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REPORT ON HELICOPTER FIELD EXPLORATION

SEPTEMBER 4th, 1966

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Introduction

A short helicopter field exploration of the northeastern Clear Hills, Alberta, was undertaken on September 4th, 1966.

The purpose of the exploration was to examine additional, if any, outcrops of bedrock to those located on the banks of the Rambling Creek (formerly Swift Creek) in order to determine and outline the sub-surface extent of the oolitic iron bed.

Previous Information

The only report available to the author on the occurrence of the oolitic iron bed is The Research Council of Alberta Preliminary Report No. 59-3, by D.J. Kidd. In view of the scanty material available the results and recommendations of this report are exploratory in nature.

Field Exploration

The helicopter traverse flown in the area is shown on the field map in green pencil. The traverse began going up the Whitemud Creek to the fire look-out tower. First landing was at the Rambling Creek for the examination of the oolitic iron bed there. From there a traverse around the fire look-out tower hill was made and it was continued from there towards the north-northwest to the Notikewin River where glacial tills making the banks of the river were examined. From there a traverse upstream along the Notikewin River was conducted with one landing (as shown on the map.) The next segment of the helicopter traverse was across the country from the Notikewin River to the Square Creek, along the

Square Creek downstream to the junction with the Notikewin River and along the river to a point north of the look-out tower. From there a traverse was flown to the look-out tower and after a brief stop there at the air-strip, back to Peace River airport.

Results of Field Exploration

No bedrock outcrops beside those on Rambling Creek were found. All of the materials making the banks of the Notikewin River and the Square Creek where examined were of glacial origin.

Glacial till examined on the Notikewin River contained occasional pebbles of the oolitic iron.

The outcrop examined on the upstream portion of the Notikewin River was glacio-lacustrine in origin.

Glacil till on the airstrip on the look-out tower hill contained very numerous eratics of oolitic iron formation in the till.

The iron bed examined on the Rambling Creek was directly overlain by glacial till and the thickness or elevation of the top of the bed cannot be used (only approximately) as definitely some of it is mission. The base was also not exposed.

Geological Setting

The Peace River area is underlain by homoclinal rocks of Cretaceous age with a dip towards the southwest. The dip is variable and as reported by McDougall (as quoted by Kidd, p.12) the regional dip of the eastern part of Clear Hills is only 8 feet per mile. The strike of the

formations in the eastern part of Clear Hills is unknown but as indicated on a map by Kidd (figure 5) it is approximately north-northwest. For lack of other data in all other calculation this will be assumed to be correct. Also it is noted that the oolitic iron bed thins downdip in the area under study.

Also Kidd states that Phillips Petroleum Company Phil C No. 1 well (page 11) intersected the iron bed at 494 feet below the surface. The exact location and elevation of the well is not known and this information also cannot be used.

That the iron bed is more extensive than the outcrop area is shown by Kidd on the basic of the numerous drill holes. He shows firstly that the bed thickens northeastwards and, secondly, that it extends south to at least Phil. Con No. 1 well. The relations between the outcrops north of Worsley is not known. In other words northeastwards of the outcrops on Rambling Creek the iron bed should be thicker and maybe richer in iron. This is indicated by the fact that iron content of the cuttings from Phil. C. No. 1 well analysed to 30% and from the outcrop to 37% (p.18). But the foregoing is very speculative. All that may be said is that the extention of the iron bed northeastwards should be at least the same in thickness and quality as that of the outcrop.

The glacier that covered the terraine advance from the north-northeast. The very numerous oolitic iron formation eratics on the airstrip at the look-out tower hill indicate definitely a close and rich deposit nearby to the north-northeast. As has been ascertained multiple times before boulder trains in till of high concentrations imply the source being only 1 to 3 miles away.

Calculations

Assuming a general dip of the formation of 10 feet per mile in the area under study and the variable thicknesses of glacial overburden as determined previously, a subcrop map of the oolitic iron bed was constructed (lavender line). Northeastwards of the red line (contour 2550) no iron bed should occur. The green line on the map shows outcrop of the iron bed if no glacial overburden were present. The validity of the assumptions was checked by plotting of the positions of drill holes as reported by Kidd.

The best or most likely area for prospecting for additional iron ore beside that outlined by Kidd is the fire look-out tower hill. Firstly, if the foregoing is correct the iron bed there should be at least 30 feet thick, richer in iron content and under shallow overburden. If the overburden is taken to a maximum of 100 feet than the reserves present there should be about 130 million tons with an average overburden to ore ration of 3 to 1. An overburden ration of 6 to 1 would increase the available reserves only to about 200 million tons.

Conclusions and Recommendations

All the foregoing discussions indicate that the most favorable area for prospecting is the fire look-out tower hill. As no definite data, beside the outcrops on the Rambling Creek, are available, no certainty to the conclusions is presented.

It would be desirable to have at least two additional drill holes in areas marked on the map in red. The exact position of the future drill holes are not binding by the areas indicated only provided that they make a triangle with the outcrops on the Rambling Creek as to aid future evaluations of the ore body.

SCHEDULE
to Iron Prospecting Permit No. 29

IN TOWNSHIP EIGHTY-NINE (89), RANGE FOUR (4), WEST OF THE SIXTH (6) MERIDIAN:

Sections Thirteen (13), Fourteen (14) and Fifteen (15), Sections Twenty-one (21) to Twenty-six (26) inclusive, the North East quarter of Section Thirty-four (34) and Sections Thirty-five (35) and Thirty-six (36);

AND

IN TOWNSHIP NINETY (90), RANGE FOUR (4), WEST OF THE SIXTH (6) MERIDIAN:

Sections One (1) and Two (2), the East half of Section Three (3), the North half and South East quarter of Section Ten (10), Sections Eleven (11) to Fifteen (15) inclusive, the North East quarter of Section Sixteen (16), the North half and South East quarter of Section Twenty-one (21), Sections Twenty-two (22), Twenty-three (23), Twenty-four (24), Twenty-six (26), Twenty-seven (27) and Twenty-eight (28), the North half and South East quarter of Section Twenty-nine (29), the North East quarter of Section Thirty-one (31) and Sections Thirty-two (32), Thirty-three (33) and Thirty-four (34);

AND

IN TOWNSHIP NINETY-ONE (91), RANGE FOUR (4), WEST OF THE SIXTH (6) MERIDIAN:

Sections Three (3), Four (4) and Five (5), the North half and South East quarter of Section Six (6), Sections Seven (7) to Ten (10) inclusive and Sections Sixteen (16), Seventeen (17) and Eighteen (18);

AND

SCHEDULE (continued)
to Iron Prospecting Permit No. 29

IN TOWNSHIP NINETY-ONE (91), RANGE FIVE (5), WEST OF THE SIXTH (6) MERIDIAN:

The West half of Section Three (3), Sections Four (4) to Nine (9) inclusive, the South West quarter of Section Ten (10), the North East quarter of Section Eleven (11), the North half and South East quarter of Section Twelve (12), Section Thirteen (13), the East half of Section Fourteen (14), the South half of Section Sixteen (16), Sections Seventeen (17) to Twenty (20) inclusive, the North half and South East quarter of Section Twenty-two (22), Section Twenty-three (23) and Sections Twenty-seven (27) to Thirty (30) inclusive;

AND

What would be statutory road allowances if the lands were surveyed pursuant to The Alberta Surveys Act, lying within the outer limits of the above described lands;

[redacted]

containing an area of Thirty-nine Thousand, Four Hundred and Fifty (39,450) acres, more or less.

AGG011 Figure 1