COMMONWEALTH OF AUSTRALIA

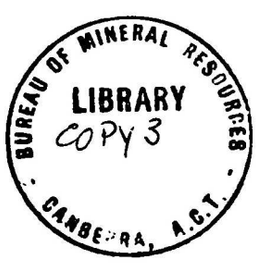
DEPARTMENT OF NATIONAL DEVELOPMENT

BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS.

RECORDS

1957, No.57

CARBORNE RADIOMETRIC SURVEY AT BLACKFELLOW'S DAM PROSPECT, NEAR CONDOBOLIN, N.S.W.



by

L.E. HOWARD

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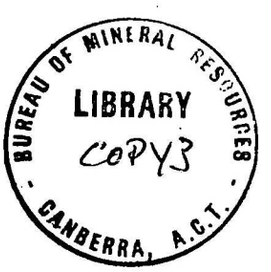

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CARBORNE RADIOMETRIC SURVEY AT BLACKFELLOW'S DAM PROSPECT, NEAR CONDOBOLIN, N.S.W.

In response to an application by the New South Wales Department of Mines, a carborne radiometric survey was conducted by the Bureau of Mineral Resources during the first two weeks of December, 1956. The survey was made over a rectangular area 4 miles by $3\frac{1}{2}$ miles with the Blackfellows Dam Prospect as centre and the longer sides oriented at 330°. The area lies mostly within the Erimeran granite, but to the east the traverses were extended where necessary until the slates were reached. The geology of the Blackfellow's Dam Uranium Prospect and the surrounding area has been described by Rayner (1954 and 1956). A locality map and a geological map of the surveyed area are shown on Plate 1.

The equipment used consisted of a scintillograph whose output was continuously recorded, installed in a Landrover, which was also equipped with a Monroe odograph. The scintillograph continuously measured and recorded the intensity of gamma radiation. The detector head of the scintillograph was at a height of about five feet above ground level, and at this height it is considered that a strip about 100 feet wide was surveyed. The sensitivity of the scintillograph was maintained constant by daily calibration with a standard source. The odograph plotted the course of the vehicle on a scale of 4 inches to 1 mile. At convenient intervals, usually about one mile apart, check points were marked simultaneously on the scintillograph recorder and the odograph record so that the two could be correlated. As the scintillograph recorder was driven by a flexible drive from the vehicle's speedometer outlet, via a two-way gearbox, intermediate positions could be interpolated with reasonable accuracy.

The spacing between adjacent traverses was approximately 1/20 mile and traverses were alternately surveyed in directions of 60° and 240° magnetic. These directions are roughly perpendicular to the strike of the minor electromagnetic anomalies located during a recent survey carried out by the Bureau (Keunecke, 1957).

The area surveyed is largely covered by alluvial deposits but there are numerous granite outcrops. The radiation intensity over the alluvial deposits is extremely regular and the only high readings obtained were over previously known locations within 2,000 feet of the mine. Immediately adjacent to the mine, readings of about 48,000 counts per minute were recorded. This is about 8 times the normal radiation level over the alluvial deposits. Other high readings obtained over the granite outcrops to the south and north of the mine had been previously observed by Rayner (1954 and 1956).

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However, granite outcrops at a greater distance from the mine showed no unusual activity. As the scintillograph response from a small source falls off rapidly with distance, it could be expected that a small trace of uranium mineralisation in a granite outcrop might not be detected by a vehicle-borne equipment in which the detector is at a height of about 5 ft. Furthermore, it was usually impossible to drive over rock outcrops. Consequently, it was customary to check outcrops quickly and rather roughly with a portable scintillation counter (type 135S). The radioactivity of most of these outcrops was not high. Differences of the order of 2 to 1 occurred in the radioactivity, but did not follow any systematic pattern.

No significant difference in radioactivity was observed over the electromagnetic anomalies, but as these may arise from deeply-buried conductive rock, whereas the gamma radiation measured is from the top two feet of rock only, little correlation was expected between the two measurements.

It may be concluded that no evidence was obtained which would justify a recommendation for further radiometric surveys in the area surveyed.

REFERENCES.

Keunecke, O., 1957 - Geophysical Survey at Blackfellow's Dam Mine, near Condobolin, N.S.W. (Record in preparation).

Rayner, E.O., 1954 - Pearce's Uranium Prospect, Blackfellow's Dam, Condobolin District. N.S.W. Geol. Surv. Rep. 54/11865M.

Rayner, E.O., 1956 - Second Report on the Blackfellow's Dam Uranium Prospect, Condobolin District. N.S.W. Geol. Surv. Rep. (Unnumbered).

PLATE 1

NYMAGEE

TOTTENHAM

BOBADAH P.O.

ERIMERAN

GILGUNNIA

A

GRANITE

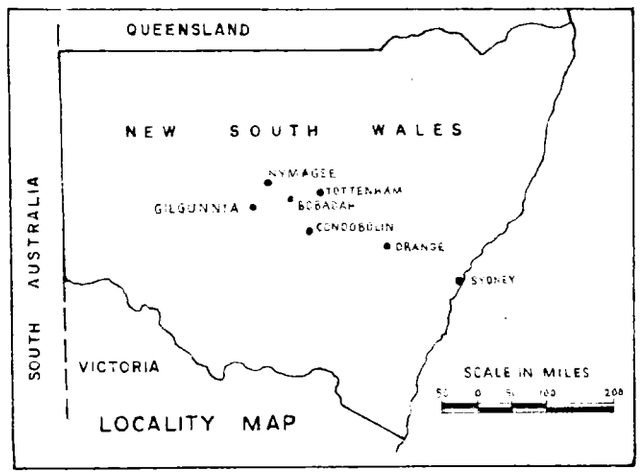
FIFIELD

CONDOBOLIN

9°

TRUE NORTH

MAGNETIC NORTH



LOCALITY MAP

LEGEND

AREA SURVEYED WITH CARBORNE SCINTILLOMETER

A PEARCE'S URANIUM PROSPECT, BLACKFELLOW'S DAM

△ SLIGHT RADIOACTIVITY

SEDIMENTARY

- RECENT — ALLUVIUM AND WASTE
- DEVONIAN — QUARTZITES, SANDSTONES AND SHALES
- SILURIAN — CLAYSTONES, SANDSTONES LIMESTONES & VOLCANICS
- SILURIAN — SLATES, PHYLLITES & CHERTS

IGNEOUS

- EPI-SILURIAN — PORPHYRIES (Deeply weathering type)
- EPI-SILURIAN — PORPHYRIES (Forming strong outcrops)
- EPI-SILURIAN — GRANITE

CARBORNE RADIOMETRIC SURVEY AT BLACKFELLOW'S DAM PROSPECT, NEAR CONDOBOLIN, N.S.W.

GEOLOGICAL MAP

Geology after H.G.RAGGATT and A.C.LLOYD

SCALE IN MILES

8 4 0 8 16 32

Geophysical Section, Bureau of Mineral Resources Geology and Geophysics G 270-1