt extension is a syncline plunging west and that the Bamaji-Jacknife Lake Belt is a syncline plunging east. Narrow quartz and(or) plagioclase porphyry sills, possibly related to the batholith north of the belt, occur parallel to foliation. A prominant zone of shearing trending east-west through North Bamaji-

Pashkokogan Pashkokogan Dia John Dad

Shinagmabin

ainly massive porphyritic

Rockmere-Moosetegon Lakes has resulted in extensive cataclasis of the felsic intrusion centered in North Bamaji Lake. Economic Geology: The Williams-Connell-Stirrett gold prospect of 1934 (Laird 1930; Harding 1935) initially promoted interest in the Bamaji belt area.

Recently, Selco Exploration Company Limited and Cochenour Willams Gold Mines Limited have been undertaking a joint project to investigate more fully the area's economic potential. An important feature revealed by the field mapping is the presence of east-west-trending quartz vein-sets containing molybdenite mineralization with subordinate amounts of pyrite and chalcopyrite pervasively associated with a high level trondhjemitic pluton in the North Bamaji-Senior akes area. Cochenour Willans Gold Mines Limited in 1966 investigated the Loon molybdenite prospect in the same general area. Twelve diamond drill holes totalling 2.576 feet disclosed largely subeconomic mineralization (Johnston 1968). Best analysis indicated 3.62 percent molybdenum over 2.6 feet (Resident Geologist's files, Ministry of Natural Resources, Kenora). Molybdenite occurring association with east-west-trending pegmatitic veins occurs east of Fawthrop Lake and was investigated in 1969 by Madsen Red Lake Gold Mines Limited 1.

Lang Lake Belt (12): The Lang Lake Belt was not mapped during Operation Pickle ake and data concerning this belt have been compiled from previous mapping by Fenwick (1970,1971) and Fenwick and Srivastava (1972). The dominant rock type is mafic metavolcanics locally pillowed or tuffaceous, with local accumulations of felsic pyroclastic rocks being present north of Shonia Lake and east and north of McVicar Lake. Thin interbeds of metasedi-

merate, greywacke, argillite, iron formation, and their derived schists and Iron formation is of widespread distribution in the area, its presence being noted both from outcrop data and linear magnetic highs on aeromagnetic maps of the area (ODM-GSC Aeromagnetic Maps 894G, 904G).

An intrusion comprising gabbro, diorite, anorthosite, and anorthositic

gabbro extends from the eastern shore of Sor Lake to 3 miles east of McVicar

ments are common in the western part of the belt and become a major if not

dominant rock type in the eastern part. The metasediments consist of conglo-

A quartz-feldspar porphyry intrusion is located between Shonia Lake and McVicar Lake and, along the southern margin of the lobe of metavolcanics 1-1/2 miles south of McVicar Lake, a feldspar porphyry unit approximately 1,000 feet in width was located during the present survey. An eastward-plunging syncline has been interpreted largely from pillow-top

Economic Geology: Discovery of gold in 1928 on the Smith-Watson group first served to create interest in this belt (Laird 1930). Numerous additional discoveries of sulphide mineralization have stimulated a surge of mining exploration activity in recent years. Extensive low grade copper-molybdenite mineralization has been recently outlined by the Hanna Mining Company in the Lang Lake area. Interesting massive to disseminated chalcopyrite-pyrrhotite mineralization within a porphyritic metagabbro pluton occurs at a sheared contact with mafic metavolcanics west of McVicar Lake. A number of mining groups have investigated this prospect, the most recent being New Jersey Zinc Explorations Company (Canada) Limited1.

Zionz Lake Belt (13): The Zionz Lake Belt is the northeastern extension of the Birch Lake-Uchi Lake Belt. Within the map-area the belt consists predominantly of foliated to massive amphibolite of mafic volcanic origin. Along the southeastern margin of Zionz Lake a thin band (50-200 feet wide) of felsic metavolcanics can be found. On the northeastern margin of Zionz Lake possible metasediments of greywacke composition occur. Within the centre of the belt and occupying most of Zionz Lake is a massive, locally porphyritic, granitic pluton. East of Zionz Lake isolated blocks of migmatized amphibolite suggest the possibility that the Zionz Lake Belt was once connected to the Meen Lake-

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chemical work on a copper-nickel showing on the eastern shore of Zionz Lake in Jackpine Lake Area (14): An arcuate unit of amphibolite, of probable mafic volcanic origin, occurs east of Jackpine Lake. A concordant unit of highly metamorphosed felsic volcanics occurs within the amphibolite. Locally the volcanics are contorted and highly injected with granitic material. Fine- to medium-grained, gneissic, saccharoidal granodiorite occurs in both the convex

Economic Geology: Very little exploration has been recorded in this belt. Fort Reliance Minerals Limited carried out trenching, geological mapping, and geo-

and concave side of the amphibolite unit. Lake St. Joseph Belt (15): The geology of this belt has been previously documented by Clifford (1969) and by Goodwin (1965). Field mapping confirmed the general geology and structure although numerous local disparities in the location and naming of rock units were apparent. The metamorphic grade of the belt appears to increase towards Osnaburgh Lake.

Economic Geology: The main interest has centered around the presence of iron formation. The presence of a large, potentially important iron deposit has been substantiated by Steep Rock Iron Mines Limited in the Soules Bay area on Lake St. Joseph, Approximately 683 million tons varying between 22.2 percent and 23.8 percent soluble iron have been indicated to a depth of 500 feet within the preliminary open-pit designs (Taylor et al. 1972). Otoskwin River Mafic Pluton (16): The Otoskwin River mafic pluton consists of massive metadiorite or metagabbro. Locally in the centre of the mass a noticea-ble increase in the biotite content occurs. Accessory magnetite in amounts up

to 10 percent is common throughout the body.

East along the Otoskwin River a thin zone of migmatized amphibolite. possibly of mafic volcanic origin, cuts across the river. English River Subprovince (17): Best exposures of English River Gneiss Beltmetasediments are found in the southeastern corner of the project area. Medium- to fine-grained, foliated to gneissic, biotite-quartz-plagioclase ± garnet rock are typical. In a very few places, sedimentary bedding is locally preserved, as on the western shore of Murrell Lake. Ubiquitous white pegmatitic masses invade the metasediments and form at least 25 percent of the outcrops. Economic Geology: A salient feature of the English River Gneiss Belt in this region is the abundance of iron formation in proximity to the regionally curvate contact with the Uchi Lake Subprovince to the north. The iron formation commonly

consists of alternating bands of magnetite and greywacke. Three major aeromagnetically distinct iron formation units are evident (ODM-GSC Aeromagnetic Maps

important iron formation during the past 12 years especially at Heart Attack Lake,

932G. 942G). Exploration attention has been given to virtually all of the

Beavis Lake, and August Lake, most notably by The Algoma Steel Corporation

¹Assessment Files Research Office, Ontario Division of Mines, Toronto.

Limited (Resident Geologist's Files, Ministry of Natural Resources, Kenora).

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Monmonawson

/Finton

Au. Ag. po. py cp. gn. shee No. 2 Shaft, Pickle Gold Au, po,py, shee, No. 3 Shaft, po, py, gf (D)/ PONSFORD py, asp, cp, Ag Au, asp Au, Ag, py, cp, asp, sp, gn, Albany Shaft, Pickle Crow Gold Mines Ltd.

Pickle Au, Ag, po, py, asp, sp, cp, gn, shee, pickle Crow Gold Mines Ltd. Pickle Au O No.1 Shaft & No.4 Au py,po, cp po,cp,pent (D) py,po,cp(D) po,py, cp(D) Pickle Crow Gold Mines Ltd. Cu, Ni,cp,po,pent, mag,il,Pd,Pt,Ag(D) A po, py, cp Po, Py, ▲ (D) py,po,cp(D) Central Patri Au, asp, py, po, cp old Mines Ltd., No. 2 operation po, pent, cp, cn, mag (D) A/po,py(D) CONNELL Mc CULLAGH po,cp,mag,py(D) o, mag, py, (D) ∠ o,mag,cp, IF(D) ▲po.cp.py,mag (D) mag,po,py,IF(D) Inset Map Showing Mineral Occurrences in the Pickle Lake Area



DIVISION OF MINES HONOURABLE LEO BERNIER, Minister of Natural Resources

G.A.Jewett, Executive Director, Division of Mines E.G.Pye, Director, Geological Branch PRELIMINARY MAP P.809 GEOLOGICAL SERIES

W. Q. MACNEE, Deputy Minister of Natural Resources

OPERATION PICKLE LAKE ACHAPI LAKE - MISEHKOW RIVER

DISTRICTS OF KENORA (PATRICIA PORTION) AND THUNDER BAY Scale I inch to 2 miles NIS Reference: 52 0, 52 P

ODM-GSC Acromagnetic Maps: 922G, 923G, 924G, 932G, 933G, 934G, 942G, 943G, 944G ODM Geological Compilation Series Maps: 2094, 2095, 2096

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QUATERNAR PLEISTOGENE AND RECENT Till, clay, sand, gravel

MAFIC INTRUSIVE ROCKS Dike Rocks 9 Unsubdivided 9a Diabase

8 Unsubdivided 1,1 8a Diorite, gabbro 8b Anorthosite, gabbroic anorthosite Intrusive Contact

FELSIC INTRUSIVE AND METAMORPHIC ROCKSd,f d Porphyritic or porphyroblastic 7e Biotite and biotite-hornblunde trondhjemite to quartz 7f Hornblende and hornblende-biotite trondhjemite to quartz 7g Hornblende and hornblende-biotite granite

h Biotite and biotite-hornblende granite i Syenitic rocks 7j Hornblende and hornblende-biotite granodiorite to quartz 7k Granitic pegmatite and aplite 71 Hornblende and hornblende-biotite diorite 7n Fine- to medium-grained, gneissic, saccharoidal granodiorite Intrusive or Gradational Contact

a Biotite-quartz-feldspar gneiss (metasedimentary migmatite >25 percent granitic material) 6b Hornblende-feldspar quartz gneiss (metavolcanic migmatite >25 percent material) EARLY FELSIC TO INTERMEDIATE INTRUSIVE ROCKSd 5 Unsubdividedi,1 5a Quartz-feldspar porphyry 5b Feldspar porphyry

5d Fine-grained massive to foliated, equigranular to porphyritic trondhjemite to dacite MAFIC TO ULTRAMAFIC ROCKS 4 Unsubdivided1 4a Metagabbro 4b Metadiorite to quartz diorite 4c Anorthositic gabbro, gabbroic anorthosite, anorthosite 4d Ultramafic rocks and their serpentinized equivalents

Ba Quartzite, arkose, greywacke Shale, slate, argillite, siltstone 3d Biotite-quartz-feldspar schist and gneiss (with minor hornblende and sericite) 3e Migmatized metasediments (10-25 percent granitic material) Garnetiferous metasediments g Staurolite-bearing metasediments h Sillimanite-bearing metasediments 3i Andalusite-bearing metasediments 3j Biotite-sericite schist

Intrusive Contact

METAVOLCANICSd, j FELSIC TO INTERMEDIATE METAVOLCANICS 2a Rhyolite to dacite 2b Tuff and lapilli-tuff c Agglomerate, breccia 2d Porphyritic flow, quartz-feldspar porphyry IF Iron Formation

IF Iron Formation

IF Iron Formation

MAFIG TO INTERMEDIATE METAVOLCANICS^d, j la Basalt to andesite, massive to foliated b Basalt to andesite, pillowed lc Maric tuff, agglomerate Metadiabase (coarse-grained flows or intrusions) 1F Migmatized mafic metavolcanics (10-25 percent granitic lg Variolitic basalt to andesite lj Porphyritic basalt to andesite, foliated and(or) massive

a. The letter "G" preceeding a rock unit number, for example "G1" indicates interpretation is based on geophysical data only. b. The letter "C" preceeding a rock unit number, for example "C1" indicates that the outcrop position and identification has been compiled from published and unpublished data, assessment files, or outcrop maps made available to the project by several exploration companies; the outcrops were not examined.

c. The letter "D" preceeding a rock unit number, for example "D1" indicates that the lithology has been compiled from drill log data from assessment files, or drill logs made available to the project by several. exploration companies; the cores were not examined. Subdivisions of major rock units do not indicate age relations. e. This is basically a field legend and may be changed as a result of subsequent laboratory investigations. f. Outcrops in unit 7 are coded with two letters, one indicating texture, and the other rock type; e.g. 7bi describes a foliated syenitic rock. h. The contacts between predominantly granitic and predominantly migmatitic terrains are based on geophysical data, therefore outcrops of granitic

rocks will occur in migmatitic areas and vice versa. Also, unit 6 provisionally includes: some foliated granitic rocks; inclusion-rich areas of granitic rock; and metamorphosed granitic rocks. i. Rock identification based on airborne observation. Age relations between units 1, 2, and 3 are unknown. k. Rock codes or symbols not found on this map will be found on other maps 1. Rock codes le, 1f, 5, 8, and 8b do not appear on maps in Operation Pickle

m. An "X" within an indicated outcrop area represents a data point. GEOLOGICAL AND MINING SYMBOLS Clacial striae. Banding; (horizontal, inclined, vertical).

O Drumlin, 30° Lineation with plunge. Ice front features (cyclic moraines), Geological boundary, << Esker. Geological boundary, × Small bedrock outcrop. position interpreted. Area of bedrock outcrop. ___ Geological boundary, —— deduced from geophysics.

___ Lineament or fault. Bedding, top (arrow) from Drag folds with plunge. grain gradation; (inclined, Anticline, syncline, with plunge. vertical, overturned). Lava flow; top in direction of arrow. Top overturned. X. Gravel pit. Gneissosity, (horizontal, RA Radiometric Anomaly.

inclined, vertical). o b (D) Drill hole with rock codes. [] Foliation, (horizontal, [22] inclined, vertical, dip Recessional morane unknown).

METAL AND MINERAL REFERENCE .. Silver mo Molybdenite . Magnetite . Nickel .. Arsenopyrite

. Palladium . Cobalt . Chalcopyrite Pyrrhotite Platinum Fluorite Graphite . Galena Sphalerite . Tetrahedrite . Hematite Thorium Ilmenite PAST PRODUCING MINES

1. Pickle Crow ExplorationsLimited (formerly Pickle Crow Gold Mines Limited) 2. Central Patricia Gold Mines Limited

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