DEPARTMENT OF MINES

SOUTH AUSTRALIA

GEOLOGICAL SURVEY

URANIUM AND FUEL SECTION

Preliminary Report

on

DEAD HORSE BAY URANIUM PROSPECT

SECTION 42B, HD MULOOWURTIE, CO FERGUSSON

(C. A. Sykes)

by

M. N. Hiern.

GEOLOGIST

D.M. 204/55

July 1957

G.S. Report Refer No 749

H.O. Report Refer No 45/18

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Map Reference

Plan No	Title	Scale
S 1531	Locality Plan	1 inch to 40 chains.

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DEAD HORSE BAY URANIUM PROSPECT

SECTION 42B, HD. MOLOOWURTIE CO. FERGUSSON

(C. A. Sykes)

1. ABSTRACT

Traces of absite occur in Pre-Cambrian rocks at the base of a steep cliff, 1 mile north of Pine Point. The deposit and results of petrological work are described. No further development is warranted.

2. INTRODUCTION

In January, 1955, Mr. C. A. Sykes of 16 Pym Street, Croydon Park submitted a sample of radio-active material which he had found while prospecting for uranium along the eastern coast of Yorke Peninsula. A radiometric assay of the material returned 2.1 lbs U_3O_8 /ton.

A ground scintillation survey of the occurrence was completed in February 1955, and from this a geological inspection was recommended. No such survey was done and the matter lay dormant until it was reopened by Mr. Sykes in February of this year. The prospect was then visited by the writer and the following report has been prepared.

3. LOCATION & TOPOGRAPHY

The prospect is situated on the beach in section 42B (previously 169) Hundred of Muloowurtie, in a bay, known locally as Dead Horse Bay, and is 1 mile north of the town of Pine Point.

The beach is narrow and is backed by steep cliffs over 50' high, the top of these form the edge of a gently undulating plain whibh extends inland for many miles.

Access to the prospect is by a steep path down the cliffs. The transport of heavy equipment, such as a diamond drilling plant would pose a difficult problem and would be best overcome by using sea transport from Pine Point, where there is a jetty.

4. PREVIOUS INVESTIGATIONS

A regional geological map of Yorke Peninsula was prepared during the recent oil exploration programme carried out by the Department of Mines.

More detailed work has been done in the vicinity of Dead Horse Bay and comprises:

1. A ground scintillation survey of the prospect by I. A. Mumme, Geophysicist.

2. A geological survey by J. E. Ridgway of a white clay (kaolinised aplite) deposit situated ¼ mile north of the prospect. A report on this is contained in Mining Review 93, page 94. A later survey was carried out by A. R. Crawford: D.M. 826/49

3. Palaeontological examination of samples of Tertiary rocks, which outcrop in the area, by N. H. Ludbrook, recorded in Palaeontological Report 6/57.

5. ACKNOWLEDGEMENTS

Petrological examination of samples collected by the writer was supervised by Mr. A. Whittle, Chief Mineralogist and Petrologist.

6. GEOLOGY

According to the regional geological map, the Dead Horse Bay prospect lies close to the Archaean - Proterozoic boundary. The rocks are exposed only on portions of the beach and the lower parts of the cliffs and consist of extensively weathered metamorphics which have been intruded by granite and aplite. Kaolinised aplite bodies occur in the cliffs 200 yards south of the prospect and, as described by Ridgeway, are well exposed ¼ mile to the north.

The Hillside and Harts copper mines, where small amounts of uranium minerals have been found in the dumps, lie 2 miles north of Dead Horse Bay.

A horizontal series of Eocene clays, sands and calcareous sandstones unconformably overlie the metamorphic rocks and aplite bodies and occupy the upper 20' of the cliffs. These sediments completely blanket the basement rocks inland.

Samples of radioactive material were collected by the writer, from a rocky beach, about 50' east of the base of the cliffs. On this, the contact between a soft pale green clay rock (to the west) and a hard rusty-brown jasperoid rock (to the east) can be traced for over 100' in a north-south direction, before it disappears to the north under scree material from the cliffs and the sandy beach to the south. The jasperoid rock is brecciated over a width of a few inches along the entire visible length of the contact. Within

the clay rock, a few inches west of the contact, is a 3" band of richly chloritic material which shows significant radioactivity, although this varies from place to place along the exposure. Samples were submitted for petrological examination with the following results.

Bag 2. - radioactive material occurring in a 3" band of dark green clay rock.

"The sample is an extremely altered rock composed of clay material, minute green flakes of chlorite, well crystallised quartz and amorphous silica. The last two minerals form white segregations in the rock. Radioactivity is due to the presence of a few grains of thorian-brannerite (absite) in the rock."

Bag 4. - A pale green clay rock representing the western member of thetwo country rock types.

"This is a structureless and highly altered rock, originally probably a pegmatite or granite. It consists essentially of decomposed felspar (orthoclase, microcline and albite) quartz, scaly sericite and hydro-muscocitz. Dark green chlorite is also present throughout the micaceous material. Iron minerals, zircon, tourmaline and rutile are major accessories of the rock."

Radiometric assay of material similar to that in Bag 2 returned 0.9 lbs U_3O_8 / ton

A further radioactive sample collected from a decomposed clay rock, 100 yds to the south, contained small amounts of an altered member of the thorite group.

7. SUMMARY & CONCLUSIONS

The uranium occurrence reported by Mr. Sykes is of no economic significance.

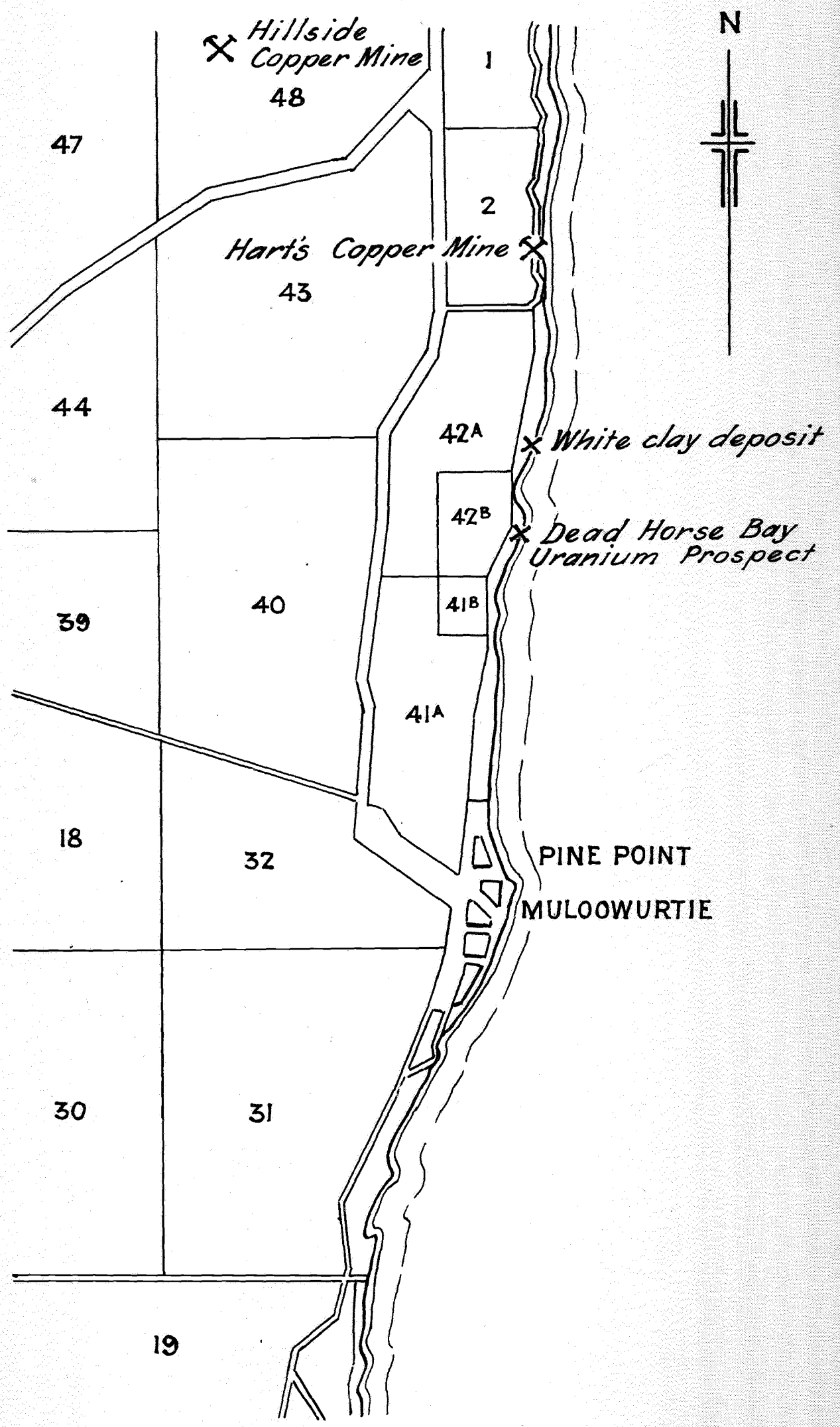
However, the area is of interest because the geologic setting of Pre-Cambrian rocks intruded by granite is favourable for the occurrence of uranium minerals. The overlying Tertiary sediments restrict ground prospecting to the lower parts of the cliffs and rocky portions of the beaches, so that geophysical methods would be the best aid to the discovery of further uranium occurrences.

It is considered that further investigation of the area embracing Dead Horse Bay, Harts and the Hillside mine is warranted and it is

recommended that this be done by a suitable sub-surface geophysical method. Detailed geological mapping at low tide of Pre-Cambrian outcrops should be undertaken at the same time.

M. N. HIERN
GEOLOGIST

MNH: CERF
24/9/57



To accompany report by M. N. Hiern.

S.A. DEPARTMENT OF MINES					
Approved Director	Passed	Drn. Tcd. R.R. Ckd. Exd.	DEAD HORSE BAY URANIUM PROSPECT HD MULOOWURTIE LOCALITY PLAN	D.M. Reg.	Scale: 40 Chns. to 1 in. S 1531 Gh5 Date 29-7-57