

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

RECORDS.

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RADIOACTIVE SURVEYS KATHERINE - DARWIN AREA, NORTHERN TERRITORY.

REPORT FOR QUARTER ENDING 31st DECEMBER, 1954.

by

J.H. Lord.

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SUMMARY

Field operations were retarded during this quarter and brought to a close in many localities due to the early onset of the rains.

Parties based on southern offices returned to their headquarters at the end of October, leaving only resident staff.

Detailed geological and geophysical work and drilling was completed on the following Prospects: - A.B.C., Edith River and Burrundie. Some work was done at the Coronation Hill, Brock's Creek, Sleisbeck, Adelaide River and George Creek Prospects.

With a reduced staff it is intended to work at George Creek and Manton Dam during the "wet" season.

STAFF.

The following staff were based on the Darwin office at the end of the quarter:-

J.H. Lord,	Geologist	J.B. Misz,	Geophysicist
D.E. Gardner,	"	G.F. Clarke,	"
J. Rade,	"	W. Burns,	Radio Technician
J.B. Firman,	"	A.D. Parton,	Geophysical Assistant
(Mrs). I. Rade,	Draftswoman,	G.G. Canning,	Drill Foreman
(Miss) P.A. Miller,	Tracer,		
B.C. Thomas,	Clerk.	(Mrs). B.J. Schofield,	Typiste
T.H. Hocking,	"	(Miss) I.A. Brookman,	Clerical Assi

In addition to the above there are two drill runners and 16 wages hands.

Mr. H. McCulloch, internal auditor for the Australian Atomic Energy Commission, assisted in the office during December, while Mr. Thomas was on leave.

The visiting regional geological, metalliferous and radio-metric geophysical parties returned south at the end of October and early November.

HOUSING.

Of the twelve houses being constructed at Fannie Bay, all had been commenced by the end of the quarter. Some were well-advanced in construction, but it is doubtful if any will be completed before the end of the "wet" season (April, 1955).

WINNELLIE STORE.

The lack of a stores' clerk at Winnellie store to maintain records caused difficulties in checking for discrepancies in stores and equipment returned by field parties. The need for such a position was reported in January, 1954, but to date it has not been created.

The camping equipment in the store is being checked and repaired where necessary, ready for next season.

One room at Winnellie has been converted into a chemical laboratory.

RADIOMETRIC LABORATORY.

Since the early wet conditions reduced field operations, the work for the laboratory has decreased rapidly during the quarter.

During the quarter an average of 15 assays per week were completed by the laboratory.

The decrease in the number of instruments requiring repair was not so marked. An average of 10 instruments per week were repaired, of which 4 have been for private persons.

FIELD OPERATIONS.

Field operations in the Katherine-Darwin Area were quickly terminated early in this quarter because of unusually early rains. Darwin recorded over 13 inches in October, compared with the previous highest recording of 6 inches. This was followed by heavy late November rains in the South Alligator area, which made working conditions in that area impossible.

The area, which attracted most attention during this quarter, was the South Alligator River fault zone, where several spectacularly rich secondary deposits were located. Details of these have been given in the November monthly report.

There has been an average of 44 Authorities to Prospect held during this period.

A.B.C. PROSPECT.

Drilling continued on this area throughout the quarter. Early in the quarter the drilling on the original prospect was completed and drilling on other areas showing radioactivity was commenced. One hole was drilled to investigate a strong magnetic anomaly which proved to be caused by an inversely polarised dolerite dyke.

The last hole of the programme is in progress to test the volcanics at depth.

The original prospect was found to consist entirely of secondary uranium minerals and the deposit may be wholly supergene.

The mineralisation occurs in a small down-faulted block and the ore reserves are disappointingly small. It is estimated that there are 1,056 tons of uranium ore available averaging 0.4% U_3O_8 per ton. If the average grade is reduced to 0.25% U_3O_8 per ton, it is estimated that there are 1,950 tons of ore available. It is doubtful if it is economic to extract the extra 900 tons because the cost of extraction and cartage must be reduced to below \$3 per ton.

EDITH RIVER PROSPECT.

The drilling at Deposit A and F in this Prospect was completed. The shear zones, which were the targets for the drilling, were encountered at each Deposit but the radioactivity was low and no uranium mineralisation was recognised.

No further work is warranted.

BIRRUNDIE PROSPECT.

One hole to a depth of 218 feet was drilled on this Prospect. Drilling proved slow due to the rods being stuck on two occasions causing considerable delays.

The object of the drilling was to test at depth the radioactivity found in a few small outcrops of light brown rock, which is gossanous in places and has a maximum count of 3 to 4 times background.

The drill passed through argillaceous siltstones to 185 feet, where diorite was encountered and this continued to the end of the hole at 218 feet. No uranium mineralisation was found in the core and probing failed to disclose any significant radioactivity. Pyrite was identified in the diorite and pyrite casts in the sediments.

No further drilling is warranted and it is recommended that the B.M.R. Reserve be abandoned.

CORONATION HILL PROSPECT.

At the beginning of November a bulldozer commenced work on cutting three benches on the site of Coronation Hill, in an endeavour to remove the rubble and expose the bedrock on this steep slope.

Radiometric gridding was done before and after the bulldozing.

On completion of the work the geology along the benches was mapped. This was made difficult by the rains, but it was completed by the end of November and the area was then evacuated.

Two new areas of radioactivity were located towards the north-western corner of the reservation. Uranium mineralisation was uncovered on one of the areas.

Reports of the above work are being prepared.

GEORGE CREEK PROSPECT.

As staff became available, work was commenced on this Prospect. First radiometric gridding was carried out, which disclosed several anomalies worthy of close investigation. Later in the quarter geological and structural mapping were done and some costeaning.

Several occurrences of uranium mineralisation in the form of torbernite were located on the Prospect.

The area will warrant drilling during the "wet" season.

REGIONAL GEOLOGICAL PARTY.

The regional geological party completed its season's operations at the end of October.

During the season the party mapped the following one-mile sheets:- Table Top (east and west), Ban Ban (east and west), Tipperary (east and west), Burrundie (west), and Burnside (east). In addition a large area was mapped regionally in the vicinity of the Sleisbeck Prospect.

SLEISBECK PROSPECT.

Six diamond drill holes were probed by the Bureau for the company operating this Prospect.

The Prospect was inspected and reported on for the Australian Atomic Energy Commission in November.

ADELAIDE RIVER PROSPECT.

The only work done at this Prospect by the Bureau was the probing of three diamond drill holes.

The company's activity has been reduced during this quarter to the exploration of the primary mineralisation encountered in Shaft No. 5 and to diamond drilling.

Shaft No. 5 was sunk to 110 feet and after cross-cutting 46 feet to the west the shear was intersected. The shear is four feet wide and is mineralised with chalcopyrite, arsenopyrite (?), pyrite and pitchblende, together with secondary uranium minerals. Apparently the intersection is in a zone of change from secondary to primary mineralisation and may mean that, if there has been fluctuations in the water table, this particular zone is impoverished. The shear zone may average 0.25% e U₃O₈ at this intersection.

The company originally intended to sink the shaft to 220 feet and cross-cut again to the shear, but this idea was later abandoned in favour of winzing on the shear.

BROCK'S CREEK PROSPECT.

The company operating this Prospect continued underground prospecting without any noteworthy results. The mineralisation in all cases is concentrated along narrow shears and fractures, but does not develop into a mineable ore body.

One drill hole, which the company drilled, was probed by the Bureau. No uranium mineralisation was indicated.

MISCELLANEOUS OPERATIONS.

Geobotanical Investigations:

Mr. A. Debnam, geochemist, attempted to locate further uranium prospects on the A.B.C. Reservation at the beginning of the quarter, but was diverted to geochemical work on the new lead prospect at Nanooma, 20 miles W.N.W. of Goodparla Homestead, until he returned south early in October.

Manton Dam Area:

The radiometric and self-potential investigations on the Manton Dam area were completed. Mr. J. Barlow, geophysicist-in-charge, recommended two drill sites, one to test an intense self-potential anomaly located in the Rum Jungle shales and the other to test the Crater Formation.

A new road has been bulldozed into the drilling sites, so that the drilling can be carried out during the "wet" season.

Rum Jungle Area:

The metalliferous party of the Geophysical Section completed operations at Rum Jungle and returned to Melbourne at the end of October.

Air-Borne Scintillometer Anomalies:

The greater portion of the anomalies on the Reynolds River sheet were examined, but no further examinations were made because there was no geologist available for the work.

Authorities to Prospect:

Several Authorities to Prospect and Mineral Leases were examined for the Australian Atomic Energy Commission and Director of Mines, and reports have been submitted.

The areas showing most promise were those examined along the South Alligator River fault zone.

J. H. LORD.

February, 1955.