ARBA PROSPECT

ASSORTED REPORTS

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1st June, 1971

NOTES ON PROGRESS OF EXPLORATION OF THE ARBA PROSPECT, TASMANIA, BY UNITED TECHNICAL SERVICES PTY. LTD.

During the option period, United Petroleum Reserves N.L., through its subsidiary, United Technical Services Pty. Ltd., hired the services of a Sydney based consultant group, namely A.C.A. Howe (Aust.) Pty. Ltd.

Under supervision by United Technical Services Pty. Ltd. the consultant geological team researched the Prospect and proposed further work stages which they felt should extend our knowledge of the area.

After compilation of their report entitled "Preliminary Report on the Arba Lease, 160 P/M, County of Dorset, Branxholm, Tasmania", UTS contracted Mr. Sydney Watson, a well-known geophysicist, to engineer a gravimetric method which would be successful in delineating deep leads in this particular set of circumstances.

Because of the nature of the basalt capping and the fact that extensive reworking of surrounding areas had occurred, a great deal of thought and care was necessary before a successful method could be devised which would locate targets of the small dimensions which we had to assume.

After a workable detection method for the small sized targets had been devised, A.C.A. Howe were engaged to survey 237 gravity stations on a line which surrounded the plateau but which had to be at least 500' from the basalt, since the basalt would cause interference to the gravity instrument and necessitate corrections which could not be tolerated owing to the small gravity anomalies for which we were searching. On completion of the six days surveying involved (which was carried out in absolutely flooded conditions) a geophysical company was contracted to complete the gravity survey.

After numerous calculations and interpretations, three gravity anomalies were detected of the size order for which we were searching. Unfortunately, because of the proximity of the basalt capping, these anomalies occur off the plateau under discussion and further gravity work may have to be initiated to delineate the direction and size of these inferred leads and to ease the extrapolation of these leads onto the plateau.

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The following conditions for the gravity metre survey were as follows:

- assumed overburden density of 1.8 gm/cc
- assumed basement density of 2.6 gm/cc (maximum figure)
- metre traverse to be as close to an elevation contour as possible to eliminate large elevation corrections.
- metre traverse to be about 500 feet away from the basalt capping to avoid errors inherent in terrain corrections.
- gravity stations to be at 50' intervals around the periphery of the prospect area.

In these conditions, a basement variation of 25' should produce a gravity Bouguer anomaly of the order of .2 to .3 milligals.

Results:

There was considerably more disturbed overburden than had been anticipated, and the elevation differences were much greater than originally planned. Therefore, many of Bouguer irregularities have been attributed to these factors and, therefore, must be regarded as near surface effects. However, three anomalous regions that could be due to basement undulations, and which will be followed up by further metre reconnaissance if necessary, have been located.

One anomaly on the south west margin of the area appears to indicate a channel in the bedrock of 30' to 40' depth and a width of 300'. The second anomaly is startlingly clear and is not like the model upon which the programme was based. But, it nevertheless appears to indicate a channel about 100' deep and 100' wide, steeply incised into the bedrock and at quite a shallow depth. This feature occurs in the extreme north west of the area. The third anomaly is in the south east of the area and appears to indicate a depression with the dimensions of width 200' and greatest depth 50'.

It should not be assumed that these three anomalies are indeed buried deep leads. However, they indicate to this company that these are the areas we should further investigate.

Our geophysicist has recommended that further gravity work be commenced. However, UTS may be able, within the next ten days, to extrapolate these areas of interest without going through the processes

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of surveying, metre reading and interpretations. If this is successful then the next step will be to initiate drilling and sampling.

I believe that Mineral Holdings Australia Pty. Ltd. should be aware of the appalling weather conditions which prevail in the Branxholm area at this time of year and should also be aware that locating a rig on the plateau and movement around the plateau is not going to be a very easy job and that there is a distinct possibility that the drilling could take longer than anticipated. However, as UPR has shown through past performances, it is willing to proceed in the face of adverse conditions and will be doing all possible to fulfil the conditions outlined in the latest communication from Mineral Holdings.

BRUCE W. MENZEL

BWM/rw

APPENDIX 1

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PRELIMINARY REPORT

ON THE

ARBA LEASE 160 P/M

COUNTY OF DORSET, BRANXHOLM

TASMANIA

FOR

J. W. KENNEDY

BY

A. C. A. HOWE AUSTRALIA PTY. LIMITED

SYDNEY, N.S.W.

MARCH 6, 1970

J. C. ROWNTREE, B.Sc.

SUMMARY

The lease area consists of lease 160 P/M 151 acres, Dorset, Tasmania, situated ½ mile N.E. of the Township of Branxholm, Northeast Tasmania.

The lease is easily accessible from the main highway and hydro electric power and water are available in the immediate area.

The lease is adjacent to the old Arba Mine which was mined intermittently from 1876 to 1924. The Tasmania Department of Mines reports that Branxholm Lead, which was worked at the Arba mine to a depth of 190 feet including 50 feet of basalt overburden had an average grade of 0.9 lbs. per cubic yard of 70% tin.

The area is underlain by Mathinna metasediments which were intruded by Devonian granites. Primary tin deposits are associated with these granites. Sand and gravel river deposits were developed in the old river system in Early Tertiary time. Late Tertiary erosion of these sediments has established the present Ringarooma River system. Tin minerals have accumulated in the original Early Tertiary sediments and in particular have been localized along "gutters" or buried channels in the lower portions of the gravel and sand deposits.

A section of sand and gravel 140 feet thick capped by 30 feet of basalt is developed in the lease area. The upper 70 feet of these unconsolidated sediments is exposed above the water table and low tin values have been obtained from this section. The Branxholm Creek deep lead apparently extends northeasterly on the eastern portion of the lease and there is evidence to suggest that this lead is mineralized.

Material with the average value of 0.9 lbs. per cubic yard of 70% tin which was obtained in the mining of the entire 190 foot section immediately south of the lease can be expected to continue onto the lease if the Branxholm deep lead extends to the N.E. Subsidiary leads may also exist on the lease.

A two stage exploration programme is recommended to explore for the Branxholm lead and subsidiary leads within the lease area.

The initial phase should consist of a two-man crew on the project for approximately one month. Initial work will consist of sampling, aerial photo interpretation, ground surveying, preliminary examination of water supply and reconnaissance mapping. The information obtained in the initial phase will allow design of a effective full-scale programme.

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The full scale programme cannot be outlined in detail at this time, however, ground gravity, magnetic, seismic and topographic surveys are expected to be required. The intergrated interpretation of the survey data will allow an accurate appraisal of any Tertiary sediments on the lease. A realistic percussion drilling programme can implemented to test for tin bearing zones if warranted on completion of the surveys.

No estimate of costs of the full scale programme can be made at this time. The initial phase is estimated to cost $5,753.00.

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INTRODUCTION

This preliminary report is based on the author's visit to the lease, January 17 - 18, 1970 and on the following reports:

1. Notes on the Tin Bearing Branholm Creek or Arba Deep Lead on the lease of A. S. Edwards, Branholm Tasmania; P. B. Nye; 22/4/69
2. Second Report on the Tin Bearing Branholm Creek on Arba Deep Lead, Branxholm, Tasmania; P. B. Nye; 20/8/69
3. Tin Ore Deposits of Northwest Tasmania, R. Jack; Tasmania Department of Mines; 8th Congress; Vol. 1; Pgs. 497-500

The author examined the lease in order to confirm the broad aspects of the geology as presented in the reports referred to above, and to determine if further work was warranted.

LEASES

The lease area consists of a portion of Consolidated Lease160 P/M in the County of Dorset, Tasmania owned by Mr. A. S. Edwards of Branxholm, Tasmania. The present lease totals 151 acres.

LOCATION AND ACCESS

The lease is situated approximately ½ mile northeast of the Township of Branxholm in N. E. Tasmania and is easily accessible by short access roads from the main highway through the township.

TOPOGRAPHY AND CLIMATE

The lease overlies a prominent hill which has a maximum relief of approximately 110 feet. The hill is capped by a relatively level basaltic flow which provides excellent soil for pasturage. Rainfall is moderate.

FACILITIES

High voltage power lines pass through Branxholm and within a few hundred yards of the lease. Water is available from the Ringarooma River and a potential pump site on the river is situated approximately 1 mile from the lease area. No buildings or mining plant are presently on the lease.

HISTORY

The lease is adjacent to the old Arba Mine which is situated a short distance east of Branholm. A resume of the history of the Branxholm Creek or Arba Deep Lead is quoted below from reference 1 by P. B. Nye.

"Alluvial tin ore was discovered in 1876 along Branxholm Creek south of the main road from Launceston to Derby. The tin-bearing deposit discovered was probably in recent gravels along the Branxholm Creek. Deeper ground was found a year or so later and this was probably the southern and shallowest portion of the Branxholm Creek or Arba deep lead.

"The lead was worked at first by a proprietary Company (Arba T. M. Co.). As the ground being worked got deeper, and costly equipment was required to work it, the Arba T. M. Co. N. L. was formed in 1888. In the same year, the Ormuz T. M. Co. N. L. was formed to work ground on private property to the west. Operations were intermittent until 1898 or 1899 when the Arba and Ormuz companies were incorporated. Development and equipping of the mine were conducted between 1899 and 1902. Extensive operations began in 1902 and continued until 1920. From 1920 onwards for a few years, the mine was let on tribute, and, in 1924, three tribute parties were working, one working the lead, one treating part of the tailings dump, and the third working the sands and gravels along Branxholm Creek.

"No information is at present available about any workings conducted since 1924 and about the results of such workings".

The Tasmania Department of Mines (ref. 3) reports that the Branxholm lead (Arba Deep Lead) was worked to a depth of 190 feet including 50 feet of basalt overburden and that the average grade was 0.9 lb. per cu. yd. of 70% tin.

GEOLOGY

The oldest rocks in the region are the Mathinna slates and quartzites. These metasediments are intruded by granite rocks of Devonian Age. The primary tin deposits of north-eastern Tasmania occur within these intrusives.

A river system similar to the present Ringarooma River was developed in Early Tertiary time.

A change in sea level in L. Tertiary time resulted in the deposition of gravels, sands, clays, etc. in the valleys of the E. Tertiary river system filled some channels to a maximum depth of about 400 feet. Basaltic lavas now overlie ~~ying~~ the Tertiary gravels and sands. Recent erosion has established the present Ringarooma River system.

The in-fillings of Tertiary gravels and sands are the "drifts" of the Ringarooma River system of deep leads. These sediments and particularly the gravels in the "gutters" or buried channels received tin minerals from the erosion of primary tin deposits in the granitic rocks and to some extent in the intruded Mathinna metasediments existing in the ranges to the south of the Ringarooma Valley and extending from the hills south of Branxholm easterly to the Blue Tier Area.

ECONOMIC GEOLOGY OF THE LEASE

A thick section of Lower Tertiary sands and gravels has been developed in the lease area. These sands and gravels are reported* to be up to 140 feet thick; up to 70 feet of the section is exposed at present above the water table. A ferrugious basalt flow approximately 30 feet thick overlies the unconsolidated sediments.

A visual examination of several samples from the exposed 70 feet of the face indicates that the sediments consist of poorly sorted, sub-angular to sub-rounded, 1 - 10 mm grains. Up to 70% of the mineral grains are quartz with the remainder as feldspar and clay particles. This indicates a granite source from the wash. The overlying basalt flow is partly unconsolidated due to extensive weathering and could easily be stripped by tractor.

Most of the past production from deep leads in the area has come from gutters or buried channels developed near the bottom of the sediment section. Tin values can be expected to be much higher within the material from these buried channels. The average assay over the entire 190 foot section of 0.9 lb. of 70% tin per cu. yd. obtained during the original Arba Mine operation was in all probability mainly supported by high values obtained in buried channels. This is further supported by the assays of 0.4 to 0.2 lbs. tin per cu. yd. obtained in the upper 70 feet of the section as reported to me by Mr. C. Manson.

CONCLUSIONS AND RECOMMENDATIONS

A section of unconsolidated Tertiary gravels and sands up to 140 feet thick has been developed in the area of the lease. The sediment section is overlain by a partly unconsolidated basaltic flow approximately 30 feet thick.

The upper 70 feet of the sediments is exposed above water table and low tin values have been obtained from this section. The Branxholm Creek Deep Lead which was mined early in the century apparently extends northeasterly onto the eastern portion of lease 160 P/M. This buried channel carried high tin values where mined immediately south of the southwesterly boundary of the lease and there is good evidence to suggest that the lead is mineralized where it occurs within the lease area. An average value of 0.9 lbs. per cubic yard of 70% tin was obtained in mining the entire 190 foot section on the Arba Mines leases immediately south of lease 160 P/M and similar values could be expected on the lease if the Branxholm Deep Lead is found to extend to the northeast. Subsidiary leads may also exist on the lease.

The apparent extension of the Branxholm Lead onto the lease and the possibility of subsidiary leads can be tested by a careful mapping and detail geophysical programme followed by drilling if warrated.

The programme should consist of an initial stage followed by the full scale programme.

The initial phase should consist of a two-man crew on the property for an estimated three weeks. The following information should be obtained during the initial phase:

1. Obtain samples fro assays from the exposed 70 feet of unconsolidated sediments. Samples at 100 foot intervals.
2. Aerial photo (government) should be obtained to enable a photo interpretation of the geology of the lease.
3. Ground survey to establish horizontal and vertical control in order to provide control for preparation of topographic plans from aerial photos.

4. Ground survey of at least a portion of the outside boundary of lease 160 P/M.
5. Preliminary examination of water supply, type, volumnes, regulations, supply route, grade, etc.
6. Dept. of Mines re: regulations on dumping of untreated waste waters. Also search title of properties and determine if other adjacent areas are of interest.
7. Reconnaissance mapping to establish extent of the basaltic flows and the wash and in particular to obtain information regarding outcrop configuration in the surrounding area. This will allow some interpretation of possible buried channels.

The information obtained in the initial exploration phase will allow design of an effective full scale programme. The full scale programme cannot be completely outlined at this time, however, the following surveys are expected to be required.

1. Gravity Survey (detailed) in order to outline possible low gravity buried channels.
2. Magnetic Survey (detailed) in order to assist in interpretation of bedrock contours.

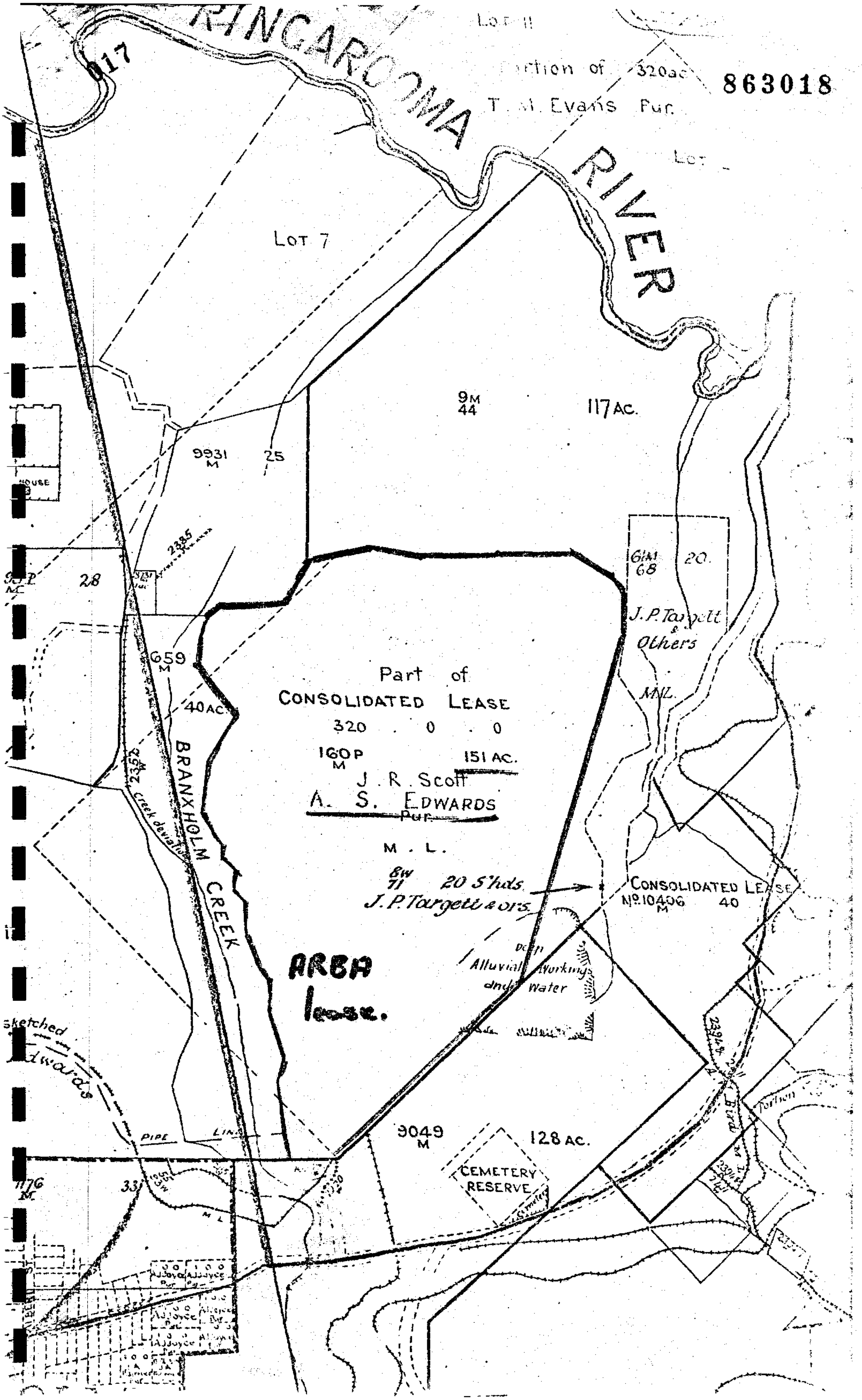
3. Seismic Survey in order to determine absolute depth to bedrock and bedrock configuration.
4. Topographic Survey in order to allow calculation of seismic results. This topographic survey will be detailed from aerial photos if the scale is right. If required, a stadia survey can be made.

The final geological detail will also be available from the full scale programme and the lease boundary survey will be completed.

The combination of the above survey information will allow an accurate interpretation of the Tertiary sediments to be made. Bedrock configurations including the presence of any buried channel will be known. A realistic percussion drilling programme can be implemented if warranted after the completion of the surveys.

ESTIMATION OF COSTS

No estimate of the cost of the full scale programme can be made until the exact size of the area of interest is known. Drilling costs for percussion range from $3.00 to $7.00 per foot but the footage requirement is unknown


863018
RINGAROOMA RIVER
Lot 11
Portion of 320ac
T. M. Evans Pur.
Lot 7
9M
44
117 AC.
9931
M
25
28
659
M
40 AC.
6IM
68
20.
J. P. Targett & Others
M.L.
Part of
CONSOLIDATED LEASE
320 . 0 . 0
160P
M
151 AC.
J. R. Scott
A. S. EDWARDS
Pur.
M. L.
20 S'hds.
J. P. Targett & ors.
CONSOLIDATED LEASE
No 10406
M
40
BRANXHOLM CREEK
Creek diversion
Alluvial Workings under water
AREA lease.
sketched
Edwards
PIPE LINE
9049
M
128 AC.
CEMETERY RESERVE
1176
M.
33
M L
A. J. Joyce Pur.

APPENDIX 2

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Summary of Drilling Statistics

Hole No.	Thickness of Basalt	Depth to Basement	T.D.
B.	14'	175'	186'
10.	56'	211'	253'
6.	37'	193'	206'
5.	43'	Drilling	199'
3.	51'		
4.	53'		
15.	32'		
14.	42'	42'	255'
13.	47'		
11.	30'		

RESULTS OF DRILLING:

Hole 10:

Basalt depth	56 feet.
56-71 feet.	Yellow "puggy" clay with inclusions of semi-coalified wood.
71-113 feet.	Angular, medium to coarse grained sand with clay matrix amounting to less than 30 percent. Occasional bands of silty micaceous clay with inclusions of brown wood remnants.
113-143 feet.	Gravel wash material. Consists predominantly of very rounded pebble-sized and occasionally cobble-sized fragments of quartz, sandstone, siltstone and shale; the whole sequence being entirely unconsolidated. On panning of samples later, occasional small grains of topaz and traces of very fine ruby tin were noted. Less than 10 percent clay was seen throughout the entire section.
143-165 feet.	Light brown to light maroon clay was intersected.
165-185 feet.	Coarse round wash material was intersected; constituents of which would approximate those of the above-discussed wash, but in addition, large pebbles of sandstone occurred, together with at least 20 percent pyrite - probably in the form of pyritic concretions. Forming the finer fraction of the wash was coarse angular sand - mostly very clear to milky quartz, with little or no attached cement.
185-205 feet.	This section consists of predominantly clay, slightly silty and very brown in colour. This colouration is probably due to very high humus content as numerous pieces of ~~basalt~~ wood were encountered in this section. Framework constituents of this section amounted to less than 20 percent and consisted of sand and pebbles.
205-209 feet.	White, very soft, weathered granitic basement. This material is recovered as a clayey fluid in which is suspended very angular pieces of quartz. OMIT {Occasional fragments of the actual basement have been recovered and undoubtedly, this is basement.}

209-211 feet. From 209 to 211 feet, a sandy, pebbly wash was intersected. This is a little peculiar from a geological standpoint as previously, four feet of weathered basement had been intersected. This could only indicate that large weathered granitic boulders are lying on the bottom of the leads.

211-253 feet. The white, clayey weathered granitic material was again intersected and this indicated that the true basement had been reached.

~~(See following page for Assay Results.)~~

Hole 6:

Thickness of Basalt:	37 feet.

Cable tool rig spudded in at 10.30 a.m., Friday, August 13, 1971.

37-45 feet.	Very yellow silty, slightly sandy clay.
45-50 feet.	Pale yellow, creamy sand. 60 percent clay with framework consisting of medium to coarse angular quartz grains.
50-55 feet.	Dark brown, slightly sandy clay - probably 15 percent organic material. Occasional pebbles of quartz and sandstone.
55-60 feet.	Argillaceous, very sandy, pebbly wash material.
60-85 feet.	Medium to coarse granite drift material. 80 percent clear white angular quartz grains with 20 percent light grey silty clay. At 5.30 p.m., on August 13, depth was 85 feet.
85-150 feet.	Quartz wash material. Probably 20-30 percent clay with wash as described in Hole No. 10.
150-193 feet.	Wash material with a considerably higher proportion of cobble and pebble-sized material with a comparable decrease in clay content. Good traces of very fine to fine and occasionally medium sized black and ruby tin was noted in the basal section of this interval.
193-206 feet.	White clayey weathered granitic basement. Total depth 206 feet.

(See following page for Assay Results.)

Hole B:

0-14 feet.	Red clay with round 4" boulders of basalt.
14-16 feet.	Bright yellow clay with moderate influx of water.

At 9.30 a.m. on Tuesday, July 20, Hole B. was drilling and sampling at 40 feet.

On Friday, July 23, Hole B. was at 126 feet.

On Monday, July 26, depth at 5.00 p.m., was at 162 feet, while on Tuesday, July 27, Hole B. was bottomed at 186 feet after drilling through 11 feet of white granitic basement.

Hole B. from 14 feet to a depth of 125 feet consisted of alternate bands of clay and yellow quartzose drift material.

125-175 feet. Quartzitic pebbly wash material was intersected and fine tin very evident from 130 feet to 175 feet with very coarse ruby tin extremely common between 145 to 170 feet. One sample taken from the interval of 150-155 feet was separated and assayed in the field with Mr. Walter Manson and the following is a record of that assay:-

> The sample weighed 1 lb. 3 oz. and a specific sample of 146.5 grams was taken for the actual assay.
> The weight of cassitterite (tin concentrate) = 60 grams;
> therefore, percent cassitterite = 41 percent.
> We assumed 90 percent purity as the concentrate was separated by panning action alone.
> Therefore, actual percent cassitterite = 37 percent.
> We assumed the cubic yard of sample to weigh approximately 2240 lbs;
> therefore 1 percent = 22.4 lbs.;
> therefore 37 percent = 828 lbs.
> As the sample obtained from the 5 foot drilling interval would weigh approximately 97 lbs. (dimension considerations) we assumed a concentration factor of 100.
> This means, then, that the interval 150-155 feet yielded 8.2 lbs. of cassitterite per cubic yard.

From visible examination of the sample intervals 135-150 feet and from 155-175 feet, I would expect an average assay for these intervals to approximate 1 lb. to the cubic yard. However, all these results will be checked by the Government Laboratory in Launceston, Tasmania.
(Samples from Hole B. and Hole 10. arrived at the Laboratory on August 17.)

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HOLE 5. GEOLOGICAL DESCRIPTION

Base Basalt - 43'	43' - 70' Coarse angular drift material with minor clay and occasional pieces of fossil wood at 60' - 80' Red tin - 60' - 70'.
70' - 80'	Coarse to very coarse sand - very angular with ruby tin. Wash material - coarse to pebbly - predominantly quartz.
145' - 160'	Coarse sand
160' - 165'	" "
165' - 170'	Coarse sand with black, organically rich clay and fossil wood.
170' - 175'	Coarse sand with bands of limonitic yellow clay, dark brown, humus rich clay with dark brown fossil wood and pebbles of shale, quartz, siltstone. (3/8" - ½" longest diameter)
175' - 180'	As above but predominantly sand with minor white clay bands and assorted wash pebbles.
180' - 185'	As above in 170' - 175'.
185' - 190'	Predominantly angular coarse sand with very minor fine tin
190' - 195'	As above.
195' - 200'	Predominantly clay with fragments of weathered granite. Basement at 199'.

METHOD FOR COMPUTING TIN VALUES FROM ASSAYS

OBTAINED DURING ALLUVIAL DRILLING - ARBA

Weight of sample recovered from drilled depth = W_{TS} (lbs)

Weight of concentrated sample = W_{CS} (lbs)

An assumption is made that for a 6" hole, the volume of sample which should be recovered from a 5' interval is 85 lb (or 1 cubic foot of average S.G. sediment) Thus, theoretical recovered sample weight = W_{TRS}

Now, in a good operation it is safe to assume that W_{TRS} = W_{TS}

Now concentration Factor $F = \frac{W_{TRS}}{W_{CS}}$

For the purposes of this calculation, assume that 1% Sn = 23 lb/yd^3

.. Laboratory Assay (x%) = 23 x lb/yd^3

.. Actual Sn in sampled interval = $(\frac{23x}{F})$ lb/yd^3

This is the method used in calculation of all results from drilling at Arba.

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HOLE 14

ARBA PROSPECT
BRANXHOLM, TAS.

22/10/71.

Although, geologically, a lead environment appeared to be present, tin values were NEGLIGIBLE.

Sample Interval (feet)	Lab. Wt. grammes	Sample Wt. Total lbs. $\frac{Wt. \times 2}{453}$	Concentration Factor	Lab. Assay %	Lab. Assay lbs/yd^3	Actual Sn in Sample Interval $lbs./yd^3$ $\frac{Lab. Assay}{Conc. Factor}$
35-40	65.4	.28	303.5	<.1	-	-
40-50	64.2	.28	303.5	<.1	-	-
50-60	38.0	.16	531.2	.13	.299	-
60-70	52.6	.23	369.5	.18	.414	-
70-80	52.0	.22	386.3	<.1	-	-
80-90	41.5	.18	472.2	.63	1.44	.003
90-100	78.4	.34	250.0	.68	1.56	.006
100-105	35.1	.15	566.6	.83	1.90	.003
105-110	50.4	.22	386.3	.38	.87	.002
110-115	46.3	.20	425.0	.18	.414	-
115-120	23.9	.105	857	.28	6.27	.007
120-125	-		-		-	-
125-130	40.7	.17	500.0	<.1	-	-
130-135	32	.14	607.1	.13	.299	-
135-140	36.8	.16	531.2	1.43	3.28	-
140-145	49.0	.21	404.7	.63	1.44	-
145-150	47	.20	425	.78	1.79	-
150-155	29.2	.12	708	.53	1.21	-
155-160	42.8	.18	472.2	2.33	5.35	.01
160-165	41.5	.18	472.2	.88	2.02	-
165-170	33.4	.14	607.1	.78	1.79	-
170-175	31.4	.13	653.8	1.13	2.59	-
175-180	30.1	.13	653.8	5.43	12.48	.019
180-185	41	.18	472.2	2.93	6.73	-
185-190	33.6	.14	607.1	.4	.92	-
190-195	37	.16	531.2	.38	1.84	-
195-200	41.9	.18	472.2	.68	1.56	-
200-205	29.5	.13	653.8	.53	1.21	-
205-210	31.1	.13	653.8	.53	1.21	-
210-215	28.2	.12	708.3	.98	2.25	-
215-220	34.2	.15	566.6	.28	.64	-
220-225	55.0	.24	354.1	.53	1.21	-

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AREA PROSPECT
BRANXHOLM,
TASMANIA.

7/9/71.

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HOLE B.

Sample (feet)	Lab. Wt. grammes	Lbs. (Wt. x 2) / (453)	Concen-tration Factor	Actual Sn in sample interval (lb/yd³) (Lab. Assay) / (Conc. Factor)	Lab. Assay %	Lab. Assay lb/yd³
20-30	109.3				Nil	
30-40	109.1				Nil	
40-50	114				Nil	
50-60	130				< 0.1	
60-70	152.5	.672	126.48	.112	.57	14.25
70-80	183.6	.810	104.90	.1954	.82	20.5
80-90	192.0	.847	100.35	.10	.42	10.5
90-100	141.0	.622	136.65	.049	.27	6.75
100-105	150.0				< 0.1	
105-110	288.0				< 0.1	
110-115	122				< 0.1	
115-120	108.5				< 0.1	
120-125	199				< 0.1	
125-130	153				< 0.1	
130-135	189	.834	101.91	.066	.27	6.75
135-140	151.69	.66	128.78	.151	.85	19.55
140-145	205.9	.90	94.4	.231	.95	21.85
145-150	211.3	.93	91.39	.427	1.70	39.1
150-155	283.1	1.24	68.54	8.18	24.4	561.2
155-160	228.6	1.0	85.00	.78	2.9	66.7
160-165	186.1	.82	103.65	2.57	11.6	266.8
165-170	250.3	1.10	77.27	3.42	11.5	264.5
170-175	155	.684	124.26	.724	3.6	90.00
175-180	114	.503	168.98	[illegible]66	1.8	45.00
180-185	70.[illegible]	[illegible]	[illegible]	[illegible]	.42	10[illegible]

HOLE B.

Over its total depth, Hole B averages ~~456~~ ·5006 lb./Sn/Yd³ (including basalt and drilled basement); [714 lb/yd³ cassit.] i.e. approx. ~~[illegible]~~ 65¢/cubic yard.

OR

·56 lb./yd³ Sn from Base ~~Basalt~~ to Top Basement.

[·8 lb./yd³ cassit.]

i.e. 73¢/yd³.

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HOLE 5.

ARBA PROSPECT
BRANXHOLM, TAS.

30/9/71.

Hole 5

T.D. 214' in [illegible] [illegible], [illegible] granite

AVERAGES 6.87¢/yd³ from 30'-199'

Sample (feet)	Lab. Wt. grammes	Sample Wt. Total lbs. $\frac{Wt. \times 2}{453}$	Concentration Factor	Lab. Assay %	Lab. Assay lb./yd³	Actual Sn. in sample Interval (lb/yd³) ∴ $\frac{Lab. Assay}{Conc. Factor}$
35-40	92	.4061	209.308	<.1	-	-
40-50	93	.4105	207.06	<.1	-	-
50-60	105	.4635	183.38	<.1	-	-
60-65	89	.3929	216.34	.28	6.27	.028
65-70	51	.2251	377.6	.63	14.11	.037
70-80	57	.2516	337.8	.43	9.63	.028
80-85	69	.3046	279.0	.38	8.51	.030
85-90	68	.3002	283.1	.35	7.84	.027
90-95	102	.4503	188.7	1.4	31.3	.165
95-100	113	.4988	170.4	3.4	76.1	.446
100-105	94	.4150	204.8	.93	20.83	.101
105-110	77	.3399	250.0	.38	8.51	.034
110-115	88	.3885	218.7	.73	16.35	.074
115-120	73	.3222	263.8	.43	9.63	.036
120-125	65	.2869	296.2	.58	12.99	.043
125-130	74	.3267	260.1	.63	14.11	.054
130-135	82	.3620	234.8	1.0	22.4	.095
135-140	103	.4547	186.9	.33	7.39	.039
140-145	111	.4900	173.4	.25	5.6	.032
145-150	39	.1721	493.8	.6	13.44	.027
150-155	33	.1456	583.7	.9	20.16	.034
155-160	48	.2119	401.1	1.73	38.7	.096
160-165	49	.2163	392.9	.82	18.36	.046
165-170	46	.2030	418.7	1.53	34.2	.081
170-175	48	.2119	401.1	.28	6.27	.015
175-180	69	.3046	279.0	.53	11.87	.006
180-185	47	.2075	409.6	.35	7.84	.019
185-190	56	.2472	343.8	.28	6.27	.018
190-195	47	.2075	409.6	.15	3.36	.008
195-200	43	.1898	447.8	<.1	-	-
Basement 199'						

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HOLE 6.

ARBA PROSPECT

Branxholm TAS.

30/9/71.

AVERAGES 8.32 ¢ / yd³ from 30' – 200'

SAMPLE (feet)	LAB. WT. grammes	Sample Wt. Total lbs. Wt.X2 / 453	Concentration factor	Lab. Assay %	Lab. Assay lbs/yd^3	Actual Sn in Sample Interval (lbs/yd^3) Lab. Assay / Conc. Factor
35-40	96	.422	201.4	<.1	-	-
40-50	110	.484	175.6	.18	4.03	.022
50-60	79	.347	244.9	.28	6.27	.025
60-70	93	.409	207.8	.6	13.44	.064
70-80	80	.352	241.4	.43	9.63	.039
80-90	76	.334	254.4	.7	15.68	.061
90-100	100	.440	193.1	2.35	52.64	.272
100-105	112	.492	172.7	.65	14.56	.084
105-110	92	.404	210.3	.53	11.87	.056
110-115	88	.387	219.6	1.32	29.56	.134
115-120	68	.299	284.2	.38	8.51	.034
120-125	83	.365	232.8	.88	19.71	.084
125-130	97	.426	199.5	.83	18.59	.093
130-135	110	.484	175.6	.83	18.59	.105
135-140	119	.523	162.5	.98	21.95	.135
140-145	118	.519	163.7	1.48	33.15	.202
145-150	90	.396	214.6	.88	19.71	.091
150-155	133	.585	145.2	.33	7.39	.050
155-160	94	.413	205.8	.43	9.63	.046
160-165	119	.523	162.5	.28	6.27	.038
165-170	75	.330	257.5	.23	5.15	.020
170-175	76	.334	254.4	.18	4.03	.015
175-180	121	.532	159.7	.38	8.51	.053
180-185	54	.237	358.6	.23	5.15	.014
185-190	59	.259	328.0	<.1	-	-
190-195	61	.268	317.1	<.1	-	-
195-200	50	.220	386.3	.1	-	-

028

ARBA PROSPECT
BRANXHOLM,
TASMANIA.

7/9/71.

863030

HOLE 10.

Hole 10.

Averages .025 lb.Sn./yd^3
over interval 60' to 253'
or
.054 lb.Sn./yd^3
over 60' - Top of Basement.
i.e., approx. 6.9 cents/yd^3
(excluding basalt)
~~or~~
~~cents/yd^3 from top of basalt to top of basement.~~

Sample (feet)	Lab. Wt grammes	Lbs. (Wt. x 2) / (453)	Concentration Factor	Actual Sn. in sample interval (lb/yd^3) (Lab. Assay) / (Conc. Factor)	Lab. Assay %	Lab. Assay lb/yd^3
60-70	161.0				<.01	
70-80	69.0				<.01	
80-90	135.0	.596	142.6	.036	.21	5.25
90-100	128.0	.565	157.5	.025	.16	4.0
100-105	121	.534	159.1	.015	.1	2.5
105-110	59.5	.262	324.4	.023	.31	7.75
110-115	127.0	.560	151.7	.12	.78	19.50
115-120	110.0	.485	175.2	.085	.60	15.0
120-125	108.0	.476	178.5	.20	1.43	35.75
125-130	86.0	.379	224.2	.055	.50	12.5
130-135	58.0	.256	332.0	.039	.52	13.0
135-140	80.0	.353	240.7	.033	.32	8.0
140-145	53.5	.236	360.0	.036	.52	13.0
145-150	39.0	.172	494.1	.027	.55	13.75
150-155	67.0	.295	288.1	.078	.91	22.75
155-160	50.0	.220	386.3	.056	.88	22.0
160-165	83.0	.366	234.1	.043	.41	10.25
165-170	77.0	.339	250.7	.055	.56	14.0
170-175	85.0	.375	226.6	.072	.66	16.5
175-180	73.0	.322	263.9	.154	1.63	40.75
180-185	73.7	.325	261.5	.068	.72	18.0
185-190	118.9	.524	162.2	.007	.05	1.25
190-195	87.1	.384	221.3	.005	.05	1.25

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195-200	73.0	.322	263.9	.005	.06	1.50
200-205	71.3	.314	270.7	.017	.19	4.75
Basement 205-215	97.6	.430	197.6	.036	.29	7.25
215-220	62.0				< .01	
220-225	101.0				< .01	
225-230	63.0				< .01	
230-235	57.0				< .01	
235-240	81.0				< .01	
240-245	58.0				< .01	
245-250	83.0				< .01	
250-255	77.0				< .01	

031

APPENDIX 4

863032

ARBA TIN PROSPECT

BRANXHOLM

REVIEW OF GRAVITY DATA.

TASMANIA

May 1971.

ARBA TIN PROSPECT : TASMANIA.

1. Introduction.

The Arba TinProspect has been examined ina the following report:

> Preliminary Report on the ARBA Lease 160/P/M
> County of Dorset, Branxholm, Tasmania,
> by A.C.A. Howe, Australia, Pty. Ltd.,
> January 1971.

The area is underlain by Silurian Mathinna metasediments which have been intruded by Devonian granites. Copious gravel deposits up to 140 feet thick were developed in old Early Tertiary river systems with possible concentrations of tin minerals in deep leads at bedrock level.

A basalt flow, probably late tertiary, about 30 feet thick, covers the present area of interest and has protected the immediately underlying gravels from any resorting processes. Around this protected area, however, Late Tertiary to Recent erosion has cut deeply into the gravels and has re-concentrated the tin minerals into creeks and new river channels. The new channels have been extensively worked over the past 100 years, and it seems at first sight that the only unworked overburden now available must lie underneath the basalt capping.

A belif has grown up that the basalt hides early Tertiary deep leads - a 'deep lead' being pictured as a channel in the basement filled with original undisturbed EarlyTertiary overburden. channel-fill. naturally concentrated

Such a channel should be detectable by a gravity meter.

The following conditions for a preliminary gravity meter survey were stated:

- assumed overburden density 1.8 gm/cc.
- assumed basement density 2.6 gm/cc (possibly too high)

- meter traverse to be as close to an elevation contour as possible to eliminate large elevation corrections,

- meter traverse to be about 500 feet away from the basalt capping to avoid errors inherent in terrain corrections,
- gravity stations to be at 50 foot intervals around the periphery of the prospect area.

In these conditions, a basement variation of 25 feet should produce a gravity Bouguer anomaly of the order of 0.2 to 0.3 milligal.

2. Results

There was considerably more disturbed overburden than had been anticipated, and the elevation differences were much greater than originally planned. Therefore many of the Bouguer irregularities must be attributed to these factors, and ~~are~~ therefore must be regarded as near-surface effects.

But there are three anomalous regions that could be due to basement undulations, and should be followed up with further gravity meter reconnaissance to investigate their size and direction.

S.J.Watson.
29 March 1971.

034

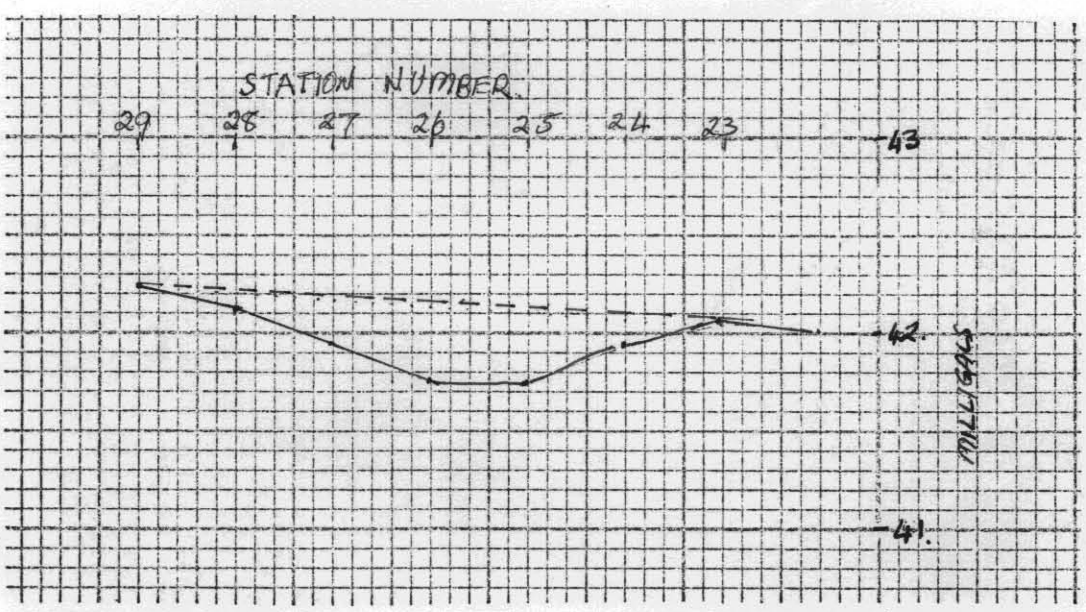
863035

ANOMALY 1.

This anomaly between stations 23 and 29 is very close to the ideal model that was used to justify the use of the gravity meter in the original discussions.

Its overall width is 300 feet. The Bouguer anomaly is 0.35 milligal, and this, on the basis of the assumed densities of overburden and basement, represents a channel in the bedrock of about 35 to 40 feet.

The depth to bedrock can not be estimated.



5 cm

035

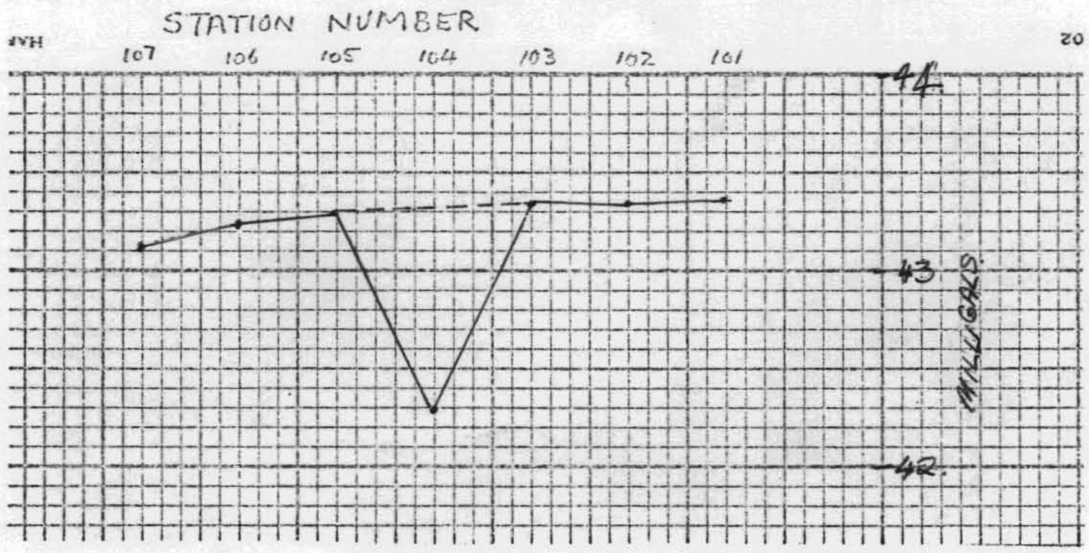
863036

ANOMALY 2

This anomaly is at gravity station 104.
It represents a mass deficiency equivalent to 1.0 milligals. The reading is legitimate.

It is unusually sharp, and can be interpreted as a channel 100 feet wide and 100 feet deep. The bedrock lies at a very shallow depth.

The sharpness of the anomaly is a puzzling feature, and the picture is not the ideal upon which the original model was made. It is such a strong anomaly that it should be included in further investigation.



5 cm

036

ANOMALY 3

This anomaly lies between gravity stations 211 and 218, and apart from the value under 213 represents a channel 200 feet across and about 50 feet at its greatest depth.

The depth to bedrock can not be computed.