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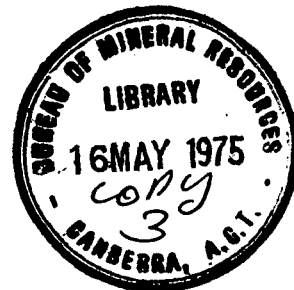
RECORDS 1953/120

PRELIMINARY Geological Report on the ELLA
Creek URANIUM PROSPECT, N.T.

by

009669

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PROSPECT, NORTHERN TERRITORY.

RECORDS

1030

<u>Plate No.</u>	<u>PLANS.</u>	<u>Scale.</u>
1	Geological Map, Ella Creek Uranium Prospect, N.T.	1 inch - 100 feet.

PLANS.

Plate No. 1 Scale. 1 inch - 100 feet.

Geological Map, Ella Creek
Uranium Prospect, N.T.

DATE OF STATE TAX RETURN: 12/31/2013

SUMMARY.

A first order radioactive anomaly discovered by an airborne scintillometer survey has been examined on the ground by geological, geophysical and geochemical methods. Counts of more than 10,000 per minute, and of 6,000 per minute, have been recorded from two shallow pits sunk on small areas which registered 9 and 6 times background readings respectively, on the surface. A total length of 780 feet of costeans has been bulldozed. No uranium mineralization has been observed either on the surface or in pits and costeans. Inspections by ultra-violet lamp have failed to reveal any fluorescent minerals.

INTRODUCTION.

The Ella Creek uranium prospect is a first order anomaly discovered by the Bureau of Mineral Resources airborne scintillometer survey of 1952. Subsequently the prospect was located on the ground by F.J. Frankovich who made a preliminary inspection in December, 1952.

The prospect is one of a group of anomalies which is oriented in an east-west direction over a distance of eight miles. The name of the prospect is derived from the fact that on the Marrakai Military map Ella Creek is the named feature nearest to the prospect.

In order to assess the potentialities of the prospect a combined programme of geological, geophysical and geochemical surveys was initiated in May, 1953. K.A. Crank and K.G. Smith prepared a geological and topographic map; A Debnam and D. White conducted geochemical tests on soil samples obtained from the area and I.A. Mumme carried out radiometric, magnetometer and self-potential surveys.

To test the value of radioactivity beneath soil cover, I.A. Mumme sank a pit on each of two small areas which registered 9 and 6 times background reading respectively. From pit A (see Plate 1), 10,000 counts per minute were recorded on a counter, type P.R.M. 200. From the second pit, 6,000 counts per minute were recorded. This pit has since been obliterated during costeaning operations. A total length of 780 feet of costeans was bulldozed. This operation proved difficult and although a ripping machine was employed in addition to the bulldozer the final depths of the costeans were inadequate for the purpose of furnishing reliable geological information.

For the purposes of this survey, a reading of 50 counts per minute was adopted as background count.

LOCATION AND ACCESS.

The map co-ordinate position of the prospect is 103653 on Marrakai one-mile military map. Aerial photograph coverage is obtained on photographs 5018 and 5019 of Run No. 1 Pine Creek survey of November, 1950. The prospect is 2.5 miles west of the 41 mile peg on the Stuart Highway and 3 miles south-east of the Brodribb prospect.

Access via a bush track which deviates from the Brodribb Highway at a point 0.7 miles south-west of the Ella Creek crossing. The track is 2.1 miles in length and during the dry season it offers easy access to all types of vehicles. The total distance from Brodribb camp is 5.5 miles. It is anticipated that the present route will prove impassable during part of the wet season.

GEOLOGY.

REGIONAL.

Around the area of the prospect, rock types are slates, sandstones and quartzites of the Brooks Creek Group of Lower Proterozoic age (Moakes, 1949). These rocks are on the northern flank of the dome shown on the geological map of the Rum Jungle structure (Matheson, 1953). The granite contact shown on this map is approximately three miles south of the Ella Creek prospect.

Regional mapping carried out during 1953 by Bureau of Mineral Resources field parties has established firstly that the beds of the Ella Creek prospect are higher in the stratigraphic section than those of the known uranium-bearing area at Rum Jungle and secondly that a probable north-west trending fault subsidiary to the Giant's Reef Fault, is located approximately one mile east of the prospect.

DETAILED.

Lithology: In the area mapped, the dominant rock type is slate and two types of slate have been recognised; namely - (i) Grey slates (ii) Hematised and silicified slates.

The grey slates outcrop in the northern portion of the area. The slates are slightly contorted; except towards the west, the slates strike at 85 degrees (magnetic) and the beds are vertical. There is a well developed shear cleavage which strikes at 60 degrees (magnetic) and which has a vertical dip. In the western sector, the slates are more strongly contorted and their general strike is 50 degrees (magnetic). The grey slates contain little hematite.

Hematised and silicified slates outcrop in the central sector and also in the extreme south. They are strongly contorted, but exposures are insufficient for the mapping of structural details. There are numerous quartz stringers along the bedding and a few narrow quartz veins transgress bedding planes. Three varieties of hematite have been observed, namely granular, compact and botryoidal.

The zone of silicification is an area of fine-grained, homogeneous material. Several blocks of rubble of this material show small fold structures preserved.

The zone of silicification merges with hematised brecciated quartzite which forms a ridge which trends south-east for a distance of one mile.

Radioactivity and Mineralization. Radioactivity is highest in, and practically confined to, the hematised, silicified slates. In those areas of high radioactivity where no outcrops occur, pitting and costeaning have revealed hematitic material. Pit A was sunk to a depth of eighteen inches. A surface count of 200 per minute was obtained at this locality; the count at the bottom of the pit increased

to 400 per minute. Individual specimens of hematized, silicified slate obtained from this pit failed to reveal any marked radioactivity.

Pit B was sunk to a depth of two feet. In the eastern end of this pit, more than 10,000 counts per minute were obtained from soft, hematitic material which carried a few narrow veins of quartz.

In costean No. 2, an area of hematitic material approximately ten feet in width, gives high indications of radioactivity. Insufficient ground has been opened to establish definite continuity of high radioactivity between Pit B and the radioactive "high" of costean No. 2.

In the area of the prospect there is no visible uranium mineralization. Ultra-violet lamp inspections have been made of outcrops; pits and costeans but no fluorescent minerals were found in them. Geochemical tests for copper, cobalt and lead failed to reveal any trace of these elements. A radiometric assay of a sample from Pit B gave a result of 1.0% equivalent U_3O_8 . Other samples have been forwarded to Melbourne for exhaustive radiometric and chemical assays, but results are not yet available.

RECOMMENDATIONS AND CONCLUSIONS.

In all cases, the high indications of radioactivity are associated with hematitic rocks. In the absence of visible uranium minerals and of fluorescent minerals it is considered that further testing of the prospect should be delayed until the nature of the radioactive substances has been determined in the laboratory.

In the chief area of interest, i.e., in the vicinity of costeans Nos. 1 and 2, geological information available at present is inadequate for the location of drill holes which may be required. In order to determine the attitude of the beds in this area, it is recommended that deeper pitting be attempted. It is anticipated that the use of explosives will be necessary in this work.

REFERENCES.

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| Noakes, L.C. | 1949: | A Geological Reconnaissance of the Katherine-Darwin Region, N.T. Com. Bur. Min. Res. Bull 16. |
| Matheson, R.S. | 1953: | Rum Jungle Investigations 1951 and 1952. Progress Report. Com Bur. Min. Res. Geol. Report 1953/24. |

ELLA CREEK URANIUM PROSPECT

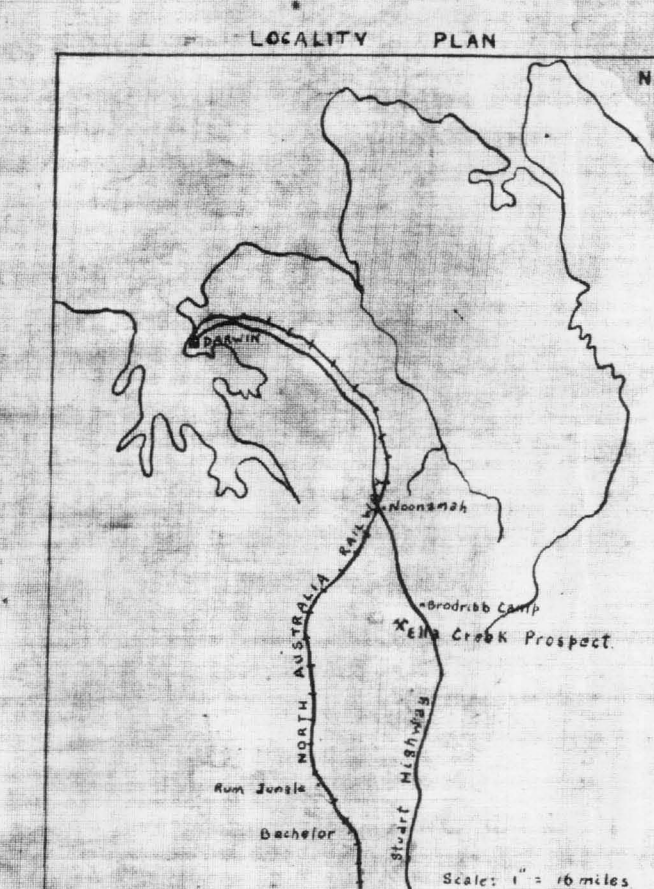
RUM JUNGLE AREA

NORTHERN TERRITORY AUSTRALIA



Reference

- | | | |
|--------------------------------|--|---|
| PROTEROZOIC
CREEK
BROOKS | | Hematised Brecciated Quartzite |
| | | Zone of Silicification with some veinlets of Hematite |
| | | Hematised Silicified Slates |
| | | Grey Slates |
| | | Topographic Contours |
| | | Radiometric Contours |
| | | Strike and Dip of Beds |
| | | Strike and Dip of Cleavage |



Plane Table and Telescopic Alidade Survey, and Geology by

KAM CRANK and K G SMITH

Map June 1953