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REPORT ON GEOLOGICAL SURVEY

FAIRSERVICE OPTION - FEIST LAKE GROUP
SILVERY LAKE AREA CLAIM MAP M-2870
PROJECT NO. 1236 NTS SHEET 52F

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INTRODUCTION

The Feist Lake Group consists of fifteen (15) unpatented claims (K498023-026 incl.; K498033-036 incl.; K49846-46 incl.; K488058, K488225, 272, 273 and 465) in the Silvery Lake area (claim map M-2870) of the Kenora Mining District.

The group is located on Pine Road approximately six miles south of Highway 17. Pine Road intersects the highway near the south shore of Octopus Lake, approximately fifty miles west of Dryden, Ontario.

A control grid was cut and chained over the property during September 1977. The baseline is 7,200 feet long and is oriented 034° magnetitic. Grid line separation is 200 feet and picket spacing is 100 feet. Approximately 78,500 feet (14.85 line miles) were cut over the property.

TOPOGRAPHY

Topography in the area is generally rugged with as much as 200 feet relief. A series of north-south trending ridges and valleys occurs within the property and extensive bedrock exposure is present along the crests of the ridges. The ridges are flanked by boulder slopes which lead into swampy and/or moss and boulder valleys. The topography appears to reflect local structure.

GEOLOGY

(i) General Geology

Lense shaped inclusions of metavolcanic and metasedimentary rocks are typical at the periphery of the Feist Lake Pluton within the contact zone of the pluton and surrounding metavolcanic-metasedimentary pile. This contact zone has been proven to be a favourable environment for Uranium mineralization and several occurrences and radiometric anomalies have been identified in the area. The Feist Lake Group occurs in this contact zone near the juncture of the pluton and the Dryberry Dome.

(ii) Supracrustal Rocks

The common supracrustal rock in the area contains biotite, quartz and feldspar as its prime constituents. Rocks with a hornblende-plagioclase assemblage are present but fairly rare. For the most part, they are highly migmatized and it is uncertain whether they are volcanic or sedimentary in origin.

The supracrustals occur as small (less than 3 feet in diameter), angular to rounded, randomly scattered xenoliths and as elongate lensoid inclusions arranged in an en echelon manner. The lense shaped variety is the most common in the property. These generally have strike lengths of 10's of feet to a maximum of a few hundred feet.

These inclusions are common within the quartz monzonite and at the contact of white and pink granitic rocks, but are very rare within the white granites alone.

(iii) Felsic Intrusive Rocks

a) Quartz Monzonite

Quartz monzonite is the dominant rock type in the area. These are massive, equigranular, medium to coarse grained rocks consisting of roughly equal parts pink alkali feldspar, quartz and plagioclase, with biotite as the common accessory mineral. Hornblende, magnetite and molybdenite are also present as accessories but are quite rare.

b) Pegmatitic Granite

These are very coarse grained rocks consisting mainly of quartz and pink alkali feldspar with plagioclase and accessory biotite. They occur as small, irregular clots within the quartz monzonite and also as elongate bodies enveloping migmatized lenses of supracrustal rock. In both cases, the pegmatitic bodies always show gradational contacts with the granitic host rock. Those pegmatitic granites in contact with the supracrustal rocks are often radioactive.

c) Magnetite Bearing White Granites

This is strictly a field term and actual composition is uncertain. These are massive, equigranular, medium grained rocks consisting of quartz and white feldspars with accessory biotite and conspicuous magnetite.

(d) White Granite

Aside from the absence of visible magnetite, the two white granites are very similar. It is likely that the two rock types are genetically related, with the distribution of magnetite being the only difference.

(iv) Structure

Little structural data could be obtained from the granitic rocks. Information derived from the supracrustals indicates a strike trend of about 035° magnetitic. Westerly dips varying from 45° to near vertical are common. Although consistant easterly dips were observed between L452N to L464N at about 2W, they likely reflect the attitude of the contact of the white and pink granitic rocks rather than what would appear to be a synformal structure.

The steep topographic lows of the ridge and valley pattern on the property may represent a system of parallel faults; or possibly contain large inclusions of supracrustal rock which have undergone differential erosion with respect to the granitic rocks.

(v) Emplacement of Intrusive Rocks

Since both white granites are similar in texture and composition, they are considered here to represent a single intrusive phase. Also, since the pegmatitic bodies show gradational contacts with the surrounding finer grained granitic rocks they are not likely a separate intrusive phase. Only two distinctly separate phases of intrusion are evident on the property and are represented by the white granites and quartz monzonite.

Although the two intrusives phases generally appear to have acted passively with respect to each other (i.e. assimilation rather than deformation is common at their contacts), a contact breccia was observed between L474N and L484N in the vicinity of Pine Road. A moderate foliation is present in the quartz monzonite in this area while the white granites are massive.

The southern portion of the property is characterized by large 'tongues' of white granite which tend to truncate to the north. The white granites are interpreted to be vein-like injections which post-date emplacement of the quartz monzonite.

MAGNETOMETER SURVEY

Aside from the moderate trends and ocassional erratic value associated with both varieties of white granite, magnetics on the property is generally subdued. A certain degree of correlation between magnetics and radiometrics is usually considered favourable for Uranium mineralization in this area of Northwestern Ontario. No such relationship is present on the property.

RADIOMETRIC SURVEYS

A Geonics Exploranium GRS-101 total count scintillometer was used as a mapping aid during the geology survey. The value of 500 cps, corresponding to four times the background value of the quartz monzonite (approximately 120-150 cps), was selected

to be the lower limit of anomalous readings.

A Scintrex GAD-6 differential spectrometer survey was performed independently of the scintillometer survey.

Anomalous areas identified by the two instruments correspond well in terms of size, quality and location.

Confidence in contouring radiometric anomalies in this area is questionable due to the erratic, disseminated nature of radioactive mineralization. Regardless of this point, general trends became apparent during the surveys and the accompanying maps have been contoured, rather than profiled, in order to produce an easily legible presentation.

Two major and several weaker anomalies were identified during the surveys. The two major zones are variable in width to a maximum of about 50 feet. The strike length of these zones are apparently controlled by the strike lengths of the lenses of supracrustral rock with which they are spatially associated. Scintillometer readings within the anomalies can vary markedly over distances of less than two feet, but commonly range between 500 and 1000 cps with localized areas ranging from about 1000 and 1800 cps.

Readings greater than 2000 cps are rare and the maximum value obtained was 2800 cps.

One of the two major zones extends from L484N to L500N between the baseline and 1E and can be located by identifying the migmatites and quartz-biotite gneisses. The gneisses occur as a continuous lense enveloped in quartz monzonite and

pegmatitic granite. Anomalous values do not occur in the supracrustals themselves but as a halo to the gneisses in the pegmatitic rocks. Readings within the gneisses are less than background at 70-100 cps. As a result, a steep radiometric gradient is present from the granitic rocks to the gneisses. The gradient is much more shallow moving away from the gneisses in the granitite rocks and values drop off to background over a range of 100-200 feet.

The supracrustal rocks in the southern portion of this anomaly, west of Pine Road, are highly migmatized but easily traceable due to excellent exposure in the area. In these migmatitic varieties, anomalous readings occur in the leucocratic portions of the migmatite and as a halomto the migmatite. The mesocratic fractions of the migmatite are not anomalous.

This anomaly appears to terminate rather abrupatly to the south. To the north, several small, migmatized lenses of supracrustal rock can be traced intermittently to the limit of the property. Highly sporadic, discontinuous readings are associated with these lenses.

The second major anomaly is considerably larger, with a definate strike length of 2800 feet and a possible total length of 4800 feet. The anomaly extends from L440N to L468N between 2W and 3W, but disappears under cover at L468N near the lake shore. North of the lake, another weaker anomaly can be traced from L482N to L488N but somewhat displaced to

the west between 6W and 7W. Rock types appear to correlate for both anomalous zones and they may in fact be continuous under the lake. The southern part of the anomaly also disappears under cover but it becomes weak in this area and may actually terminate.

A minimum width of twenty feet was observed for this anomaly, but since it occurs along the edge of a steep ridge, its total width is uncertain.

This anomaly is associated with several small lenses of migmatite which, taken together, form a fairly continuous and traceable band. The migmatites are again enveloped in granitic rocks, but in this case, they mark the contact of the quartz monzonite and pegmatitic granite to the east and the white granite to the west.

Anomalous readings occur in the granitic roks found immediately adjacent to the migmatite but are generally confined to the pegmatitic phase. Only a few sporadic anomalous areas were found in within the white granite.

A minor anomalous zone occurs from L492N to L504N between 9W and 12W. The area is characterized by several small, discontinuous lenses of migmatite. A small pod of white granite also occurs with this zone. Values in this anomaly reaks are sporadic, but again confined to the pink granitic and spatially associated with the supracrustals.

A second minor zone occurs from L442N to L468N between

2E and 3E and trending parallel to the major zone described above. In this area, small migmatitic lenses mark the contacts of interfingering lebes of quartz monzonite and white granite. Assimilation of the two granitic phases is common where they have interfingered. Mineralization again occurs in the granitic rocks adjacent to the migmatites, but in this case, both the quartz monzonite and white granite were found to be anomalous. Mineralization in both granitic rocks is likely the result of assimilation of the two phases during emplacement of the white granites.

Pegmatitic rocks are not abundant in either of these two minor anomalous zones.

Several other small, isolated lenses of migmatite are common throughout the property. Many of these are associated with above background readings.

SUMMARY '

1. Radioactive mineralization is confined to the granitic rocks as a halo to the gneisses and migmatites. The quality of the anomalies appears to be related to the form of the supracrustals. The best anomalies are associated with those migmatites that are continuous and traceable over a large distance; while mineralization is sporadic when associated with small, discontinuous lenses.

- 2. The gneisses themselves are never radiometrically anomalous and in those cases where the supracrustals have been migmatized, anomalous readings occur only in the granitic portions of the migmatite. The radiometric gradient moving away from the supracrustals in the granitic rocks is shallow and values drop to background over a range of 100 to 200 feet.
- 3. Although mineralization appears to be favoured in the pegmatitic phases, some mineralization is also present in the finer grained phase. Only those pegmatitic bodies found in contact with the gneisses and migmatites are radioactive.
- 4. The white granites are generally not anomalous even when found adjacent to the supracrustals and likely post-date mineralization. Any mineralization in the white granites is presumably due to assimilation of radioactive quartz monzonite and pegmatitic granite.

CONCLUSIONS

Since there is no field evidence to indicate that the pegmatitic granite represents a separate intrusive phase, they cannot be interpreted here to fit the traditional concept of Uranium-bearing pegmatite dikes.

The common factor in radioactive mineralization on the property appears to be the presence of the supracrustal rocks, regardless of their degree of metamorphism or deformation.

Since the origin of the radioactive elements is uncertain, two possible mechanisms of concentrating Uranium and Thorium can be developed from observed field data. One model requires the supracrustals to have originally been relatively 'wet' Uranium-bearing rocks. Partial syntectic melting of the supracrustals during granitic emplacement would result in their migmatization and dehydration. Fluids liberated during this process may effectively mobilized Uranium into the granitic rocks, thus producing the observed halo effect (i.e. radioactivity decreasing with transport distance away from the supracrustals). These fluids would also inhibit crystallization of the granitic melt, causing development of the pegmatitic phase. Gradational, rather than intrusive, contacts with the finer grained phases would be expected under these conditions.

A second model assumes the Uranium-bearing solutions were generated as a late stage product within the intrusive itself and mobilized along the inherently weakened zones near the contacts of the granitic and supracrustal rocks. The development of a mineralized halo and 'in situ' pegmatites would be the result of processes similar vto those above.

Field data indicate that the granitic phase is favoured over the supracrustals as the site for precipitation of radio-minerals. Since the supracrustals are presently not radioactive, this point is somewhat contradictory with regard to the origin of radioactive minerals in the first model unless a very

efficient means of ion transfer can be inferred. Although the physio-chemical processes of selective precipitation are beyond the scope of this report, it has been well established that oxygen activity and pH are critical parimeters in aqueous solutions; particularly on the Colorado Plateau where Uranium precipitation is very selective. Related redox reactions may also be in effect within granitic melts.

RECOMMENDATIONS

From past experiences, it appears that diamond drilling is not a effective way of assessing the mineral potential of this type of Uranium occurence. Trenching and bulk sampling may produce more representative results and this is presently underway on the property. For now, attention should be focused on the two main radiometric anomalies.

March, 1978

SHERRITT GORDON MINES LTD

Vincent J. Scime Exploration Geologist





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TO BE ATTACHED AS AN APPENDIX TO TECHNICAL REPORT FACTS SHOWN HERE NEED NOT BE REPEATED IN REPORT TECHNICAL REPORT MUST CONTAIN INTERPRETATION, CONCLUSIONS ETC.

Type of Survey(s) Magnetome	ter, Geological, Radiometric	••••••••••••••••••••••••••••••••••••••
Township or Area Silvery L		MINING OF A FAG TO ASSED
Claim Holder(s) Robert Fa		MINING CLAIMS TRAVERSED List numerically
D O Roy	644 Druden Ontario	
Survey Company Sherritt	Gordon Mines Ltd	k 488058 /3
Author of Report V. Scime		(prefix) (number)
Address of AuthorSherritt	Gordon Mines Ltd.	K
Covering Dates of Survey	Gordon Mines Ltd. water dr. Dryden, Ontario Sept./77 to April/78	K 488272
	(linecutting to office)	K 488273
Total Miles of Line Cut	14.7	-
		K
SPECIAL PROVISIONS CREDITS REQUESTED	DAYS per claim	K 498023
CREDITS REQUESTED	Geophysical	K 498024 1/2
ENTER 40 days (includes	Electromagnetic	
line cutting) for first	-Magnetometer	day2) X 498025 /4-
survey.	Aca	2/2 498026
ENTER 20 days for each	-Other	K 498033
additional survey using same grid.	Geological	
	Geochemical	498034498034
	provision credits do not apply to airborne surveys)	K
MagnetometerElectro	magneticRadiometric nter days per claim)	K
DATE: March 1978 SI	Villa Sale	K 498463
DATE: Warde 1116 SI	Author of Report or Agent	— J
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L.P.	2 2001.	all claimy are will
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Previous Surveys File No. Type Dat	c Claim Holder	
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		K488658 - 30 do
		" 4 98024 - 20 "
		498025 - 10 "
<u></u>		1,0020
		" TOTAL CLAIMS 15

GEOPHYSICAL TECHNICAL DATA

N S	Magnetometer: 785 Magnetometer: 785 Magnetometer: 785 Magnetometer: 785 Mumber of Stations Radiometric; 3,140 Number of Readings Radiometric: 12,560 Station interval Magnetometer: 100' Radiometric: 25' Line spacing 200 ft.
	rofile scale
Ċ	Contour interval Mag: 50 gamma T.C.: 50 cps K: 5cps U: 2cps Th: 2cps
MAGNETIC	Instrument Scintrex MF-2 vertical component fluxgate magnetometer Accuracy - Scale constant ±0.05% of full scale for 1,000 to 10,000 gamma range Diurnal correction method 100ping 1 Base Station check-in interval (hours) N/A Base Station location and value
r si	To start and
TIC	Instrument
GNI	Coil configuration
ELECTROMAGNETIC	Accuracy
	Method:
	Frequency(specify V.L.F. station)
回	(specify V.L.F. station) Parameters measured
	rarameters measured
	Instrument
	Scale constant
III	Corrections made
GRAVITY	
ତା	Base station value and location
	Elevation accuracy
	Instrument
	Method
	Parameters – On time Frequency
IX	- Off time Range
IVI	- Delay time
RESISTIVITY	— Integration time
R	PowerElectrode array
	Electrode spacing
	. •
	Type of electrode

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SELF POTENTIAL	
Instrument	Range
Survey Method	
Corrections made	
RADIOMETRIC	
Instrument Scintrex Gad-6 differential spectrome	eter with GSP-3 sensor
Values measured <u>Total Count</u> , <u>Potassium</u> , <u>Uranium</u> , <u>The Energy windows (levels)</u> <u>T.C.: 0.15-2.77 MeV</u> ; <u>K: 1.38-</u>	norium gamma ray counts/sec -1.56 MeV; U: 1.66-1.90 MeV; Th: 2.44-2.77Me
Height of instrument at topographic surface	
Size of detector 3" by 3"	
Overburden sand & boulder, swamp (type, depth - include of	maximum depth unknown utcrop map)
OTHERS (SEISMIC, DRILL WELL LOGGING ETC.)	
Type of survey	
Instrument	
Accuracy	
Parameters measured	
Additional information (for understanding results)	
AIRBORNE SURVEYS	
Type of survey(s)	
Instrument(s)(specify for each type of	survey)
Accuracy(specify for each type of	survey)
Aircraft used	
Sensor altitude	
Navigation and flight path recovery method	
Aircraft altitude	
Miles flown over total area	Over claims only

GEOCHEMICAL SURVEY - PROCEDURE RECORD



Numbers of claims from which samples taken				
Total Number of Samples				
Type of Sample(Nature of Material)	Values expressed in: per cent p. p. m.			
Average Sample Weight	p. p. b. □			
Method of Collection.	Cu, Pb, Zn, Ni, Co, Ag, Mo, As, (circle)			
Soil Horizon Sampled				
Horizon Development				
Sample Depth				
Terrain				
	Reagents Used			
Drainage Development	•			
Estimated Range of Overburden Thickness				
	A 1 A 114 A 1			
	Reagents Used			
SAMPLE PREPARATION	Commercial Laboratory (test			
(Includes drying, screening, crushing, ashing)	Name of Laboratory			
Mesh size of fraction used for analysis	Extraction Method			
	Analytical Method			
	Reagents Used			
	General ————————————————————————————————————			
General				
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