

1953/128

copy 2

COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS.

RECORDS.

1953/128

PRELIMINARY GEOPHYSICAL REPORT ON WATERHOUSE URANIUM

PROSPECT NO. 4, N.T.

by

A.F. Allen.

DARWIN, N.T.

PRELIMINARY GEOPHYSICAL REPORT ON WATERHOUSE URANIUM

PROSPECT, N.T. NO. 4.

by

A.F. Alle.

RECORDS

C O N T E N T S.

	<u>Page.</u>
SUMMARY	1
INTRODUCTION	2
TOPOGRAPHY	2
GEOLOGY	2
GEOPHYSICS	3
RADIOMETRIC SURVEY	3
MAGNETIC SURVEY	4
CONCLUSIONS	4
REFERENCES.	4

PLANS AND SECTIONS.

<u>Plate No.</u>		<u>Scale.</u>
1	Radiometric Contour plan.	1 inch - 100 feet.
2	Magnetic Profiles	1 inch - 500 gamma.

SUMMARY.

The Waterhouse Uranium Prospect No. 4 contains several of a series of anomalies detected during the Airborne Scintillometer Survey in the field season of 1953.

This is the only prominent occurrence of radioactivity in laterite so far tested in the Waterhouse area.

No defined relationship between the occurrence of the laterite and the radioactivity is clear. The area includes a disused war camp and there are several trenches in the area down to a depth of 10 feet. These all show a well weathered lateritized zone down to the bottom indicating this zone to be deeper than it seems from surface indications. However not all the lateritic areas contain radioactivity and a prominent ridge of laterite just south of the main area along traverse d 9 gives very low counts.

The laterite is underlain by shales in some parts and it does seem that the radioactivity is connected primarily with these beds and under suitable weathering conditions concentrated in the laterite at the surface.

Some quartz-hematite injection occurs and it is noticeable that in four of the five 'high' spots quartz reefs are prominent.

The highest radioactivity occurs usually in isolated hematized rocks near these reefs. Limonite is always present in these rocks. No other mineralization is evident and no uranium minerals were detected.

The radiometric survey shows one major area of two times background with outlying minor areas.

There are five zones of slightly higher radioactivity.

The highest reading in the area is five times background occurring in a shallow costean dug across the fifth hot-spot.

Areas one to four are where quartz-hematite injection has taken place. Area five occurs in laterite rubble.

Several small hand pits were dug in the major area but bedrock was not reached. The counting rate was not appreciably affected.

A magnetometer survey was carried out in the area. Much interference was encountered from old iron sheeting and piping. In all possible cases these were removed, but several gaps occur in the survey. The results show a large number of irregular highs and lows of very variable extent.

Two costeans have been bull-dozed. One in the first area extended the area of three times background to the east of the quartz reef but the counting rate was not raised. The second dug across the fifth area raised the counting rate from three to five times background.

The results of the radiometric and magnetic surveys are shown on the accompanying plates.

INTRODUCTION.

The prospect covers an area originally enclosing three first order and one second order anomaly located by the Airborne Scintillometer Survey of 1952.

It is situated 1.4 miles from the southern end of Gould Airfield on a true bearing of 218 degrees. It occurs where the track from Gould Airfield crosses the Darwin-Birdum railway line from east to west.

The military co-ordinates on Batchelor sheet are 032 303.

The Air photos are 5090, 5091, Run 17, Pine Creek Survey 1375, 15th June, 1952.

Preliminary ground investigation was carried out in October of 1952 and is contained in 'Preliminary Report on Airborne Scintillometer Surveys by N.H. Fisher and J. Sleiss' Carborne equipment was first used to locate the anomalies and determine their extent in July, 1953. An Auster aircraft carrying a Halross scintillometer also flew over the area at the same time locating a high only near to the first zone. This was carried out by Territory Enterprise Limited.

A survey grid was laid down to serve both the geological and geophysical work. The base line runs north-south for 3,300 feet and traverse lines run across it at 100 ft. intervals.

The detailed radioactive survey covered the whole area. Traverse lines were read at 300 foot intervals in the outer sections where closer work was not warranted.

The work commenced in August and was completed in October 1953.

TOPOGRAPHY.

The anomaly is situated in flat country which falls away to gently undulating terrain to the east and south.

There are numerous drain pipes, iron sheets, fallen in trenches and concrete footings strewn over the area. These are the remnants of a wartime camp.

The outcrop of the Waterhouse granite occurs about two miles west.

GEOLOGY.

A geological plan of the area has been prepared by the geological section and accompanies the respective report.

Generally the area shows little local disturbance. Regionally the beds appear to be on the western limb of a syncline.

The laterite covers most of the area running into alluvium to the north and south. About half a mile to the west the sediments outcrop more prominently.

No indications of uranium minerals were detected in the area.

GEOPHYSICS.RADIOMETRIC SURVEY.

The main traverse lines were first read at 25 foot intervals to enable an overall picture of the area to be obtained.

The total area of twice times background is approximately 600,000 square feet. Altogether this contains about 3,300 square feet of three times background, 100 square feet of four times background and several square feet of five times background.

A ratemeter type 1011c was used for the survey. The five small areas of higher radioactivity will be briefly discussed separately.

Area 1. This is the most extensive zone containing 2,500 square feet of three times background and 90 square feet of four times background.

The highest counts occur in isolated rocks at the surface, these are well hematized and weathered to limonite. The hematization seems to be directly connected with a quartz reef in the zone.

A shallow costean was bull-dozed along the eastern side of the area and this extended the area of three times background but did not give any higher counts. Hard laterite about two feet below the surface did not allow the costean to go any deeper.

Area 2. This contains 150 square feet of three times background. The radioactive rocks are well hematized and isolated. Several broken quartz outcrops occur nearby.

Area 3. This contains 250 square feet of three times background occurring in a hard outcrop of laterite.

Area 4. This area contains 350 square feet of three times background and a few isolated rocks of over four times background. It occurs on the western side of a prominent quartz-hematite vein similar to the first area.

Area 5. This is an area of 7,200 square feet of twice times background lying outside and south of the major area. Originally it contained 30 square feet of three times background occurring over laterite rubble.

A costean was bulldozed north and south directly across the area. Hard patches of rock were encountered just below the surface and the depth of the costean is only two feet. However this increased the maximum counting rate from three to five times background and considerably extended the area of three times background north along the costean.

The highest radioactivity occurred in the resistant beds of hematized shales and sandstones exposed in the costean.

A radiometric contour plan (Plate 1) showing the above areas has been prepared at a scale of one inch equals 100 feet. It accompanies this report.

MAGNETIC SURVEY.

The results of this survey were extremely variable showing a large number of unrelated high and low readings.

Most traverses were read at 12 $\frac{1}{2}$ intervals and later at points outside the traverses to determine if any of the high or low areas were continuous, but none were. All possible care was taken to remove any surrounding iron material that could interfere with the readings.

It was observed that an ordinary eight foot sheet of galvanised iron had a noticeable effect on the magnetometer when it was about 30 feet away in the "broadside on" position and about 60 feet away in the "end on" position.

As some objects were fixed gaps occur in some of the traverses. Where large high or low readings occur at the edges of one of these gaps they have been discarded.

Point DO was used as a suitable box station for work in the area.

A Hilger and Watts vertical force magnetometer with a sensitivity of 31.5 gamma per division as calibrated using the small auxilliary magnet was used for the survey.

The results are shown on plate 2 as a series of profiles along each traverse.

CONCLUSIONS.

No really worthwhile radioactive zones exist in this large area of twice times background. There appears to be some connection between the quartz-hematite injection and the zones of higher radioactivity.

Further costeaning work could be done to determine more clearly the nature of the radioactivity in these areas. During the wet season this would probably be done more easily as the laterite may soften considerably after thorough rain. The area is also well suited to prospecting of this type.

Otherwise the anomaly does not warrant any further work.

REFERENCES.

- | | |
|----------------------------|---|
| Wood F.W. &
McCarthy E. | 1952: Scintillometer Airborne Surveys over the Rum Jungle area and other Portions of the Northern Territory. Com. Bur. Min. Res. Records Rept. 1952/79. |
| Fisher N.H. &
Sleiss J. | 1952: Preliminary Report on Airborne Scintillometer Anomalies Nos. 1,2,3 & 4 - 31st October, 1952. |
-

RESTRICTED

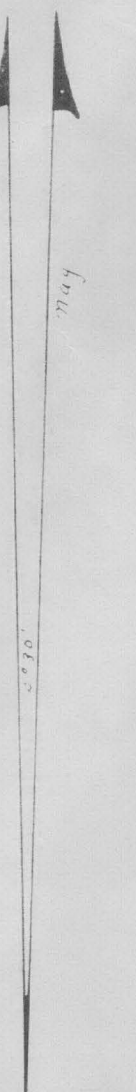
PLATE 1
RADIOMETRIC CONTOUR PLAN
WATERHOUSE URANIUM PROSPECT

NO 4

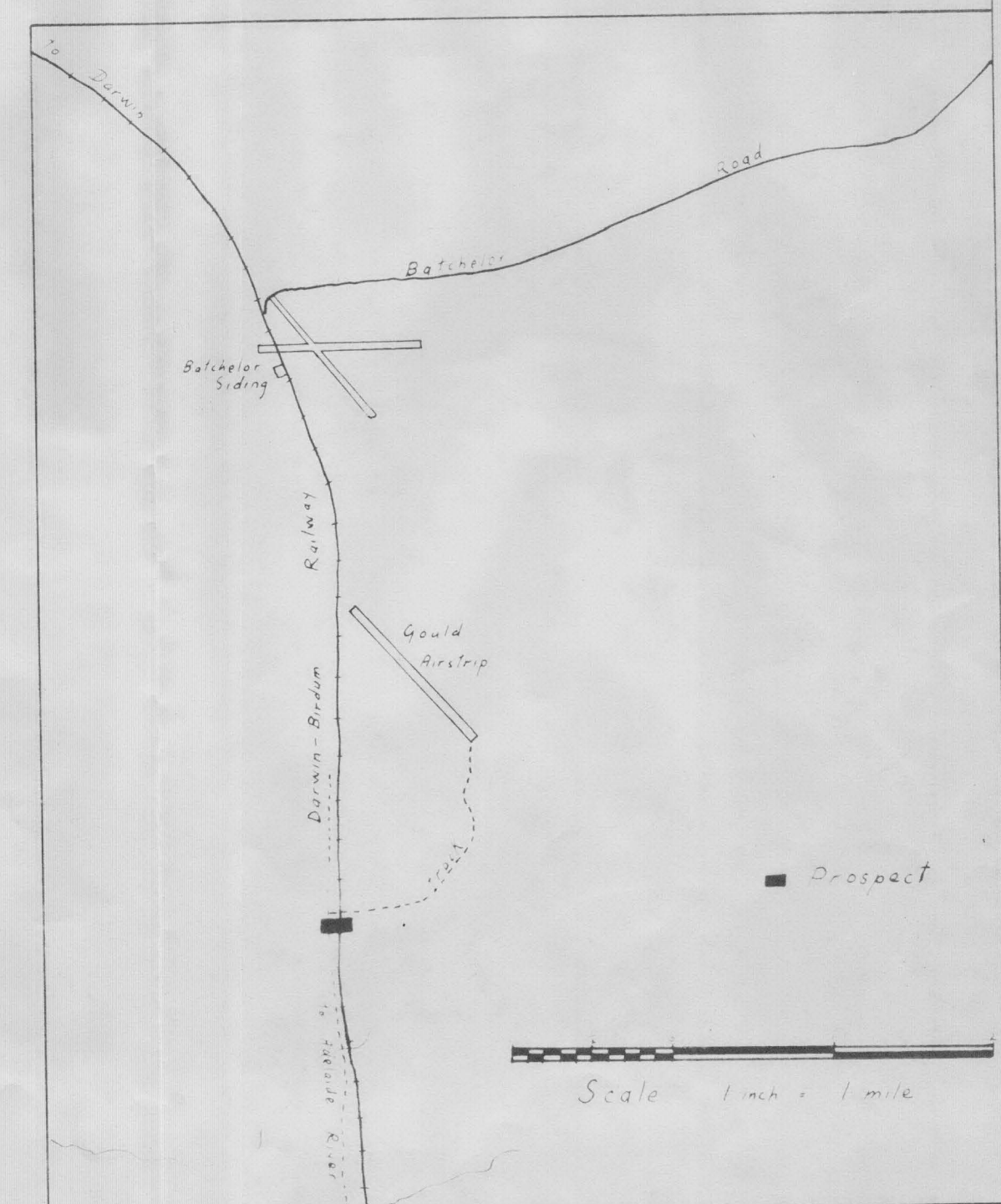
RUM JUNGLE AREA
NORTHERN TERRITORY, AUSTRALIA

Scale 1 inch = 100 feet

Contours 1000
1 x Background
Background = 50 (Scale C)
Ratemeter Type 1011C



Locality Sketch



Radiometric Survey

by

A. F. Allen

August - September 1953

WATERHOUSE URANIUM PROSPECT
NO 4

RUM JUNGLE AREA

d/12 NORTHERN TERRITORY, AUSTRALIA

