

1953/115
B

1953/115

B

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

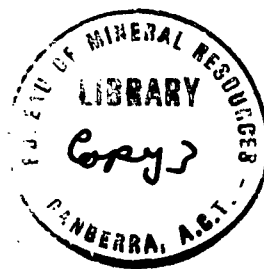
RECORDS 1953, No. 115

RADIOACTIVE SURVEYS,
KATHERINE-DARWIN AREA,
NORTHERN TERRITORY

REPORT FOR QUARTER ENDING
30TH. SEPTEMBER, 1953

by

R. S. MATHESON



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

RECORDS 1953, No. 115

RADIOACTIVE SURVEYS,
KATHERINE - DARWIN AREA,
NORTHERN TERRITORY

REPORT FOR QUARTER ENDING
30TH. SEPTEMBER, 1953

by

R. S. MATHESON

RADIOACTIVE SURVEYS KATHERINE-DARWIN AREA, NORTHERN TERRITORY
REPORT FOR QUARTER ENDING 30TH SEPTEMBER, 1953.

by

R.S. Matheson

C O N T E N T S.

	Page.
GENERAL	1
HEADQUARTERS DARWIN	1
OFFICE	1
WINNELLIE STORE & LABORATORY	1
HOUSING	1
STAFF	2
GEOLOGICAL WORK	2
BRODRIBB PARTY	2
WATERHOUSE PARTY	3
EDITH RIVER PARTY	4
ARNHEM LAND PARTY	5
GEOPHYSICAL WORK	5
GROUND INVESTIGATIONS	5
AIRBORNE INVESTIGATIONS	5
DIAMOND DRILLING	5
RESERVATIONS	6
NEW DISCOVERIES	6
CONCLUSIONS	6
REFERENCES	6

GENERAL.

The four field parties and the Airborne Geophysical Section continued operations in the area during the quarter ending 30th September, 1955.

HEADQUARTERS, DARWIN.

OFFICE.

A Sydney Williams hut in the Larrakeyah military area continued to be used as a temporary office during the quarter. It is hoped however that action will be taken before the commencement of the "wet" season to provide a better temporary office, more centrally situated, in Darwin.

The Bureau staff based on the Darwin office during this period consisted of -

R.S. Matheson, Supervising Geologist.
B.C. Thomas, Clerk.
Mrs. Anson, Shorthand typiste.

J. Misz, Grade 3 Geophysicist arrived in Darwin on 16th August to take up duties as resident officer in charge of geophysical work in the area.

The appointment of the Resident Senior Geologist to take over the duties as officer in charge of the Darwin office is still awaited.

The volume of work now being handled by the office is beyond the capacity of the present office staff, and there is an urgent need for the appointment of an additional clerk to handle records, mail and messages. The present clerk is fully engaged in attending to orders, accounts, returns, staff matters, problems connected with store and enquiries from the various camps etc.

Additional typing assistance is required as it is now necessary for the present typiste to work overtime in an effort to catch up on accumulated typing. The presence of a geophysicist based on the Darwin office has helped to increase the volume of typing. Many reports are also now coming to hand from the field parties.

WINNELLIE STORE AND LABORATORY.

The alterations to establish a proper store and laboratory at Winnellie were continuing at 30th September.

HOUSING

None of the eight houses being built for the Bureau had been completed by the end of September, and revised completion dates as supplied by Principal Architect, Department of Works, Darwin were as follows:

First House - early in November.
Second and third houses - by middle of November.
Other 5 houses - by end of November,

Enquiries from the Furniture Officer indicate that funds are not yet available to allow orders to be placed for the furniture for seven of these houses. There may be a delay of up to two months in obtaining the furniture after the orders have been placed.

It appears likely that we will have to help out some of the married officers based in Darwin with camp equipment until their basic furniture becomes available.

Consideration should be given to what will happen with regard to the single staff based in Darwin over the "wet" season. It appears that there will be eight single staff in Darwin and suitable accommodation is difficult to obtain. It is suggested that Brodribb camp be kept in operation over the wet season.

STAFF

Some rearrangement of geologists in the field parties was effected during the quarter.

R.S. Matheson visited Canberra and Melbourne during the period 15th August to 6th September in connection with discussions concerning the work. During his absence the work in the Katherine - Darwin area was supervised by R.B. Allen. Early in September R.B. Allen was put in charge of the Arnhem Land party.

B.P. Walpole was involved in a vehicle accident towards the end of August and received a broken ankle. He was unfit for further field work and returned to Canberra on 10th September. P.B. Rosenhain was transferred from Waterhouse area and took over Walpole's duties as party leader of the Brodribb Camp early in September.

F.J. Frankovich, who was released from T.E.P. about the end of June to replace F. Joklik in the regional mapping of the Waterhouse area, became leader of Waterhouse party early in September following P.B. Rosenhain's transfer.

K. Crank, Grade 1 geologist, attached to the Brodribb party resigned in August.

The Geochemical team consisting of A.H. Debman and D. White completed their investigation and returned to Canberra by the end of August.

P.H. Dodd is still seconded to Territory Enterprises Pty. Ltd.

GEOLOGICAL WORK.

The geological work carried out between 1st July and 30th September, 1953 was on the same basis as that carried out during the previous quarter.

BRODRIBB PARTY.

Detailed geological work, regional geological work and diamond drilling was continued in this area, more time being spent on regional mapping than in the previous quarter.

Diamond drilling of the Brodribb anomaly was continued, and total drilling done to the end of September was 1534 feet, 923 feet having been done since the end of June. Holes B3, B4, and B5 were completed at depths of 269 feet, 250 feet and 242 feet respectively and hole B6, which had reached a depth of 252 feet at the end of September was still in progress. Only one drill was operating in the area during September the other having been sent to Coronation Hill. Results of the test drilling to date have been disappointing and although sulphide mineralization was encountered the radioactivity as indicated by assaying of sludge samples and Geiger probing of the holes has generally

been low. The only assay results from the holes of 0.01% eU₃O₈* or more have been as follows:-

Hole B2.	from 40' to 45'	0.015% eU ₃ O ₈ .
Hole B3	" 60' to 65'	0.01% "
Hole B4	" 45' to 50'	0.013% "
	" 50' to 55'	0.019% "
Hole B5	" 100' to 105'	0.01% "

It appears fairly definite now that the Brodribb anomaly is the result of superficial enrichment in Ferruginous laterite from a very low grade original source in the underlying Brock's Creek meta-sediments.

It is proposed to discontinue drilling here after completion of Hole B6 at about 300 feet.

Trial self-potential traverses have now been carried ~~at~~ over the Fraser Prospect, but no important sulphide mineralization at depth is indicated.

A total length of 780 feet of bulldozed costeans has been completed at the Ella Creek prospect, and a line of high radioactivity trending in an east-west direction over a length of about 100 feet and with a maximum width of 10 feet is indicated. This radioactivity may again only be the result of superficial enrichment, but the drilling of one test hole is recommended.

The inspection of airborne anomalies continued during the period, but none of those examined can be regarded as important prospects.

WATERHOUSE PARTY.

Regional and detailed geological work was continued in this area.

The detailed work indicated two additional localities in the area warranting some further attention. These are being referred to as the Waterhouse No. 3 and Waterhouse No. 4 prospects.

The Waterhouse No. 3 Prospect is located at Military coordinates 053240 Batchelor sheet and is one of the anomalies located during the airborne survey in 1952. The prospect occurs in an area of folded slates and quartzites which are injected by quartz veins. The detailed geological work has not yet been completed but radiometric work (Alle, 1953) has indicated three main anomalous areas. The first area occurs in a belt of slate rubble, and shows readings in excess of twice background over a length of 340 feet and a width of 140 feet. Within this area is a localised area of from 3 to 4 times background 40 feet long by 30 feet wide.

The second area is located in a belt of hematized rocks and shows readings of twice background over a length of 340 feet and an average width of 150 feet. Within this area is a localised area of from 3 to 4 times background 30 feet long by 20 feet wide.

The third area embraces a belt of rocks in which there has been much quartz injection. An area of 2 to 3 times background extends over a length of about 300 feet and an average width of about 50 feet.

* eU₃O₈ means equivalent U₃O₈ which is the result obtained by radiometric assays.

No radioactive minerals have so far been identified in the areas, but fluorescent minerals occur as veins and spots in the radioactive high zones. Specimens of these are being forwarded for identification.

The background reading for the area generally is about 55 counts per minute.

The Waterhouse No. 4 Prospect is located at Military coordinates 030303 Batchelor sheet. This area embraces the first side of the railway line near the northern boundary of the Hundred of Waterhouse. The area in which the anomalies occur is fairly flat and is extensively laterite covered. Scattered outcrops of siltstone and quartz veins occur. There is an extensive area in excess of twice background here extending 1200 feet east-west by 600 feet north-south, within which occurs a "hotter" area 120 feet by 30 feet, of up to five times background.

Another anomalous area occurs about 600 feet south of this first area and gives readings of 3 to 4 times background over a length of 100 feet and a width of 20 feet.

Radioactivity in the laterite is localised to patches of laterite embraced in the two anomalous areas mentioned above.

Arrangements are in hand to carry out some bulldozed costeaning in this area.

The geological and geophysical reports on the Waterhouse No. 4 prospect are still in preparation.

EDITH RIVER PARTY.

Regional and detailed geological work was continued in the area.

The detailed investigations of known prospects was completed by the end of September, and prospecting work had also been undertaken.

A new radioactive prospect was discovered by Geologist A.B. Clark on 3rd September 1953, at a point 11 miles distant and on a bearing of 33 degrees from the Katherine Post Office.

The prospect is associated with a belt of basic lavas, interbedded with quartzites, grits and pebble beds of the Buldiva Group of Upper Proterozoic age.

Preliminary radiometric contouring in the area of the find has shown that the anomalous radioactivity in excess of 40 counts per second extends in a north-east direction over a length of about 340 feet and has a width of about 200 feet. Within the 40 counts per second contour is a restricted area extending north easterly for 200 feet and is 70 feet wide which shows counts ranging from 75 counts per second to 500 counts per second. The 500 counts per second contour is about 80 feet long and 20 feet wide. The background scintillometer count for the area is 15 counts per second.

Autunite can be seen in the outcrops in the high count area, and two grab samples of the richer material gave the following assay results:-

Sample No.	Field Geiger Reading counts per minute.	Assay % $^{235}\text{U}_3\text{O}_8$
A9812	700	0.59
A9811	600	0.45

The anomalous area consists of an outcropping section of basic lava protruding through sandy soil, and it occurs on the southeast side of a creek.

The prospect is encouraging and detailed geological and geophysical investigations are at present in progress. Arrangements are also in hand to bulldoze the area.

A reservation has been taken out to protect the area.

ARNHEM LAND PARTY.

Detailed geological, Geophysical and geochemical work was carried out in the area during the quarter ending 30th September, work being concentrated chiefly near the Coronation Hill Prospect.

Road work was carried out in preparation for drilling in the area, and two drills commenced operations in the area in September.

The inspection of a few radioactive anomalies located by the airborne scintillometer during test flights over the area was also undertaken by the party.

GEOPHYSICAL WORK

GROUND INVESTIGATIONS.

Ground geophysical investigations were continued during the period.

AIRBORNE INVESTIGATIONS.

By the end of September the airborne geophysical section had completed their flying of the following 1 mile military sheets, and they shifted their base for operations to Katherine:- Reynolds River, Burnside, Ban Ban (Western half), Tipperary, Burrundie.

DIAMOND DRILLING

Two Bureau Sullivan HD 22 drills were operating in the area during the period. They were both based at the Brodribb prospect until the beginning of September, when one of them was shifted to Coronation Hill.

A T.E.P. Sullivan HD22 drill has been doing contract drilling for the Bureau at Coronation Hill since early September.

Total drilling done during quarter ending 30th September was as follows:-

Brodribb	925 feet
Bureau drill Coronation Hill	183 feet 6 inches.
T.E.P.	252 feet 10 inches
Total -	<u>1,359 feet 4 inches.</u>

RESERVATIONS.

An additional reservation of 252 square miles was taken out during the period around the new ABC Prospect at Katherine.

The reservation at Coronation Hill was also amended in size from 63 square miles to 147 square miles.

NEW DISCOVERIES.

On 3rd September 1953, Geologist A.B. Clark of the Bureau of Mineral Resources made a new radioactive discovery about 11 miles north east of Katherine. This find is being referred to as the ABC Prospect.

CONCLUSIONS.

Important information has been obtained during the quarter concerning the regional geology and uranium mineralization in the Katherine-Darwin region.

The geological section of the Bureau has also been responsible for the discovery of a new uranium prospect.

REFERENCE.

- Alle, A. 1953: Preliminary Geophysical Report on
Waterhouse Uranium Prospect No. 3.
-