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URANIUM OCCURRENCES AVOCA AREA TASMANIA.

by

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SUMMARY

Uranium mineralization in the Avoca area of Tasmania occurs in association with stanniferous fissure lodes in granite of Devonian age. The Uranium mineral is torbernite. The patchy nature and low grade of the torbernite showings and the general type of mineral occurrences suggest that the possibility of a uraniferous ore body being present in this area is remote.

INTRODUCTION

At the request of the Atomic Energy Commission, the writer examined radio-active mineral occurrences in the Avoca area, Tasmania.

Two days were spent in the area and four prospects were examined. In addition, one day was spent in discussion with the Tasmanian Director of Mines and his staff. The writer was accompanied during the investigation by Mr. T. Hughes, Geologist of the Tasmanian Mines Department.

GENERAL

Radioactive minerals occur in association with greisen and pegmatite lodes in granite of Devonian age. The greisen bodies are fissure lodes and contain cassiterite as their chief ore mineral. The granite is weakly radioactive and gives counts which average 2 x background. A good deal of this activity may be due to monazite which has been identified in alluvials derived from the granitic body. In any case the activity of the granite mass is not exceptional and, in fact, is of a much lower order than that of radioactive granites in the Northern Territory.

RADIOACTIVE MINERALIZATION

Four prospects were examined. Of these, two showed torbernite as the radioactive mineral, one prospect showed slight radioactivity in a limited area and the fourth prospect was an outcrop of unaltered granite.

Prospect No. 1

Royal George Tin Mine - The Royal George mine is situated adjacent to the village of the same name approximately 10 miles east of Avoca on the Fingal Railway, 49 miles from Launceston. The mine was abandoned in 1922. Reid and Henderson (1929) state the production of the mine to be approximately 900 tons of tin oxide concentrate, and estimate the average grade of the ore as between 0.5% and 0.6% metallic tin.

The ore body consists of a number of closely spaced greisen, tourmalite, pegmatite, and porphyry fissure lodes in granite. The fissures strike at 320° and dip steeply to the South West. The ore mineral is cassiterite with accessory pyrite and chalcopyrite. Malachite and torbernite showings occur on the wall of the open cup. The old underground workings are now inaccessible but the mine plans (plate 1) give a reasonable appreciation of the dimensions of the ore body. The plans indicate a length of about 800 feet and a width of about 35 feet. The lode pinches out at both ends. The surface

dimensions of the body thus indicate that approximately 1800 tons of ore per vertical foot are present. Most of this has been stoped out to No. 2 level.

Uranium mineralization in the form of torbernite was discovered on 17.1.55 by V. Pitulez. With one exception, the showings are confined to the hanging wall of the open cut and consist of flakes of torbernite on joints and cracks. The concentrations of secondary mineralization are not impressive. Field assays indicated grades between 0.01 and 0.15% $\text{e U}_3\text{O}_8$. A grab sample taken from the richest showing gave a radiometric assay of 0.04% $\text{e U}_3\text{O}_8$. The bottom of the cut is mostly filled with rubble and it is not known whether the uranium mineralization extends across the ore body. However the evidence suggests that such mineralization is likely to be distributed in small pockets. One small patch of torbernite occurs on the foot wall but outcrops of lode material in the centre of the cut showed no mineralization and no significant radioactivity.

A fair estimate of the extent of the visible uranium mineralization is obtained if the hanging wall is considered in one dimension. In a total length of 800 feet an aggregate length of 50 feet shows patchy torbernite mineralization i.e. only 6% of the hanging wall shows mineralization. The above figures are approximate only and the figure of 50 ft. is probably generous. Less than 1% of the total length of 800ft. showed mineralization which would assay higher than 0.05% U_3O_8 .

To test the property adequately an initial 2,000 feet of diamond drilling would be required, but the chances of such testing indicating a body of payable uranium ore are considered to be remote. Although the surface dimensions of the old workings are impressive, the history of this type of body on the Avoca field indicates a tendency to pinch out at relatively shallow depths.

The Royal George prospect is at present a subject of dispute before the mining warden as to tenure. There is, however, no dispute as to the fact that the original discovery of uranium mineralization on this property was by Mr. Pitulez.

Prospect No. 2

This prospect is located approximately $\frac{1}{2}$ mile south of the Royal George mine and consists of a tin bearing greisen and tourmalite fissure lode. The lode strikes east: the dimensions are not known. The tin values are apparently very low as the old workings are limited to pits and shallow shafts. Minor torbernite mineralization occurs in a few pieces of broken stone on the old dumps. Field assays indicate that the grade of these specimens is less than 0.05% $\text{e U}_3\text{O}_8$.

What values are present are confined to the quartz mica greisen. The tourmalite is not mineralized.

The prospect has no apparent economic significance.

Prospect No. 3

This prospect consists of an unaltered granite outcrop a few miles north-east of Avoca township. The outcrop showed radio-activity equivalent to $2\frac{1}{2}$ times background.

Prospect No. 4

Rex Hill Tin Mine - The Rex Hill mine is situated 5 miles North-West of Avoca. The history of the mine is described by Reid and Henderson (1929). The mine has been abandoned for several years and the workings which consist of an adit, a shaft to a depth of 290 ft. and an open-cut, are no longer accessible. The

orebody strikes north and is contained in a graphic granite pegmatite and greisen fissure lode in granite. Dimensions of the lode are obscure but Reid and Henderson state that the main orebody was 3 to 4 feet in width with bulges about 30 feet in width occurring on flat joint planes. The length is not known.

The chief ore mineral is cassiterite with associated sulphide mineralization in the form of galena, sphalerite, chalcopyrite and pyrite.

One small block of pegmatite containing coarse quartz crystals and approximately 2 cu. ft. in size gave a count of 4 times background. No radioactive minerals could be seen in hand specimen. Old dumps of sulphide ore showed slight radioactivity equivalent to twice background, but other dumps and the walls of the open cut showed no significant activity when tested with a Beta probe.

The lack of visible secondary uranium minerals; the very low order of radioactivity in the exposed lode material; the type of ore occurrence suggests that exploration of this mine for radio-active ore is not justified.

RECOMMENDATIONS

1. The discovery of torbernite at the Royal George Mine on 17th January, 1955, by Mr. V. Pitulez, fulfils the requirements of the act for reward purposes.

It is understood that a claim for such a reward has already been made to the Atomic Energy Commission.

Although the Avoca find is not promising as a future source of radioactive ore the discovery was the first made of radioactive minerals in Tasmania, and has undoubtedly stimulated the interest of prospectors in that state. As such, the find is extremely valuable even though its economic prospects are considered to be negligible.

It is recommended that an immediate reward of £500 be granted to Mr. V. Pitulez.

2. To assist the Tasmanian mines department in the initial stages of evaluation of uranium prospects.

(a) The Bureau should offer to carry out such radio-metric assays and petrographic and mineragraphic determinations as are necessary. (It is not generally realised that such facilities are available free of charge).

(b) An invitation should be extended to the Director of Mines and such of his field staff as he considers is warranted to examine prospecting activities and uranium occurrences in the Northern Territory and Queensland.

ACKNOWLEDGEMENTS

The writer wishes to record his thanks for the assistance and courtesy rendered to him by the Director of Mines, Tasmania and his staff, in particular Mr. T. Hughes, geologist at the Department of Mines.

REFERENCES.

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ROYAL GEORGE TIN MINE AVOCA - TASMANIA

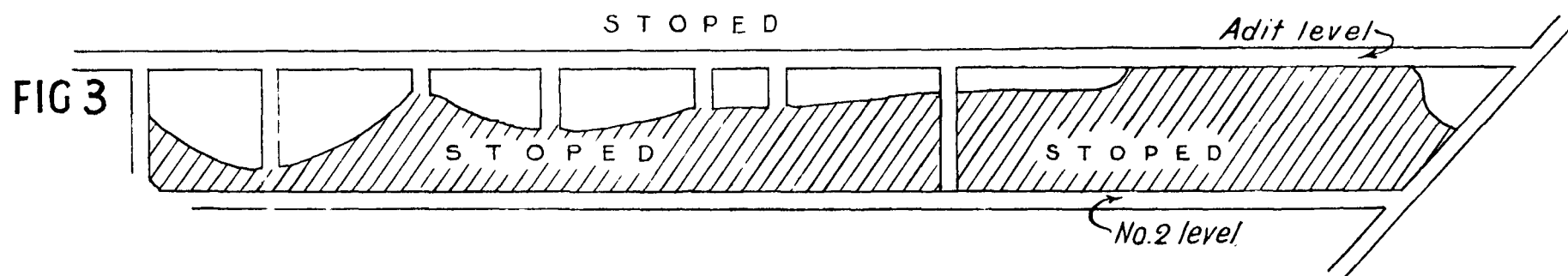
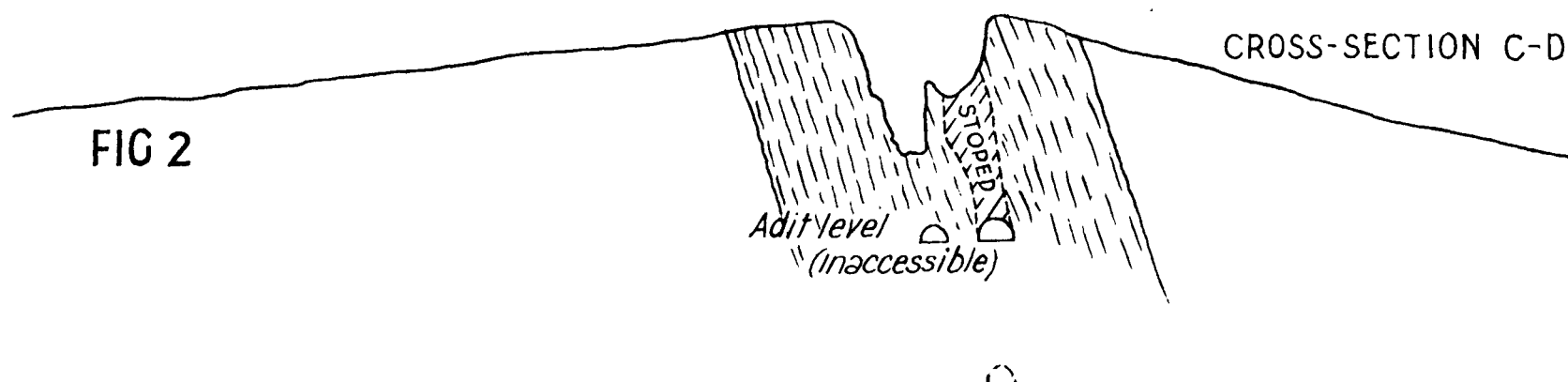
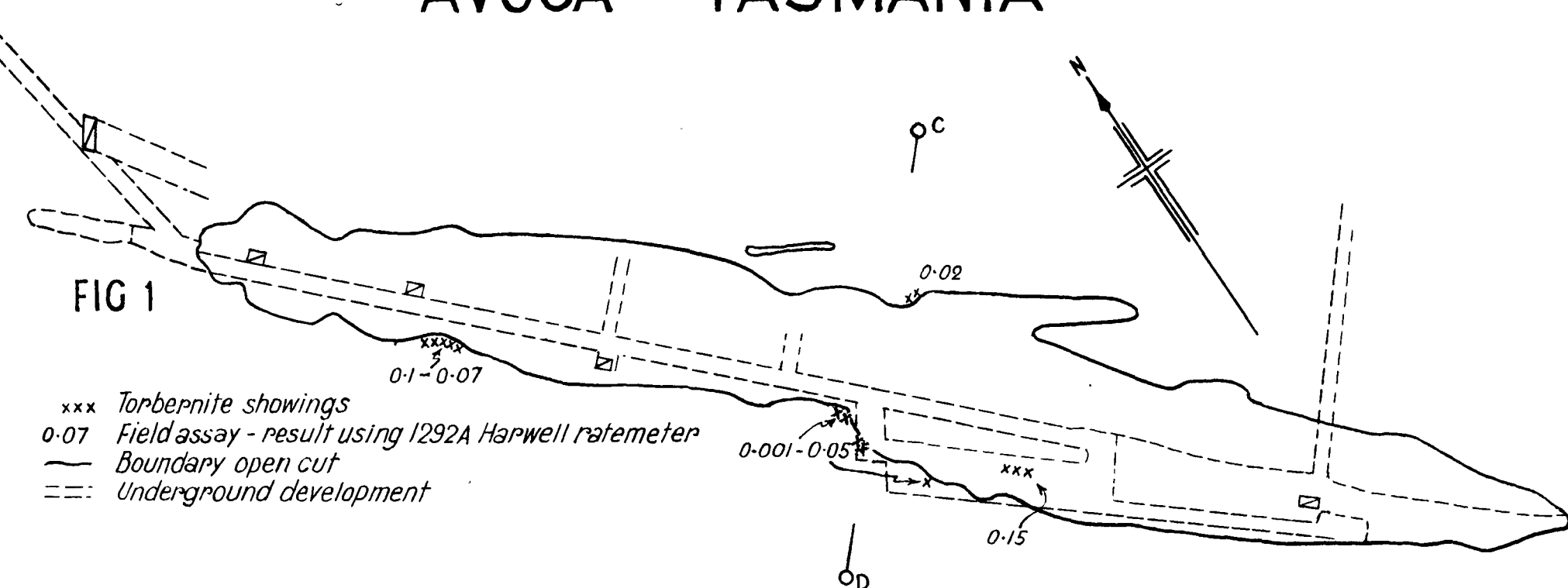


Fig 1 Plan of open cut showing approximate positions of Torbernite showings and underground development.

(Details by Williams,
Tas. Dept of Mines.)

Fig 2 Cross-section C-D.

Fig 3 Underground development below adit line to 1920. (copied from old mine plans)