

**RADIOACTIVE PROSPECTS**

**THE BLUE TIER AREA**

By

L. C. Noakes

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L. C. Noakes,  
Bureau of Mineral Resources.

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The Blue Tier Area

The Blue Tier is a partly dissected plateau, almost entirely composed of granitic rocks, in north-eastern Tasmania and has been an important producer of tin.

The granitic rocks are of Devonian age and on the Blue Tier Plateau the overlying Lower Palaeozoic sediments have been entirely removed. The geology of the area and of the tin deposits has been described in detail by Reid and Henderson (1928) and reviewed by Thomas (1953).

Two main types of granite have been mapped - a porphyritic granite, essentially similar to the most common type of granite in the Storey's Creek area, and a younger differentiate - the 'tin' granite, a medium and even-grained, more acid granite which intrudes the porphyritic type in flat-topped, steep-sided cupolas. These younger granites have been greisenised and altered in many places and tin is associated with the greisen, pegmatite and altered granite. The most important tin deposits are of the flat-lying 'floor' type where tin is disseminated in greisen and greisenised younger granite for some 70-100 feet below the gently-dipping contact with the overlying, barren, porphyritic granite. A narrow pegmatite band 6-12" wide is found in places along this contact.

Both types of granite show noticeable radioactivity in places but it is more noticeable in the younger 'tin' granite than in the older porphyritic granites. Little work has again been done on radioactivity here, but samples from the Australia and Anchor Mines, forwarded by the Mines Department, have been assayed by the Bureau of Mineral Resources, Melbourne, and T.D. Hughes has inspected and reported on radioactivity in the Anchor Mine. The sample assayed from the Australia Mine showed .05%eU<sub>3</sub>O<sub>8</sub> and ratio of 1.2 which is not encouraging, but this mine was not visited.

The Anchor Mine.

This is the largest tin deposit on the Blue Tier and has produced 3,000 tons of tin oxide at an average grade of .2%. It was worked in a series of open-cuts but has not been mined since 1950. The mine is on the dissected southern slopes of the plateau and is easily accessible by road.

T.D. Hughes has examined all old workings at the Anchor Mine and has found significant radioactivity restricted to one small area of the thin pegmatite band which occurs along the contact between the two granites and which dips gently southwards at most places in the workings. The area of significant activity is in a short gallery in the wall of the open-cut on the eastern side of the mine workings where the band, 4-6" wide, is exposed around the top of the wall and in portion of the roof.

The total length of band exposed around the wall of that portion of the gallery which was accessible, was about 50 feet. Examination by beta probe indicated that maximum activity was restricted to 2 feet of pegmatite, 4-6" wide, on the western wall and elsewhere in the band activity was, on an average,

reduced to a third of this maximum and at no point exceeded half.

Samples taken from the point of maximum activity, and assayed by field methods at Canberra, gave .09%eU<sub>3</sub>O<sub>8</sub> with ratio 1.0 for a large sample and .25%eU<sub>3</sub>O<sub>8</sub> ratio 1.25 for a specimen. Samples or specimens previously sent to the Bureau of Mineral Resources, Melbourne, presumably all from this gallery, assayed radiometrically .22% and .35%eU<sub>3</sub>O<sub>8</sub> with ratios of 1.5 and 1.4 respectively. The second sample was also assayed by fluorimeter which gave .29%eU<sub>3</sub>O<sub>8</sub>. The ratios indicate that activity is due to uranium which, in places, is not in complete equilibrium (uranium rich) although theoretically the assay by fluorimeter should have been higher, not lower, than the radiometric assay. T.D. Hughes took a composite sample of the granites from below and above the pegmatite band and the result was .02%eU<sub>3</sub>O<sub>8</sub> with ratio of 2.0.

It is clear that the band as exposed in the gallery is too low grade and too narrow to be of more than mineralogical interest. There is no evidence of significant concentration in the tin granite in the Anchor Mine and, as Hughes has pointed out the only possibility remaining is that of the pegmatite band widening. However, Thomas (1950) describes the band on the Blue Tier and gives its width as 6-12" which does not provide much encouragement.

Judging by present records, there is certainly scope for further radioactive prospecting on the Blue Tier but the Anchor Mine can be eliminated.

#### APPENDIX II

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The results of radiometric assays carried out by the Geophysical Section of the Bureau on samples from the three prospects inspected came to hand after the report was written. The samples assayed were those on which field assays were previously carried out at Canberra and quoted in the report and the results of both field and laboratory assay are shown below for comparison.

#### Anchor Mine.

<u>Field Assay</u>			<u>Laboratory Assay (Geophysical Section).</u>				
eU <sub>3</sub> O <sub>8</sub>	Ug	Ratio	No.	Ub	Ug	Ratio	
.09	.09	1.0	TR55/134	.078	.055	1.4	