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*Mineral Engineer*

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NOTES ON SEARCH FOR AIRBORNE SCINTILLOMETER ANOMALY

KATHERINE AREA

by

D.E. Gardner.

*H/C 12/1/54*

*LM 12/1/54*

# NOTES ON SEARCH FOR AIRBORNE SCINTILLOMETER ANOMALY

## KATHERINE AREA

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### INTRODUCTION.

The air-borne scintillometer survey near Katherine during October, 1953, failed to cover a triangular area in the south-east corner of the Katherine sheet, as it was beyond the range of the Shoran beacons. The area is part of a Bureau of Mineral Resources reservation taken out to protect the ABC Prospect. Several trial flights were made over the area, however, in an attempt to detect the presence of any significant radiometric anomalies. During these flights, Geologist A.B. Clark acted as an observer to spot on photo-mosaics the positions at which any anomalies might occur. A third order anomaly was recorded during a flight along Maude Creek at a point thought to be within 1 mile of the junction of Dorothy Creek and Maude Creek. A search was made later by D.E. Gardner with the object of finding the source of the anomaly and the results of this work are given below.

### METHOD OF SEARCH

The area covered during the search appears on air photos, Katherine 1-mile sheet, Run 5, Nos. 25 and 26, and is shown on the plan accompanying this report. An Austronic ratemeter was carried through the area, and the background count was continually observed. Structures which might be favourable for mineralization were found by examination of the air photos and by traversing the area. These were carefully tested with the ratemeter. The localities tested are given in Table 1.

TABLE 1 LOCALITIES TESTED

<u>Locality</u>	<u>Remarks</u>
<u>Bed of Maude Creek</u>	
Basalt	Some basalts have a relatively high background count.
Sand and gravel.	
<u>Alluvium</u>	
Adjacent to Maude Creek. Between Maude Creek and Dorothy Creek.	Alluvial material in some creek beds has a high count-rate presumably because humus absorbs radioactive matter from ground-water.
<u>Fractures and Shears</u>	
Locality A	At locality A, tuffs interbedded with thinly laminated cherts form tight folds pitching steeply northwards. They are strongly sheared and brecciated in planes or zones striking 305 degrees (M) and dipping at high angles to the south-west. Silica and ferruginous material, which appears, at least at the surface, as hematite,
Locality B	
Linear Structure, running slightly south of east,	
just south of Locality B.	

Locality	Remarks
	have been introduced into fractures.
	At Locality B, tuffs are capped by Buldiva sandstone and conglomerate. They are sheared in a direction 325 degrees (M) mainly at high angles, but some brecciation also appears along planes dipping at approximately 50 degrees westward. The sheared tuffs are silicified in places, and they contain a small amount of hematite, which may be an initial constituent.
	Linear structure south of B: Slight shearing and/or jointing, is seen along the strike of the structure, but there is no sign of mineralization.
Flat, underlain by Brocks Creek beds, about 1000 ft. west of Maude Creek.	This is appreciably higher than the alluvial flats, and if it had a relatively high background count it could give rise to a radiometric anomaly.
Locality C.	Basic volcanics form a sharp hill. They have a massive appearance and comprise flow rock and (?) agglomerate.

#### RESULTS OF THE SEARCH.

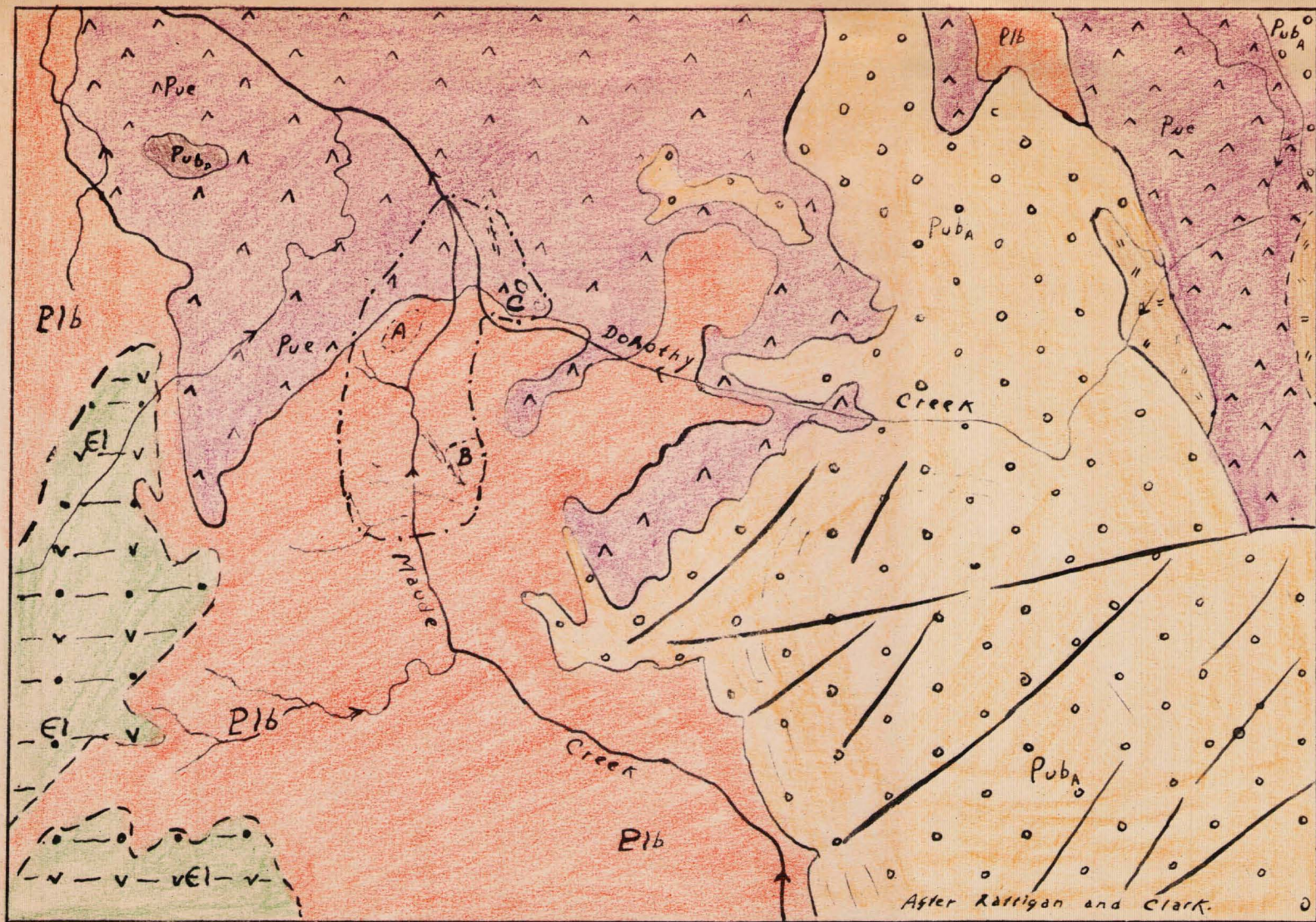
The geiger-counts, per minute, obtained at the several localities are given in Table 2.

TABLE 2 GEIGER COUNT AT EACH LOCALITY.

Locality	Count Rate, per minute.
<u>Bed of Maude Creek</u>	
Basalt	Generally 100 to 120; in places up to 160
Sand and gravel	Ranges from 60 to 100; commonly 80.
<u>Alluvium</u>	80 to 100
<u>Fractures and Shears</u>	
Localities A and B	120 to 160
Linear structure south of Locality B.	80 to 120.
Flat underlain by Brocks Creek beds.	Slightly higher count than on alluvial flats. Range 80 to 120; generally about 100.
Locality C.	160 to 180.

#### CONCLUSIONS AND RECOMMENDATIONS.


No significant radiometric anomalies were found in the area searched and no further work in that particular area is warranted, but there appears to be scope for further prospecting outside it. D. E. Gardner and A. B. Clark consider it possible that the radiometric anomaly indicated from the air is situated <sup>a/only</sup> on the strong, easterly-trending fault which has caused an apparent displacement of more than 2000 feet in the Buldiva sandstone  $\frac{1}{2}$  mile south of the area searched. Prospecting of the country adjacent to this fault is recommended.



SEARCH FOR AIR - SCINTILLOMETER ANOMALY "SPOTTED BY A. B. CLARK, OCT. 1953.

Scale: - 0 1/2 1 Mile

CAMBRIAN  Leight Creek Formation  
 UPPER  Budiva Quartzite  
 PROTEROZOIC  Edith River Volcanics

LOWER PROTEROZOIC  Brocks Creek Group

--- Boundary of Area Searched  
 A Locality referred to in report.