

MAR 19770006: SAND POINT

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GEOLOGICAL REPORT

PERMITS 193 & 194

PROJECT 71-41 & 71-60

SAND POINT AREA, ALBERTA

NTS 74 L 15, 16 74M 1

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SEPTEMBER 7, 1977

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Figure 1 - Bearing of glacial striations and grooves

Reference - Scott, B.P. (1976) Thluicho Lake East Half
geological report. DMR Report 167 (Preliminary)

INTRODUCTION

Permits #193 and #194 are located approximately 30 kilometres northeast of Fort Chipewyan, Alberta.

Prospecting and geology were carried out between August 16 and September 1st, 1977 by five prospectors and a geologist (M. MacMahon) with an assistant geologist (J. Fraser). Twenty nine (29) prospecting traverses were run and a further 6 boulders were located bringing the total to 8. Four pits were dug on the beach approximately 2 kilometres south of Sand Point. No bedrock was encountered as the holes struck water at depth of 8 feet or less. Thirteen (13) geological traverses were run as well as some helicopter reconnaissance mapping. J. Fraser spent one day re-sampling selected lakes for water and sediments.

The area is located on the northern shore of Lake Athabasca. The area consists of a sand plain up to 3 kilometres wide along the lake with a few rounded basement outcrops. To the west are outcrop ridges rising 50 to 75 metres above the level of the lake. Outcrop is abundant in this latter area. Boulders are common along the shore but at the base of the ridges, are rare. Rounded sandstone boulders are to be found at abandoned beach levels which are located at least 30 - 50 metres above the current lake level, amongst the basement ridges.

Latitude 59° N and Longitude $110^{\circ} 45'$ are in the north part of permit #193.

PREVIOUS WORK

The permits lie within the area covered by the following reports:

Riley, G.C. (1960) Fort Fitzgerald 1:250,000 preliminary geological map (GSC publication 12-1960)

Godfrey, J.D. (1959)
Research Council Alberta, Bulletin #1

Uranerz Exploration and Mining has done the following work:

Geological reconnaissance (K. Lehnert-Thiel) 1975
Air magnetic survey with interpretation of results
by Kenting (1975)
Geological mapping and prospecting (1976)

The only evidence of previous work by other companies was an old cut line and several claim posts near the start of traverse #3.

GEOLOGYGENERAL

The area is underlain by Precambrian rocks. Apart from a narrow zone of low grade metamorphic rocks along the shore of Lake Athabasca the area consists of a gneissic complex which may be part of the Tazin Group. Riley (1960) indicates that these gneisses represent various stages of a regional granitization process. The low grade metamorphic sediments have more similarities to the Thluicho Lake Group (Scott 1976) than to the Martin Formation, but no definite assignment can be given to these rocks with current data.

The area is homoclinal, with the rocks striking northeasterly and dipping to the west at $60 - 80^{\circ}$. Faulting has occurred along some of the linear features observed in the area.

Glacial striae and grooves are oriented 070° to 115° , and average 088° (see Figure 1).

ROCK TYPES

UNITS 1, 1a - consist of rocks which have undergone greenschist facies metamorphism. Unit 1 has argillitic, slately and greywacke phases. It is usually fine grained, green to grey green with a prominent slately cleavage in the first two types and a few possible primary sedimentary structures, cross bedding and graded bedding in the latter. This unit grades into subunit 1a which is mainly arkosic with some polymictic conglomerate horizons locally present. The arkose is pink, medium grained and massive in fresh samples but white to grey in weathered exposures with the feldspars converted to clay minerals.

Units 1 and 1a are similar to the Thluicho Lake Group, arkose and argillite (Scott 1976), but the conglomerate, which consists of well rounded quartz and feldspar pebbles and minor clasts of mafic gneisses, does not resemble any unit seen in the Thluicho Lake area.

There has been strong shearing of this unit parallel to strike.

UNITS 2 - amphibolite is very minor and only one mappable band was observed near the start of traverse #3, where it is medium to coarse grained, dark green, massive to gneissic, with minor pyrite and magnetite.

Minor lenses and boundinaged (?) blocks of amphibolite occur throughout the gneisses.

UNIT 3 - the rocks of this unit are probably remnants of metasediments and/or metavolcanics which form some mappable units within the gneisses. They are grey, medium grained, and contain 10 - 40% biotite. Garnets were seen in only two locations, on traverse #8 and in a small ultramafic band, less than one metre wide. In the south end of the property are rocks similar to Unit 3, but which appear slightly more granitic and were mapped as unit 5a.

At three locations within this unit high scintillometer readings were found with a maximum of 7500 cps on a fracture zone three metres long by 5 cms wide (prospecting traverse 4 - 15). No uraniferous mineralization was seen and these occurrences are not considered significant.

UNIT 4 - this unit is the most widespread in the area and consists of highly variable pink, medium grained, quartzo-feldspathic granite gneisses. Unit 4 contains the undifferentiated rocks of this type and sub-units 4a, b, c, appear to represent potential mappable units.

Sub-unit 4b - is porphyroblastic, normally with a cataclastic to mylonitic texture. It is pink to light grey in colour and the feldspar porphyroblasts are up to 5 cm in length. This occurs on the east side of the map area and is probably related to areas of lower magnetic intensity.

Sub-unit 4c - is medium to coarse grained, tending to be porphyroblastic, grey to pink, massive to weakly foliated with moderate biotite and amphibole content in a quartz feldspar gneiss. There are a number of zones up to 200 metres wide. Glacial grooves are commonly well preserved on outcrops of this unit.

Minor magnetite is common in Unit 4 rocks.

UNIT 5 - this occurs only in the southern part of the map area, where it is a coarse grained, grey to white, massive rock in which the feldspars commonly have a light green alteration (chloritization?). The biotite content of this granite ranges up to approximately 10 - 15% and combined with the fact that it is gradational to Sub-unit 5a indicates granitization from sedimentary or volcanic rocks.

Sub-unit 5a - is a gneissic granite in which banding is present and locally blocks of amphibolite can be seen.

Pegmatite and fine grained granite dykes are common in the area of traverse 5. The main trend being east-west for these dykes.

Scintillometer readings are generally less than 150 cps with readings to 400 cps over narrow (1 - 3 meter wide) pegmatites.

REGOLITH?

One outcrop which is highly silicified and slightly hematized was found near the shore of Lake Athabasca just south of Sand Point. There are some quartz veins in this outcrop. Regolith and altered basement outcrop along the shore approximately 5 kms north of permit 193.

ATHABASCA SANDSTONE - is reported to outcrop on the south-west corner of Burntwood Island which is approximately 4 km east of Sand Point.

STRUCTURE

Apart from localized structures, the strike is generally north-easterly and dips are to the north-west at 60 - 80°. Small scale folding is usually tight to isoclinal with the axial planes parallel to the regional trend and plunge due north.

Some faults indicated by Kenting from their interpretation of air magnetic data can be detected on the ground. Evidence includes fracturing which parallels the assumed fault trends, locally contorted banding, quartz veining related to fracturing, and possible displacement of lithologies. No major brecciation zones were observed. Minor quartz cemented breccias are present throughout the map area.

The relationship of Unit 1 and Unit 4 indicates that they are overturned with high grade metamorphic gneisses of Unit 4 overlying Unit 1 greenschist facies metamorphic rocks. The contact is faulted but would have to be a reverse fault with a large displacement to have caused the observed relationship.

Sedimentary rocks exposed in cliffs to the north of permit 193 have been hematized and appear to have low dip angles. They belong to Unit 1 and slumping is responsible, at least locally, for the shallow dips.

ECONOMIC GEOLOGY

Eight uraniferous boulders have been found in the area. All of these are well rounded and are within one kilometre of the shore line. The glacial direction shown by striations, 088° - 268° ; indicates a source lying under Lake Athabasca.

Small patches of yellow uranium oxides (?) were observed in glacially smoothed outcrops on traverse #12. Scintillometer readings were near 500 cps. The rock type was Unit 4b and the outcrops showed no sign of hematite alteration.

Scattered high scintillometer readings are associated with shearing and fractures in Unit 3 biotite gneisses.

Only scattered pyrite and one occurrence of pyrrhotite were noted.

CONCLUSIONS

- 1) no Athabasca Formation or Martin Formation was observed.
- 2) 8 uraniferous boulders have been located.
- 3) the average bearing of glacial striae is 088° .
- 4) the source of the boulders (2) is probably under Lake Athabasca.
- 5) 57 prospecting traverses have been completed in 1976, 1977 and there is little likelihood that a large number of boulders would be found by further work.
- 6) geological traverses were generally spaced 2-3 kms apart. In spite of this wide spacing it is felt that further mapping would not add greatly to the information gathered by the current work.

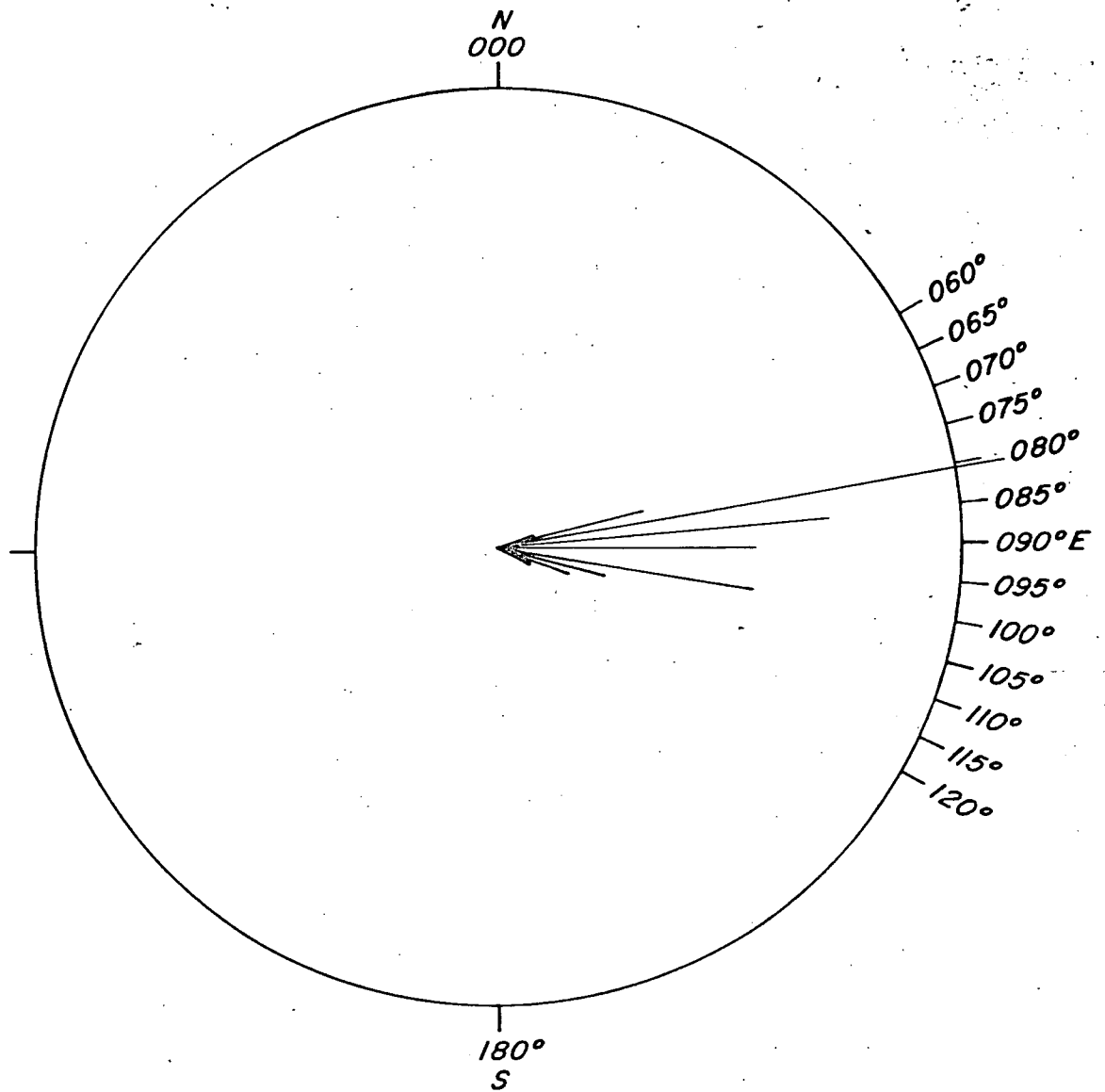
RECOMMENDATIONS

No further geological mapping is recommended.

Drilling to check for the Athabasca Sandstone/Basement unconformity along the shore near or on Sand Point is a low priority recommendation, since it probably lies under Lake Athabasca.

Also of low priority would be some shallow trenching, with a plugger, to sample the possible uraniferous fractures seen on traverse #12.

Unless the low priority work recommended above is to be carried out, permits 193 and 194 should be dropped or optioned.



SCALE $\frac{1}{2}$ cm. = 1 GLACIAL STRIATION

No.	Bearing	No.	Bearing	No.	Bearing	No.	Bearing	No.	Bearing	No.	Bearing
	100°		085°		080°	25	085°		100°		075°
	104°	10	115°		090°		088°		100°		085°
	100°		085°		082°		075°	35	080°		080°
	085°		085°	20	085°		105°		100°		080°
5	090°		075°		088°		100°		105°	45	085°
	090°		080°		080°	30	110°		080°		090°
	090°	15	090°		075°		085°		078°		080°
	080°		080°		090°		110°	40	100°	48	080°

ARITHMETIC MEAN OF GLACIAL STRIAE = 088°

BEARING OF GLACIAL STRIATIONS AND GROOVES
 SAND POINT AREA ALBERTA
 PERMITS 193 & 194

FIGURE 1