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**RECORDS.**



# PRELIMINARY REPORT ON THE FRAZER PROSPECT, BRODRIBB AREA NORTHERN TERRITORY.

by

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Records

## C O N T E N T S.



## PLANS AND SECTIONS.

| Plate No. | Plans. | Scale. |
|---|---|---|
| 1 | Radiometric Contour Plan of the Frazer Prospect. | |
| 11 | Geological Section and Radiometric Profile of the Frazer Costean. | |

## SUMMARY.

The Frazer Uranium Prospect was located by the Bureau of Mineral Resources airborne scintillometer survey in 1952. Subsequent geological and geophysical investigation has shown that radioactivity is apparently confined to the ferruginous zone of the laterite profile.

The maximum activity recorded on the surface was equivalent to 7½ times background.

A costean was bulldozed and a supplementary hole in the deepest part of the costean showed that activity dropped appreciably with depth, at one point it dropped to 2 x background in ten feet.

## INTRODUCTION.

The Frazer Uranium Prospect was located by the Bureau of Mineral Resources airborne scintillometer survey in 1952 and classified as a first order anomaly. A Preliminary Inspection Report was issued on 26.5.53 by D.E. Catley and C.S. Robertson.

In June 1953 the area was gridded at 25 ft. intervals for 800 feet in a northerly direction and 400 feet Westerly. On this grid the area was geologically mapped and radiometrically contoured by K. Crank, A. Debman and D. White carried out geochemical work soil samples from the area.

Access is along the "Humpty Doo" track via the crossing over the Manton Dam Water line, located East of and adjacent to the Brodribb Camp at 39½ miles on the Stuart Highway. Three quarters of a mile along this track a turn off for ½ mile South leads to the anomaly, located at Military co-ordinates from ground investigation are 165.686 on the Military sheet - Marrakai and the anomaly occurs on Photo 41286, Marrakai Run 2, 1941.

## GEOLOGY.

### DETAILED GEOLOGY.

The prospect is situated in an area of low relief, which as a whole is covered by blacksoil and patchily distributed fragments of lateritised shale and sandstone.

The vertical section exposed in the costean is a typical laterite profile, a thin soil cover is underlain by a ferruginous zone, this in turn is underlain by a mottled zone and finally a pallid zone which is incompletely exposed and probably continues for some depth below the point reached by the auger hole in the bottom of the costean. The costean, bulldozed in July 1953 was laid out across the assumed strike and zone of highest radioactivity, the length of the costean is 120 feet and it has a maximum depth of 7½ feet.

The soil cover is black soil with a few floaters of quartz derived from a nearby quartz reef. The ferruginous zone consists of a mixture of sandstone and shale fragments, all thoroughly leached and sometimes encased in concentrically banded hematite, to give a pisolitic structure. Internally the pisolites are decomposed and contain earthy and limonitic material. The whole mass is loosely bound together by a greenish grey clay. A rather sharp division exists between this zone and the pallid zone, the sharpness being accentuated by textural and colour differences and discontinuities in the mottled zone.

The pallid zone consists of yellow clay which constitutes 80 - 90% of the zone, it contains fairly fresh boulders of a fine grained micaceous sandstone which in their position of rest within the clay have an apparent dip of about 40°- 50° west, this is probably accidental and not related to the local dips.

REGIONAL GEOLOGY.

Approximately 400 yards east of the costean a hematised quartzite and a hematised brecciated quartzite outcrop. They have an outcropping length of about 250 yards and contain no mappable structures.

The outcrop is massive and hematisation obliterates bedding there being up to 80% hematite in the topographically higher parts of the outcrop.

The outcrop is an example of the hematisation in situ of a bedded rock. From top to bottom of any portion of the outcrop the amount of hematite decreases, until at the lowest level, the original nature of the rock can be seen.

The two rock types are a massive quartzite, and a brecciated quartzite, apparently dipping vertically, but they contain no reliable features to confirm this, the general trend of the outcrop is 330° magnetic.

A discontinuous outcrop of vein quartz striking 345° magnetic occurs 150' west of the highest surface radiometric contour (Plate 1). Quartz detritus and thin disconnected veinlets were also exposed in the costean. The only other rock type exposed is a laterite, patchily distributed, and chiefly as floaters.

The nearest outcrop to the surveyed area is two miles East, at Acacia Gap where the west limb of an anticline overturned west is exposed in a belt of north trending quartzites.

RADIOACTIVITY.

Radioactivity at the prospect is confined to a thin layer up to two feet thick of ferruginous laterite.

Outcrops of this rock coincide with the highest radiometric contours shown in plate 1.

Plate 2 also shows quite clearly that the zone of high radioactivity also coincides with this particular horizon.

The maximum radioactivity found at the surface was 7 - 8 times background, taken as 5 micro-amps. using ratemeter type 1011 and was found where laterite outcropped at the surface. The degree of activity was generally found to be related to the surface soil cover, being lower where the soil was thicker.

The overall trend of the long axis of the surface radiometric contours, is approximately parallel to the strike of the quartz veining which in turn parallels the assumed strike of the country rock.

It is considered that the radioactivity is due to a concentration of uranium in the ferruginous zone of a laterite profile, developed in situ on rocks containing a small quantity of syngenetic uranium.

The concentration has apparently been brought about by upward migration in a zone where greater than normal permeability has been induced in the rocks by fracturing as indicated by the quartz veins.

The uranium probably travelled with and was precipitated with iron.

The high radioactivity registered at the surface is largely due to mass effect. A sample of the ferruginous laterite gave an assay of 0.01% $U_3O_8$.

No recognisable uranium mineral has been observed.

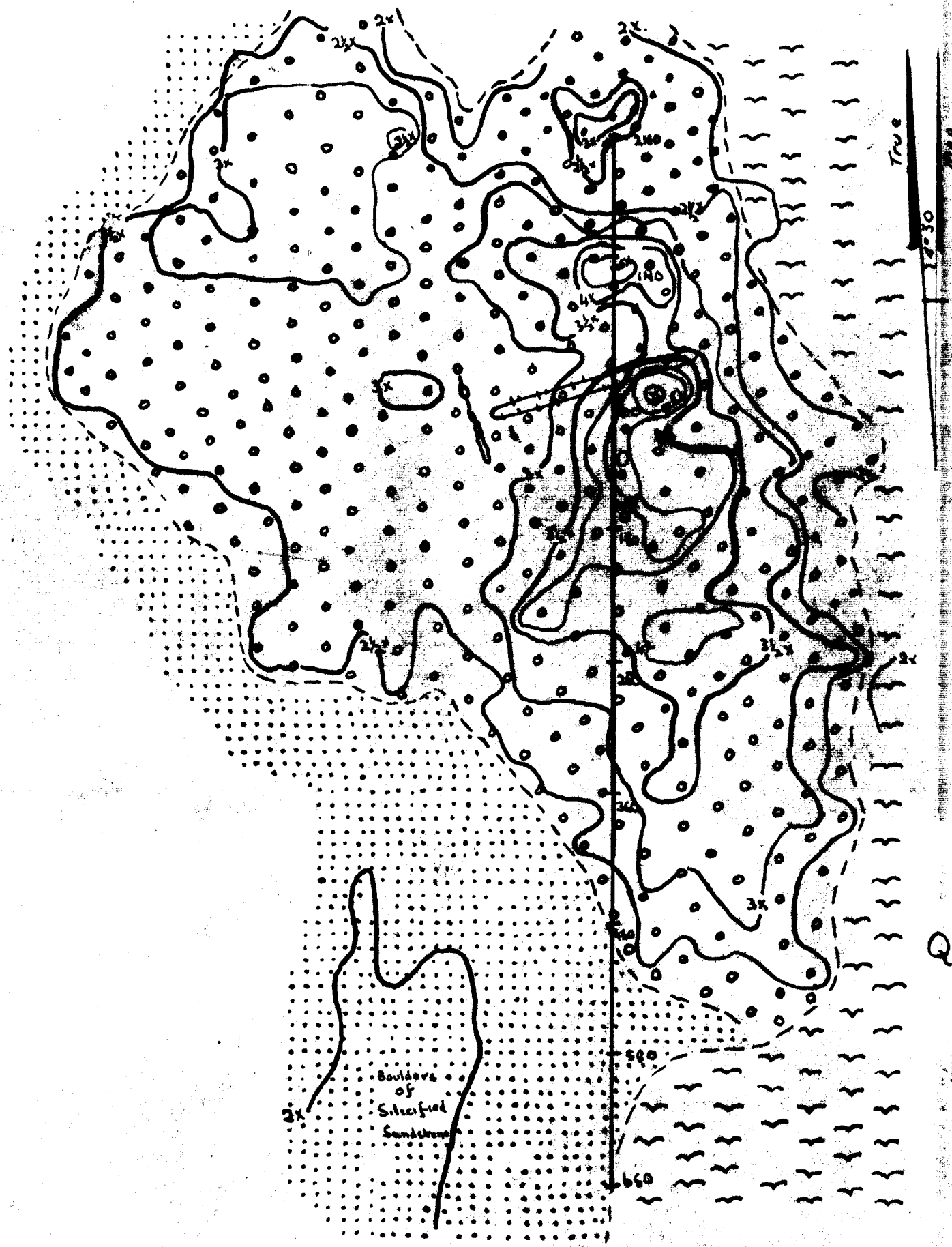
## CONCLUSION.

The radioactive laterite at the Frazer Prospect represents a concentration of uranium at the surface, the source being the underlying country rock. The absence of recognisable uranium mineralization and the low radiometric assay values obtained from the enriched zone are not encouraging, and further testing of the prospect is not recommended.

PLATE 1.

# FRAZER URANIUM PROSPECT

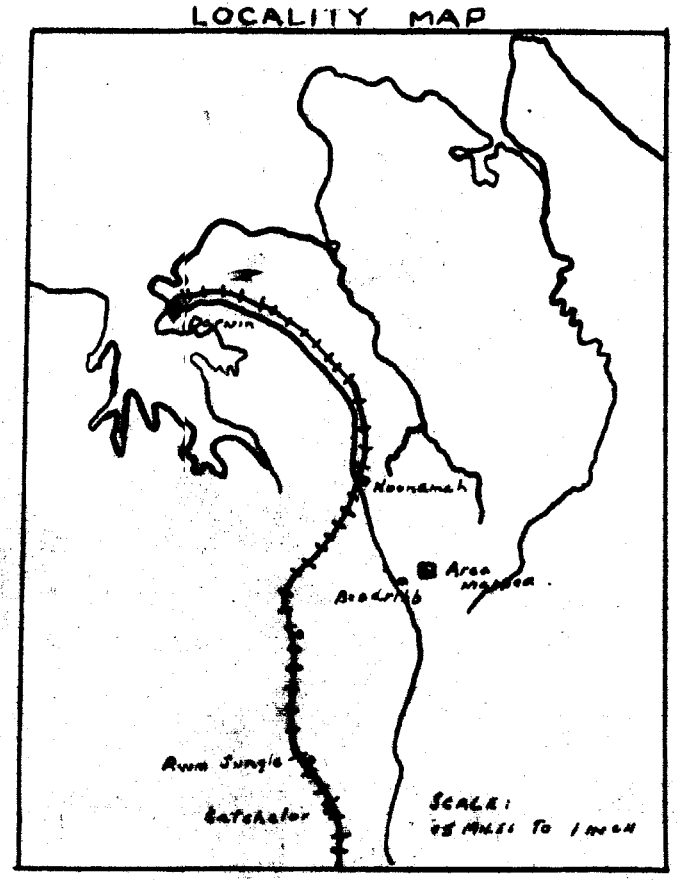
## Geological & Radiometric Contour Plan




100' 50' 0 100' 200' 300'

SCALE

LOCALITY MAP




## Reference

QUATERNARY.

- Soil Cover.
- Laterite Gravel and Soil
- Alluvium
- Quartz Vein.
- 350 E. Survey Pegs.
- 8' Costeans.
- 5½ Radiometric Contours.

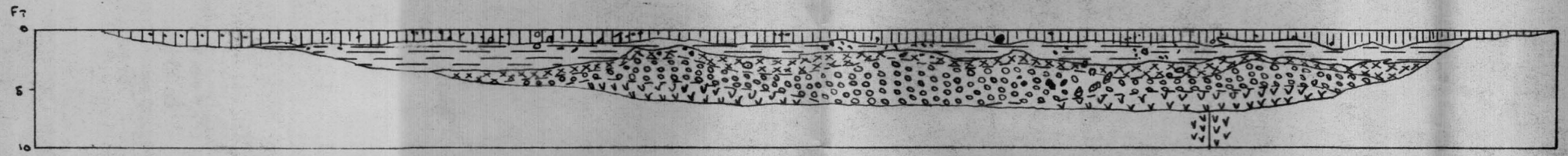
Plate 1.

N.B. LATERITE GRAVEL MAY BE DETRITUS OF TERTIARY LATERITE.

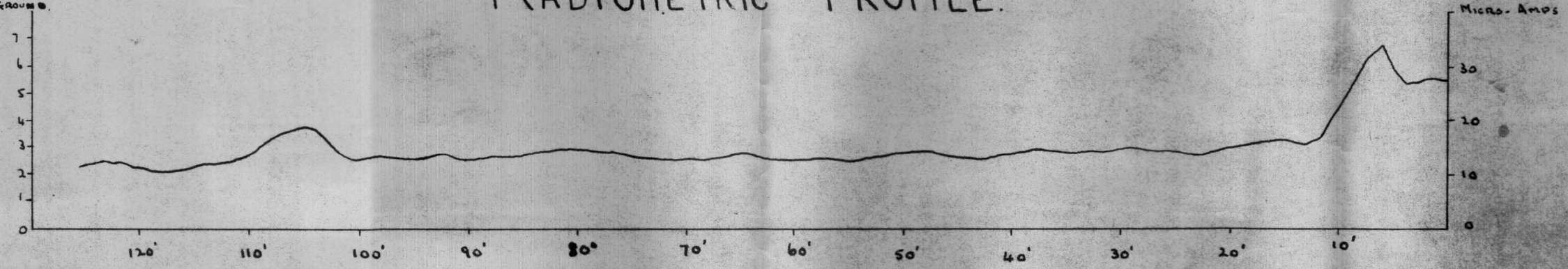
PLATE 2.

# FRAZER URANIUM PROSPECT.

## GEOLOGICAL CROSS SECTION




## RADIOMETRIC PROFILE.



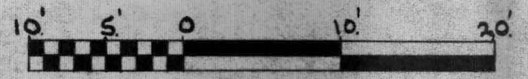




PLATE. 2.

REFERENCE.

| | |
|---|---|
| | QUARTZ |
| | SILICIFIED SLATE FRAGMENTS. |
| QUATERNARY | SOIL COVER. |
| TERTIARY. | FERRUGINOUS ZONE. |
| | MOTTLED ZONE. |
| | PALLID ZONE. |
| | GREY CLAY. |