COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS.

RECORDS.

1953/123

PROGRESS REPORT ON THE ABC PROSPECT AT 31ST OCTOBER, 1953.

by

R.S. Matheson.

CANBERRA.

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CONTENTS

PLANS

Plate No.		Scale
1	Geological Map ABC Uranium Prospect	1" = 100 feet.

PROGRESS REPORT ON ABC PROSPECT

AT 31ST OCTOBER, 1953

R.S. MATHESON

RECORDS 1953/123

This prospect was discovered by Geologist A.B. Clark on the 3rd September, 1953 at a point 11 miles distant and on a bearing of 33 degrees from the Katherine Post Office. Following its discovery a reservation was taken out on behalf of the Bureau of Mineral Resources to protect the area.

Detailed geological and geophysical investigations have since been undertaken in the area, and costeaning by hand labour and bulldozer has also been done. The examination and testing of the prospect is not yet completed but a summary of the information concerning the prospect available at 31st October 1953 is given below.

The prospect occurs in a belt of basic to intermediate volcanics interbedded with quartzites and grits of the Buldiva Group of Upper Proterozoic age. These volcanics and sediments have a general strike of N 30 degrees west and a general northeasterly dip of 40 to 45 degrees but there is a local steepening in dip to about 70 degrees north eastward near the prospect, due to faulting. This fault strikes in a north easterly direction and appears to dip steeply, and the horizontal displacement thereon is about 1 mile, the eastern side having moved.

Hematite occurs as coatings on the quartzite underlying the volcanics, and there is a network of steep and flatly dipping, reddish, hematite stained, silicified veins occurring in the volcanics at the find.

The nearest exposed granite is approximately 20 miles distant.

Autunite and phosphuranylite were present in the outcrops at the site of the original discovery, and 8,000 to 10,000 counts per minute were recorded with the Austronic Geiger counter. Two grab samples taken from the outcrop of what appeared to be the richest material assayed 0.59 and 0.45% e U_3O_8 respectively.

Radiometric contouring in the vicinity 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 a width of 200 feet and corresponds more or less with the area of volcanics outcropping through sandy soil. Within the 40 counts per second contour is a restricted area extending north easterly over a length of 200 feet and a width of 70 feet, which shows counts ranging from 75 to 500 counts per second. The 500 counts per second contour is 80 ft. long and 20 feet wide. The background scintillometer count for the area is 15 counts per second.

To the end of October 1,400 feet of bulldozed costeaning and 540 feet of hand costeaning had been carried out at the find.

The bulldozed costeaning, which was carried out in soil covered areas, has not yet yielded any important results, but the hand costeaning, which was done on the outcropping area, has provided valuable information. Seven hand costeans (A to F) have been sunk to shallow depths in a north westerly direction across the outcrop of the lode at intervals over a length of 180 feet. Details of the costeans are given below and their positions can be seen on the accompanying plan (Plate 2.).

COSTEANS A, C AND F.

High Geiger counts, up to and exceeding 10,000 per minute with an Austronic ratemeter were obtained in Costean A, F, and C, and these costeans have been sampled. Results are tabulated below.

COSTEAN.	Section containing at least 0.1% U3O8 (measured from S.W. end of costean) Ft.	U3O8 Content of Section. Minimum %	Maximum %	Average %
A	From 35'6 to 48' viz. length 12'6"	0.131	0.663	0.305
C	From 65' to 102' viz., length-37'	0.178	1.523	0.75
F	From 18' to 33' viz., length-15'	0.144	0.8	0.511

The uranium content of the sample taken at the north-eastern end of costean C is 0.56 per cent. The costean extends an additional 15 feet to the north-east but it has not cut through the creek gravel at the locality. Clearly, it should be sunk to below the gravel and sampled some distance farther to the north-west.

OTHER COSTEANS, VIZ. B.D.E.

High Geiger counts have not been obtained in these costeans. However, they are shallow, being mostly less than 2'6" deep. It has been found on the ABC prospect that small counts and low uranium content at a shallow depth is succeeded in some localities by high counts and high uranium content at a slightly greater depth. Thus, costean F, at a depth of 2 feet has an average uranium oxide content of .511% over a length of 15 feet and counts ranging from 3,000 to more than 10,000 per minute. At the surface, the maximum count, obtained only over short lengths, was 400 per minute. Each of the costeans included here, viz. B, D and E; over some portion of its length, gives a count rate sufficiently above background to warrant deepening it over this portion. A summary of the data is:

Costean.	Background count per minute	Count over anomalous portion of costean per minute.	Distance of anomalous portion from south-west end. feet
B	In the volcanics 100-140	Ranges from 400 - 1500.	0' - 60'
D	from 0 to 84' ranges from 140 to 280	Ranges from 240 to 1150	84' to 126'
E	Elsewhere in costeans range from 80 to 140.	Ranges from 120 to 160	9' - 48'

The uranium minerals so far identified are autunite and phosphuranylite which are present both in the Amygdaloidal basalt and in the silicified hematised vein rock. Both these minerals are thought to be secondary, and no primary uranium mineral has yet been recognised. It is suspected however that the primary mineralization may be confined to the network of silicified, hematised veins, as the secondary uranium minerals are disseminated through the vein material in addition to occurring as coatings on joints and fractures.

No copper minerals are present at the find, but secondary copper minerals have been noted in the volcanic belt elsewhere along its strike.

The reason for localisation of uranium mineralization in the volcanics at the find is not yet clear, and further work will have to be done to establish it. It is possible that the north-east striking fault, which cuts through the area may have a bearing on mineralization.

Further work will also have to be undertaken to determine the shape, size and attitude of the ore body which is not yet clear. With a view to determining this it is proposed to drill a series of vertical holes over the deposit during the "wet" season. Road-work is at present in progress to give access to the area.

A detailed report on the prospect is at present being prepared by Geologist D.E. Gardner, who was in charge of field work in the area.

CONCLUSIONS

Available information indicates that the ABC Prospect is an important discovery, but further work is required to determine the shape, size and attitude of the deposit and the nature of the primary mineralization.

The deposit occurs in association with a belt of volcanic rocks well above the base of the section of the rocks of the Buldiva Group of Upper Proterozoic age. This in itself is an important discovery in opening up the Buldiva Group as a potentially favourable province for prospecting for uranium deposits. Further geological work may lead to establishing structural controls for localisation of uranium mineralization in the Buldiva Group.

PLATE 1

GEOLOGICAL MAP

A.B.C. URANIUM - PROSPECT, KATHERINE, NORTHERN TERRITORY.

Scale

0 100 200 300 400 Feet

REFERENCE

QUATERNARY — Qrs — Soil cover and alluvium.

UPPER PROTEROZOIC
- Pub_E
- Pub_D — Bulolva Group
- Pub_C
- Pub_B
- Pub_A
- Pue — Edith River Volcanics

LOWER PROTEROZOIC — P1b — Brocks Creek Group.

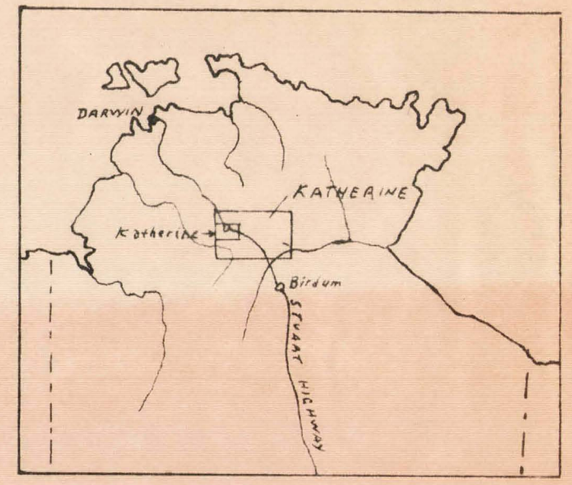
Section of costean assaying at least 0·1 per cent U_3O_8

Radiometric contours in counts per second on Mairoga scintillometer.

200N Grid-point on base line.

100 Topographic contour based on assumed datum 100 feet at 100 N on base line.

POSITION OF AREA DEALT WITH IN REPORT AND REFERENCE TO AUSTRALIAN FOUR MILE AND ONE MILE SERIES.



GENERAL GEOLOGY OF PORTION OF THE KATHERINE AREA.

Scale

0 1 2 3 Miles