COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

21

SECRET

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DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS.

RECORDS.

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WHITE'S EXTENDED PROSPECT, RUM JUNGLE, NORTHERN TERRITORY.

by

H. J. Ward.

R E P O R T

ON

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1	Geological Plan and Section and Radiometric Sections of Costeans, White's Extended Prospect.	1 inch - 40 feet and 1 inch - 20 feet

INTRODUCTION.

During the 1950 Field Season three radiometric anomalies were located by geophysical methods on a low hill situated between 1,300 and 2,000 feet east of White's Deposit. This area is known as White's Extended Prospect. In 1951 geological mapping on a scale of 40 feet to an inch was undertaken and this was followed by costeaning and diamond drilling.

Owing to other commitments in the Rum Jungle area the exploratory programme and mapping in the White's Extended area has not been completed.

GEOLOGY.

GENER AL.

White's Extended is situated near the nose of the Giants Reef Dragfold in the same slate formation as Brown's Deposit and White's Deposit. The slate formation at White's Extended which is predominantly carbonaceous and poorly exposed is bounded to the north, east and south by the quartzite breccia formation.

The quartzite breccia formation which is similar to that described in the report on White's Deposit (Ward, 1953) varies from rocks with medium sized subangular quartz pebbles to coarse angular quartz boulders set in a hematised sandy matrix. Within the quartzite breccia are beds of grey and pink quartzite the continuity of which is hard to map owing to poor surface exposures.

Distinct from the quartzite breccia is the "shaly breccia", which possibly represents shaly limestone. Exposures of the quartzite breccia present a coarsely pitted and jagged surface. The raised portions of which generally consist of siliceous material. In fresh sections the rock consists of blebs and grains of quartz in a matrix of quartz and hematite and possibly ankerite. In advanced stages of weathering the surface of the rock has a cellular texture and the rock itself is almost completely kaolinised. When the shaly breccia was intersected 100 feet below the surface by a diamond drill hole (WEDE) two feet of limestone core was recovered. This suggests that the shaly breccia may be the weathered product of an altered limestone with intercalate shaly bands. The stratigraphic relationship of the shaly breccia and the quartzite breccia is not clear and it appears to have been complicated by faulting. Until further evidence is obtained it will be necessary to accept the shaly breccia as a marginal section of the quartzite breccia formation

STRUCTURAL GEOLOGY.

The detailed geological structure of White's Extended area is difficult to interpret owing to the poor exposures of the slate and quartzite breccia formation.

White's Extended is situated near the nose of the Giants Reef Dragfold in the slate formation, which is continuous from Brown's and White's Deposit. The general trend of the rocks is in an easterly direction and the beds dip about 80 degrees to the south.

The presence of a N30°W fault and a N60°W fault has been observed. The age relationships of the faults cannot be readily determined, but it is thought that the N60°W fault may displace the N30°W fault. The N60°W fault forms the junction of the slate and the quartzite breccia formation. No mineralization has so far been found on the northern side of this fault.

MINERALIZATION.

Costeaning and diamond drilling has shown the presence of secondary uranium minerals determined as phosphuranylites and autunite. These minerals occur in areas giving counts of greater than seven times the background count. Small amounts of malachite and pyrite were observed in a quartz veinlet about 30 feet from the northern end of Costean A, but torbernite does not constitute ore of the secondary uranium minerals so far recognised at the prospect.

The secondary uranium minerals are in the cavities of the brick red to brown gossanous alteration product of the "shaly breccia", and also in the opaline quartz which has been deposited in fractures within the rock. To date uranium minerals have not been found in the slate formation. It may be possible that the "shaly breccia" has provided a more favourable environment for the deposition of secondary uranium minerals however, and primary mineralization may be present in the slate formation at depth.

WORKINGS.

In 1951 the four costeans listed below were dug to test the radiometric anomalies in the White's Extended area.

Costean.	Length.
A	160 feet
B	80 feet
C	60 feet
D	75 feet
Total	375 feet

In 1952 costean B was extended over 500 feet northwards to the quartzite breccia-slate contact.

DIAMOND DRILLING.

Six holes totalling 670 feet in length and a seventh (WEI) partially completed have been drilled at White's Extended to test radiometric anomalies at depth. Two holes WEDA and WEDF intersected low grade uranium ore.

Details concerning the drill holes are given in the following table.

TABLE.

DRILL HOLE.	COORDS.	REDUCED LEVEL OF SITE.	BEARING.	INCLINATION.	BORE DEPTH FEET INCHES.	RESULTS INSTRUMENT ASSAYS % U_3O_8
WEDA	24N 139.5W	352'	308°	60°	134' 6"	Average about 0.07% with maximum 0.09% between 90 ft. and 125 ft.
WEDB	20S 130W	352	322°	45°	140'	No important results.
WEDC	10.5N 155W	352	320°30'	60°	60'	No important results.
WEDE	29N 161W	352'	320°30'	60°	123'	No important results.
WEDF	8N 91W	353'	320°30'	60°	100'	Varies from 0.04% to 0.10% between 25 and 50 feet otherwise less than 0.04%
WEDG	25N 143E	352'	360°	60°	113'	Varies from 0.05% to 0.06% between 40 and 50 ft. otherwise less than 0.04%.
WEI	61.5S 168W	350'	360°	50°	170°	No results yet available.

ORE RESERVES.

The testing of radiometric anomalies at White's Extended has not conclusively established the presence of a uranium orebody, and much work must yet be done to enable an accurate estimation to be made of the ore reserves. However a conservative estimate of the oxidised ore may be made by assuming an average width of 4 feet and a length of 60 feet and a vertical depth of 50 feet. Using a tonnage factor of 13 cubic feet to the ton this block is estimated to yield 3,230 tons of oxidised uranium ore containing not less than 0.1 % e U_3O_8.

Listed below are the assay results of channel and sludge samples from the lode.

Costean Channel Samples.

B71	Costean A.	65 - 70 feet from north end.	0.091% U_3O_8
B72	" "	85 - 90 " " " "	0.289% U_3O_8
B73	" B	12 - 16 feet from north end.	1% (approx).
B74	" "	16 - 20 " " " "	0.475% U_3O_8
B75	" "	20 - 24 " " " "	0.12% U_3O_8
B76	" "	24 - 28 " " " "	0.175 % U_3O_8
B77	" "	28 - 32 " " " "	0.056 % U_3O_8
B78	" "	32 - 36 " " " "	0.106 % U_3O_8

Drill hole Sludge Samples.

DDH	WEDA	0.07% U_3O_8 between 90 feet and 120 feet bore depth.
	WEDF	0.13% U_3O_8 between 30 feet and 35 feet bore depth.

CONCLUSIONS.

The work done to date should be supplemented by further diamond drilling and shaft sinking when equipment becomes available. Shaft sinking and cross cutting at depth between the two main Costeans should provide valuable information regarding ore occurrence.

Costeaning to aid the interpretation of geological structure in the slate formation is also necessary.

ACKNOWLEDGEMENTS.

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REFERENCES.

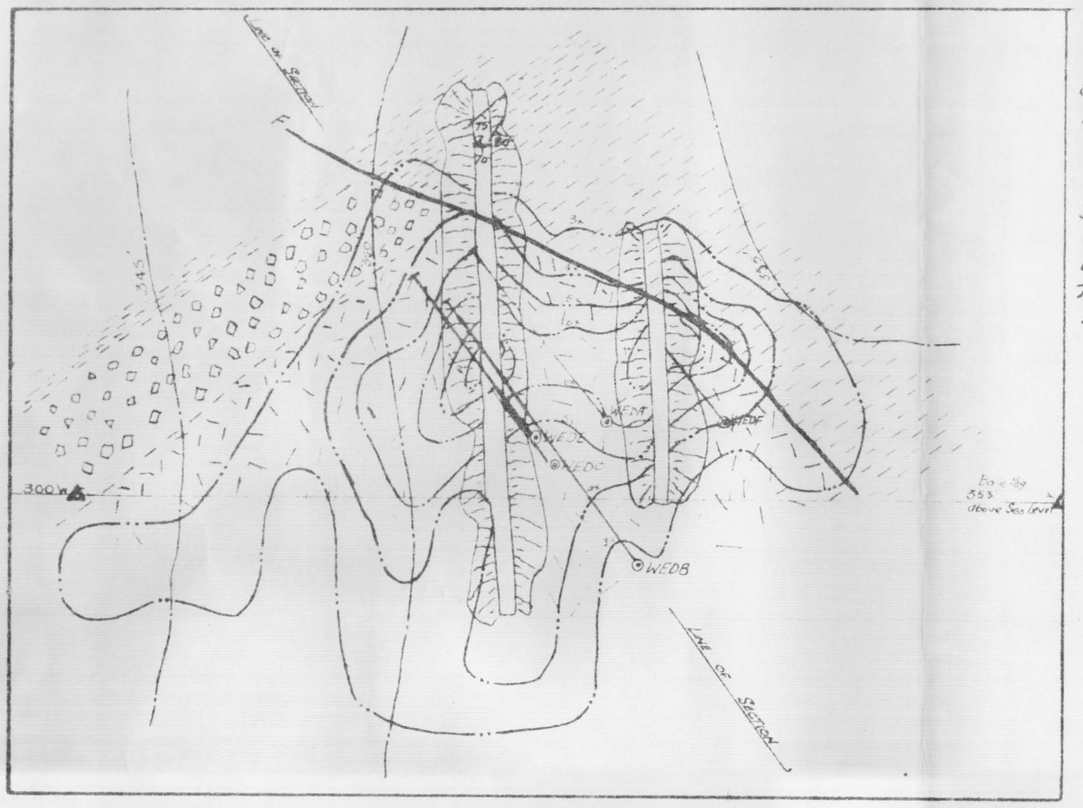
R.S.Matheson.	1953:	Rum Jungle Investigation 1951 & 1952. Com. Buf. Min. Res. Records Rept. 1953/24.
Ward H.J.	1953:	Report on the Geology of White's Deposit, Rum Jungle, N.T. (In preparation.)

PLATE 1

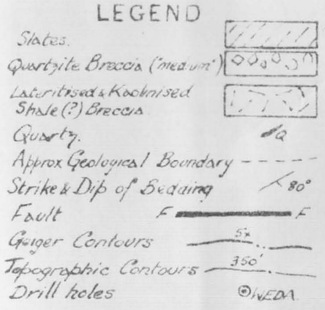
WHITES EXTENDED PROSPECT

GEOLOGICAL PLAN

Scale:- 40ft - 1in

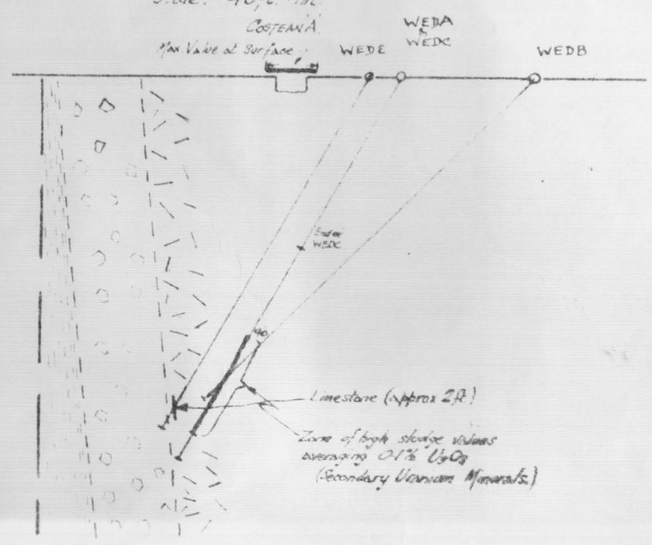


LEGEND



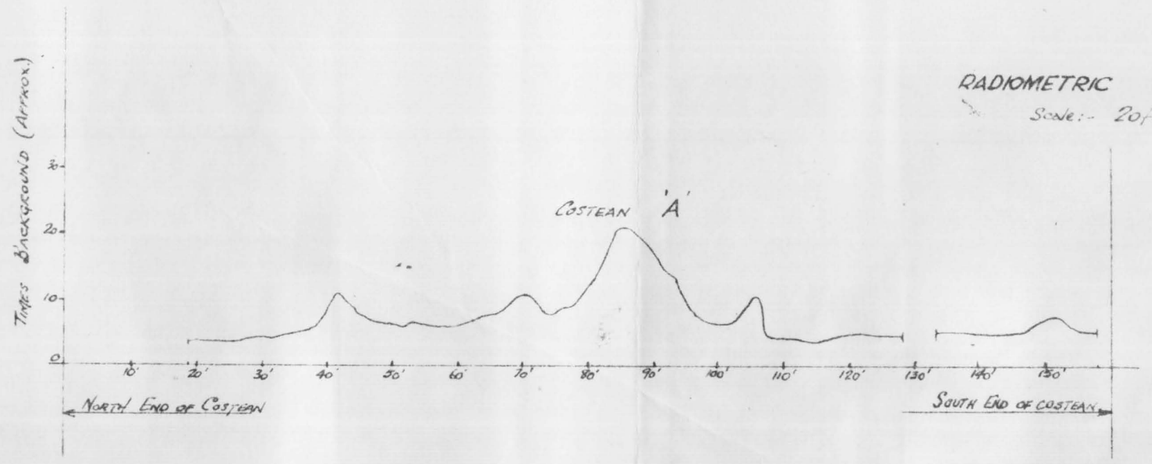
GEOLOGICAL SECTION PARALLEL TO WEDB.

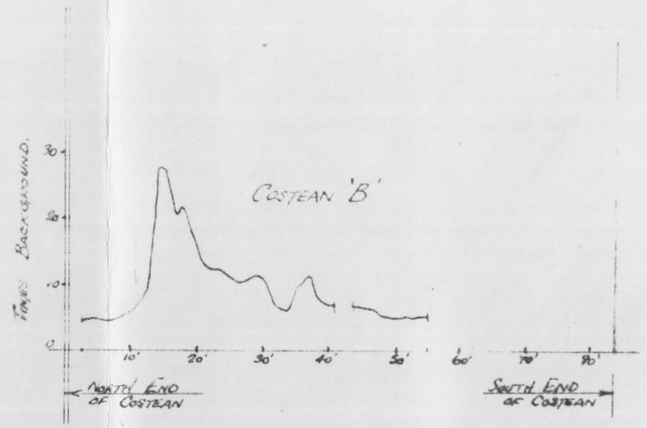
Scale:- 40ft = 1in.



RADIOMETRIC SECTIONS.

Scale:- 20ft = 1in.





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