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MARGINAL NOTES

LOCATION AND ACCESS

The center of McMurray Township is located at approximately 47°59' north Latitude and 84°44' west Longitude. The town of Wawa located in the northwest corner of the township connects directly with Trans-Canada highway 17. Highway 101 passes along the south shore of Wawa Lake in the northern third of the township. A gravel road leading south from highway 101 through the center of the township connects many of the former gold properties of the area. A second gravel road extends south from highway 101 along the west side of the Firesand River to as far as Megit Lake.

From Megit Lake a trail is present along the west bank of the river for two-thirds of the distance to Reed Lake. A road leads north from the town of Wawa to the George McLeod Mine of the Algoma Ore Division of the Algoma Steel Cor-

poration permitting access to the northwest corner of the township. MINERAL EXPLORATION

The numerous abandoned mines and abundant evidence of trenching and pitting attest to the vigorous search for gold in the past. For a description of the early development of gold deposits in the area the reader should refer to Gledhill, T.L. (1927); Moore, E.S. (1931); Frohberg, H. (1935) and Ferguson, S. (1971). In recent times the Pursides Gold Mines Limited property has

undergone extensive development. The property includes the former Cora (Surluga), Hornblende, Mackay Point, Wawa Gold Fields, Cooper, Jubilee, and Minto groups. The Cooper, Jubilee and Minto are former producers. The property was formed in 1960 by Sutherland and Com-

pany which acquired the 8 claims of the Surluga (Cora) group. Sutherland carried out a diamond drill programme of 25 holes totalling 9 267 feet during 1960 to 1961 and staked an additional 28 claims. Surluga Gold Mines Limited was formed by Sutherland and Company in March 1962 and acquired another 37 claims. Diamond drilling was completed during 1962 to 1963 and partially outlined five mineralized zones totalling 225 226 tons grading 0.232 ounce Au/ton. The Consolidated Mining and Smelting Company of Canada Limited completed 14 000 feet of surface drilling in 1964. In 1966 a vertical shaft was sunk 950 feet with 7 levels. A mill operated for part of 1968 and until February 18, 1969. In 1969, Pango Gold Mines Limited joined Surluga Gold Mines

Limited in developing the Pursides property. Pango Gold Mines Limited discovered a peridotite body in 1969 with minor coppernickel mineralization south of the Jubilee mine. At present, data on this occurrence is lacking. Surluga Gold Mines Limited changed its name to Pursides Gold Mines Limited in 1973 and was forced into receivership in 1976. The property is currently dormant. Gold mineralization in the map-area is restricted to quartz veins within the epizonal Jubilee stock and peripheral supracrustal rocks. The gold veins appear spatially related to the stock as dem-

onstrated by Rupert (1975). Two mines, Jubilee and Pursides, occur in quartz veins within the Jubilee fault. Faulting or shearing is also reported in the former Parkhill mine (Moore 1931, p. 40) and where they commonly occur parallel to the walls of the veins (Moore 1931). Pyrite, pyrrhotite, chalcopyrite and sphalerite are locally present in minor quantities within the veins. The Sulphide ironstone-pyritic banded chert of the Judith iron

range and the Adina Gold Syndicate location have been extensively pitted and trenched for gold. This work was likely completed in the 1930s. Examination of samples from pits on the Judith range disclosed minor chalcopyrite mineralization along fractures in the sulphide-rich section. Sulphide mineralization of economic interest was not observed on the former Adina property, but more detailed examination is warranted. Massive to disseminated sulphide mineralization within the map-area is associated with banded chert and is considered to be sulphide ironstone facies of iron formation by the writer. The Firesand River Carbonatite Complex contains niobium,

yet been found to occur in commercial quantities (Parsons 1961). During the summer numerous old trenches and pits were encountered in the bush; most of the pitting is likely for gold, and was completed around the 1900s or the 1930s. Records for this work lacking, and most of the major work has been located by Ru-Several former gold properties are currently undergoing con-

uranium, and apatite (phosphate) mineralization which have not

siderable surface work by exploration companies. Tables I and II present production data and assessment work information for the

GENERAL GEOLOGY

McMurray Township displays a much more varied geology than Lastheels. The epizonal Jubilee stock located in the north-central part of the township, is a major geologic feature of the township. The intrusive is composed dominantly of diorite, quartz diorite, and granodiorite. The stock contains abundant xenoliths and blocks of supracrustal rocks. The contact of the stock with the supracrustal rocks is sharp and best described as an intrusive breccia. Little evidence of assimilation or extensive metamorphism of the supracrustal rocks was observed. East, south, and southwest of the Jubilee stock, tuffs, feldspar crystal tuffs, and lapilli-tuffs of intermediate composition (andesite to dacite) cover a broad area. Except where locally sheared, these rocks lack penetrative deformation, and bedding is rare. When bedding is found, it generally dips away from the Jubilee stock at angles ranging from 20 to 50 degrees. Northwest of the stock and immediately south of Wawa, quartz-feldspar crystal tuff occupies an extensive area. These tuffs locally contain zones of fragments, generally of lapilli size and rarely of block size. The presence of these fragmental zones distinguishes them from the intrusive quartz-feldspar porphyries. Bedding was not observed in the quartz-feldspar crystal tuffs, but a shallow-dipping schistosity is commonly present. Both the intermediate tuffs and the more felsic crystal tuffs northwest of the Jubilee stock are interpreted by the author to be effusive products of magmas associated with stock emplacement.

East and southeast of the stock and in isolated patches south of the stock, quartz-feldspar intrusive rocks are present and form a somewhat discontinuous arcuate band around the stock. This crude ring-dike pattern may represent a series of caldera-like fractures peripheral to the Jubilee stock. The tuffs and the Jubilee stock are intruded by massive dike-like bodies of fine- to mediumgrained mafic rocks which display a general east-west or northwest trend (Rupert 1975).

East of the stock in the general area south of the Stanley mine a unit of polymictic clastic rock (lahar or debris flow) is present, and immediately south of this a thick unit of flow-banded, quartzporphyry flow rock is present (Rupert 1975). While these units have a northeast trend, rare bedding in the clastic unit and flow banding in the flow unit display a north to northwest strike. These units probably occupy valleys on the flanks of the former volcanic structure marginal to the stock. In the northeast corner of the township steeply dipping to ver-

tically dipping pillowed mafic to intermediate flows are present. hese rocks are separated from the tuffs marginal to the stock by a quartz porphyry intrusion. All facing directions are to the north. A mafic intrusion at Reed Lake is composed of gabbro, quartz gabbro, quartz diorite and pyroxenite. On a line between the Jubilee stock and Reed Lake numerous exposures of diorite to granodiorite of the Jubilee Stock intrusive rocks are present, however the relationship between the stock and the Reed Lake mafic intru-

The Judith iron range lies south of Highway 101 towards the Firesand Carbonatite Complex. Pitting on the west end of the unit indicates a formation approximately 12 to 15 m wide. The iron formation overlies felsic tuffs and massive quartz porphyry flow units and in turn is overlain by massive mafic to intermediate metavol canics. Disseminated sulphide mineralization and local pods of massive sulphide mineralization up to 1 m wide are found on the south side of the iron formation above the felsic volcanics. The sulphide-rich southside of the iron formation is in turn overlain to the north by banded chert with disseminated sulphide mineralization. Banded chert with local disseminated sulphide mineralization and isolated pods of massive sulphide mineralization is also abundant at the Adina gold Syndicate property (Rupert 1975). The Judith iron range and Adina property have been extensively trenched and pitted, presumably in search of gold.

Diabase dikes are common to the area and are presumed by

the writer to be Late Precambrian in age. The diabase dikes generally have a northwest trend. Biotite-rich and olivine-rich lamprophyre dikes are common. These dikes are generally less than 1 m in width and have a north-

Straddling the McMurray and Lastheels Township boundary is the Firesand River Carbonatite Complex. This complex is approximately 2.4 km in diameter. The intrusion is enclosed in brecciated wall rocks and evidence of fenitization was observed by the author up to 1.6 km from the complex. The Carbonatite Complex has an outer ring of sovite and silicocarbonate and a core of ferruginous liolitic phases have been recognized by the author hin section. The complex has been dated at 1048 m.y. by K-Ar techniques (Wanless, 1970).

In numerous road cuts along Highway 101, narrow (less than

0.3 m wide), rusty weathering, carbonate-rich dikes were noted. These dikes display from 4 to 10 times background radioactivity and the author correlates their emplacement with that of the Firesand Carbonatite Complex. The radioactivity is largely due to potassium and thorium (see table 3).

STRUCTURAL GEOLOGY

The Jubilee stock may represent a subvolcanic intrusion intruding its own effusive products in a caldera structure on the basis of the

data previously cited. This interpretation suggests that the shallow dipping volcanics associated with the stock may be younger than those steeply dipping volcanics north of Wawa Lake, those in Lastheels Township, and those in the northeast corner of McMurray Township. A major fault is interpreted to exist along the Firesand River and on the basis of geophysics, faulting is thought to be present in the northwest corner of McMurray Township (Rupert 1975). The quartz feldspar porphyry units appear to crosscut stratigraphy and appear fault controlled. The numerous lineaments found in Lastheels Township and south of Wawa Lake are likely faults and shear zones. The main intrusive phases of the Jubilee stock display north to northeast elongation; a southeast trend is also suggested by the numerous outcrops of intrusive rocks of the Jubilee stock in a line southeast of the stock towards Reed Lake. These trends may reflect a fracture control for the emplacement of the stock which is now largely obliterated by intrusion and effusive products of the magmatic event.

The Jubilee fault, striking in a north to northeast direction bisects the west-central portion of the Jubilee stock and two former producing gold mines are situated on it. This structure dips 40-50 degrees to the east. A shear or fault zone may exist in Wawa Lake but evidence for it is at present lacking. The quartz-feldspar tuffs north-east of the Jubilee stock display a shallow 15 to 30 degree south dipping schistosity.

ECONOMIC GEOLOGY

Gold would appear to be the element most likely to be of economic interest even though the presence of base metal mineralization in the northeast corner of the township is a possibility. Minor coppernickel mineralization in association with mafic dikes or intrusions is also possible and its presence has been indicated on the Pursides property. Niobium and apatite mineralization occur within the Firesand River Carbonatite Complex. Extensive drilling of this intrusion has been undertaken by the Algoma Steel Corporation Limited. Radioactive carbonate-rich dikes occur in numerous road

cuts along highway 101 but they appear too small to be of eco-

The Judith iron range and the former Adina property consist of banded chert and massive sulphide mineralization which locally may contain minor base metal mineralization.

Table III presents tabulated assay information concerning radioactive carbonate dikes found along highway 101.

RECOMMENDATIONS TO THE PROSPECTOR

Pending future developments in the area there may be a need to re-evaluate the Judith iron range and the former Adina property for base metal content. A re-evaluation of these properties is warranted as a result of the current gold prices. The early prospectors have undoubtedly examined every quartz vein exposed at surface, however as economic conditions change, many of the old diggings may be worthy of re-examination. On the basis of previous developments, the gold-bearing veins are likely to have a vertical extent 2 or 3 times their strike length. Gold production to date has been generally from depths of less than 240 m and gold mineralization appears to display a close association with intrusive phases of the Jubilee stock. There is a more doubtful relationship between quartz veins and shearing. While shearing is present within most of the former mines it appears likely to post-date vein formation. The quartz veins likely occupy fractures within the stock and enclosing supracrustal rocks and the shear zones have followed the same planes of weakness.

Additional work on the Firesand River Carbonatite Complex is warranted. In particular, the dolomite core rocks should be tested for their rare earth content. Minor niobium and apatite mineralization is widespread and may in the future be of economic interest.

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1935: The Ore Deposits of the Michipicoten Area, Ontario Department of Mines, Annual Report vol. 44, pt. 8, p. 74-78.

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Algoma, Ontario Division of Mines, Preliminary Map P 828, Geological Series Scale 1 inch to ¼ mile. Compilation 1970 thru 1972

1970: Isotopic Age Map of Canada; Geological Survey of Canada, Map

TABLE 1—SUMMARY OF GOLD PRODUCTION FROM MINES IN McMURRAY TOWNSHIP, DATA FROM GEOSCIENCE DATA CENTRE, ONTARIO GEOLOGICAL

Mine Cooper (Ganley Vein)	Au (ozs)	Ag (ozs) Production with I	Date Minto
Darwin (Grace) Mine	15.191	1.363	1902, 03, 07, 08, 10
			1923, 25, 30, 35, 36
			37, 40, 43 and 44.
Deep Lake Mine	1.633	57	
Golden Reed Mine	6		1908
Jubilee Mine		Production with	Minto
Minto Mine	37.678	1.123	1929-39, 1942-44
Parkhill Mine	54.301	2.896	1904, 29, 1931-40, 1942-44
Stanley (Smith, O'Keefe)	84	3	1936
Pursides Mine (Cora, Surluga, Pango	1.687	43	1968
Van Sile (S.B. Smith)	1.536	75	1935-36

TABLE 2—TABULATED DATA OF EXPLORATION ACTIVITIES IN MCMURRAY TOWNSHIP. DATA FROM ASSESSMENT LIBRARY FILES, SAULT STE. MARIE,

Company	Files	Commodity	Date
Algoma Ore Properties Ltd.	SSM 300 866 Rept. 10, 12, 11, 20, 63.675	Fe	Various
Anderson Claims	SSM 301, 63 3722	Au	1966
Bohme, J.D.S.	SSM 2.287, 63.2694 2.282	Au	1971
Carleton, Blanche	Rept. 16	Au	1965
Cons. Bellekeno Mines Ltd.	SSM 63.1201	Au	1962
Cons. Mining & Smelting Company of Canada Ltd.	SSM 625	Au	1964
Cons. Morrison Explorations Ltd.	SSM 2.1671	U?	?
Darwin Gold Mines Ltd.	63.3725	Au	1934
Dunaine Mines Ltd.	Rept.20	Au	1980
Hollinger Cons. Gold Mine	es Ltd.	Au	1937
Henderson, S.	SSM 1763	Au?	?
Hillside Gold Mine	SSM 1691	Au	1955
Jalore Mining Company Ltd.	SSM 1263	Fe	1952
Lake-Osu Mines Ltd.	SSM 505,63.1241	Au	1963
McMarmac Red Lake GML	SSM 604	Au	?
Milmac Mines	63.3724	Au	?
Marrison, R.	Rept. 13	Nb	1956
Nyman W.	2.1801	?	1975
Pango GML	2,3290, 2,334, 63,2184 63,2636, 2,245, 2,246, 2,170, 63,2665, 63,2814 2,69, 2,244, Rept 19	Au	
Parkhill Gold Mines Ltd.	63.3721	Au	1934
Pursides Gold Mines Ltd.	63.3209	Au	1973
Surluga Gold Mines Ltd.	Rept. 14, 15, 17, 18	Au	1960-6
Teare, J.H.	SSM 1616	Au	1936

TABLE 3—TABULATED DATA FOR FOR RADIOACTIVE CARBONATE DIKES ALONG HIGHWAY 101, McMURRAY

Tremblay Claims SSM 309

Villeneuve prospect SSM 308

Dike No RA-9	Station No	cpm-dike 15000	cpm-wr 1500	Strike 150	Dip 80N	Width 20 cm	U (ppm)	Th (ppm)	3640	Nd (ppm)
RA10	111-46	4500	1000		-	-	NA			
NA11	90-8	2100	1700	130	65N	12 cm	NA			
RA12	90-13C	3000	2000	290?	-	-	2	30	1800	550
	90-13D	19000	1500	320	80S	4-6 cm	21	70	4940	1430
RA13	90-30B	12000	2500	_	-	-	8	280	1400	580
RA14	90-51B	5500	3500	100	83N	4-5 cm	7	30	320	160
RA15	90-53	28000	3000	260	90	12 cm	NA			
RA16	90-64	5700	3000	_	-		NA			
RA17	90-37C	15000	4000	105	80S	braided	4	220 -	500	280



LEGEND^a

UNCONFORMITY

Resources Deputy Minister

ONTARIO GEOLOGICAL SURVEY MAP P. 2441

GEOLOGICAL SERIES - PRELIMINARY MAP PRECAMBRIAN GEOLOGY McMURRAY TOWNSHIP

WAWA AREA ALGOMA DISTRICT

Aile 74 NTS Reference: 41N/15, 42C/2

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LOCATION MAP Scale: 1: 1 584 000 or 1 inch to 25 miles

METAL AND MINERAL ABBREVIATIONS

.. Arsenopyrite .. Pyrrhotite .. Quartz Veins

LIST OF PROPERTIES AND

OCCURRENCES . Adina Gold Syndicate 2. Big Dome Prospect 3. Cooper Mine (Ganley Vein) 4. Darwin Mine

Deep Lake Mine 6. Firesand Complex 7. Golden Reed Mine 8. Hillside Mine 9. Hornblende Shear Zone 10. Jubilee Mine

15. MacLeod, G.W.

16. Mariposa Shaft

17. Minto Mine

4f Interlaminated siltstone, mudstone 4g Conglomerate with granite clasts 11. Laccolith 4h Volcanic clast conglomerate 4j Siltstone, sandstone, lithic sandstone 12. Lake Osu Mines Ltd. Claims 4k Quartz arenite, arkose, lithic arkose 13. Mackey Point Mine 14. Mackey Point Veins

4m Carbonate-rich metasedimenti 4p Thinly bedded wacke, siltstone 4q Carbonate, ferruginous limestone

> 18. Morrison et al. Claims 19. Parkhill 20. Stanley Mine (Smith, O'Keefe) 21. Sunrise Mine, Wilcox and Lucky Strike Vein (Shier Group) 22. Surluga Mine (Cora, Pango, Pursides) 23. Surluga Nickel Prospect

24. Van Sickle Mine (S.B. Smith) 25. Villeneuve 26. War Eagle

27. Wawa Gold Fields (Figgus Vein)

Schistosity, inclined, Geological boundary, observed Lineation, m=mullion structure, c=clast, p = pillow,

_____ interpreted sl=slickensides, ____ geophysically inferred b = biotite Glacial striae Pillowed volcanics Fe Iron staining with dip and facing direction indicated cltd Chloritoid Pillow elongation, in-45990459 from grain gradation, clined, vertical, facing direction unknown inclined, vertical, over-RA Radioactivity Bedding, top (arrow) Minor shear, inclined, vertical inclined, vertical, over-Major shear, attitude

Geological boundary,

structures in interbed-

cal, overturned.

ded sandstone-silt-

stone, inclined, verti-

- Paleocurrent direction

IF Iron formation Kinkband, inclined. vertical with plunge of

1n Aplite, pegmatite dikes q Trondhjemite r Granodiorite, quartz monzonite 1s Monzonite, quartz monzonite 1t Porphyritic monzonite, quartz monzonit 1u Granodiorite, trondhjemite, weakly foliated 1v Porphyritic granodiorite

Breccia Carbonatized Silicified

a) This is a field legend and may be changed subsequently to laboratory investigations. The legend applies to Chabanel, McMurray, Lastheels and Esquega Townships and units listed may not all be present in each township. b) Greater than 50 percent silicate-oxide minerals.

c) Greater than 50 percent carbonate. f) Transitional porphyritic to non-porphyritic.

g) Associated with mafic intrusive rocks. h) A chemical sedimentary bed which contains 33 percent or more of the common iron minerals by volume. This does not include commonly associated interbeds of chert or clastic sedimentary material. A sufficiently extensive map-

pable unit containing a significant proportion of ironstone interbeds may be designated as an iron formation.

m) Possibly contemporaneous with unit 7 rocks. G The Lithology was either interpreted or inferred from geophysical data. D The lithology was either interpreted or inferred from drillhole data.

Where a rock-unit code precedes a second rock-unit code enclosed in brackets, Superscript on any symbol means data was compiled from map P. 828, by R. J.

Information from this publication may be quoted if credit is given. It is recommended that reference be made in the following form: Sage, R.P., Sawitsky, E., Turner, J., Leeselleur, P. and Sagle, E. 1982: Precambrian Geology of McMurray Township, Wawa Area, Algoma District; Ontario Geological Survey Preliminary Map P. 2441, Geological Series, Scale 1:15 840 or 1 inch to 1/4 mile. Geology

ologist's office and the Mining Recorder's office nearest the map-area.

ships, District of Algoma, Ontario Division of Mines; Preliminary Map P. 828, Geological Series, Scale 1:15 840 or 1 inch to 1/4 mile. Magnetic declination is approximately 5°55' in 1980.

and Waters Group, Ontario Ministry of Natural Resources.

45° 45° fold and direction of Lineament

dip of axial plane,

Geology is not tied to surveyed lines.

Minor fold, strike and

Lineament, possibly a fault zone

bearing and plunge of Shaft-depth in feet

SOURCES OF INFORMATION

Base map derived from the Forest Resources Inventory maps, Lands

Rupert, R.J., 1975, McMurray Township and part of surrounding town-

CREDITS

Geology by R.P. Sage, E. Sawitsky, and assisted by J. Turner, P. Leeselleur, and E. Sagle, 1979. Every possible effort has been made to ensure the accuracy of the information presented on this map; however, the Ontario Ministry of Natural Resources does not assume any liability for errors that may occur. Users may wish to verify critical information; sources include both the references listed here, and information to file at the Resident or Regional Ge-

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