

Q33 No 13

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Mr Hughes

S.P.L. 18

BLUE TIER

(for plans see ~~Attached~~ Draft.)
Plan Nos 297-298/33)

35-066

METALS INVESTIGATION

Blue Tier 1935

By

L. C. CHARK

S.P.L. 18. Blue Tier
Metals Investigation 1935

P.F. Howland Nov. 1963

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Blue Tier Report to Metals Investigation etc.

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*Plans No 297/33 & 298/33 held
 by Geol. Survey Drafting Branch apply.
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AMG REFERENCE POINTS ADDED

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Metals Investigation Pty. Ltd.
P.O. Box 856K.
MELBOURNE.

Dear Sirs,

BLUE TIER

As instructed I have carried out preliminary prospecting and made an examination of the possibilities of developing the so-called "Southern Area" of the Blue Tier, North East Coast of Tasmania, which was considered by the Blue Tier Tin Committee appointed by the Tasmanian Government in 1928, and submit the following report:-

Summary and Conclusion

The Tin Committee advised that testing operations should be carried out to prove if possible an area of about 100 acres of Stanniferous granite for development of open-cut operations on a large scale.

The results of the present preliminary work indicate

I. That while it is improbable that so large an area can be proved, there is considerable probability of proving an area of 50 acres in the vicinity of the Anchor Mine with the possibility of somewhat increasing this area by further developments on its Western boundary.

II. The possibility of augmenting the ore supply to a central mill in the vicinity of the Anchor Mine, by supplies from outside mines both within and without the "Southern Area", promises satisfactory results on further investigation.

The Tin Committee advised the expenditure of £10,000 on boring and testing operations.

An option of purchase expiring on October 8th, 1936 is held over the property of the Anchor Syndicate.

The old Anchor Coy, prior to 1914, treated about 1,400,000 tons of stone when the average price of Tin was about half its present value in Australian currency.

Summary and Conclusion,

The present Anchor Tin Syndicate, which started operations in October last, has a capital of £3000, paid £6000 in dividends and has £1000 in hand. It has, in its working face, 80,000 tons of stone in sight which will, under present conditions, yield a profit of between £20,000 and £25,000.

By extending the present face, another 180,000 tons of rather less profitable stone can be worked.

It is recommended

I. That the Anchor option should be exercised under either of the conditions noted in Appendix I, which would involve a payment to it of about £10,000 for an outright purchase or £5000 cash with a 10% interest in a new company.

II. That provision of £5000 be made for slight and temporary improvements in the Mill and mining operations, and that surplus profits or so much as is necessary be applied to further testing the Anchor ore body and such other outside bodies as appear likely to supplement the ore supply.

If the above work should not yield the results of the magnitude hoped for, there is practically no doubt that there remains in the present Anchor lease sufficient payable ore, under present conditions, for a mine of considerable size which, with additional ore from outside mines, would still provide an attractive proposition.

The wisdom of exercising the Anchor option appears to be beyond doubt.

The estimates of the Blue Tier Tin Committee are referred to in another report.

Details of report are as follows.

LOCATION, TOPOGRAPHY, RAINFALL, POWER SUPPLY ETC.

The area is situated on the Southern Slopes of the Blue Tier, a mountainous range of granite rocks rising to an elevation of 2900 feet above sea level.

The surface is scored by deep gullies, is generally rugged and to a great extent covered by dense vegetation.

It is situated in the vicinity of the township of Lottah, in the county of Dorset, North Eastern Tasmania.

Lottah is connected with Launceston by a good mountain road suitable for Motor Transport and is within 19 miles of Herrick, the Terminus of the Government Railway Line to the North Eastern District.

Rainfall. The rainfall is heavy, from 60 to 70 inches per annum, but owing to the elevation, the water supply is limited. Suitable sites for dams for Mill Dressing water are available.

Electric Power, from the Government Hydro-Electric Scheme, will be available at reasonable rates - that stated in the Blue Tier Company's report being £5.10.0 per horse power if taken in a block of 4000 horse power.

Plans Nos. 1, 2, 3, & 4 have been prepared and are described in detail in Appendix I. Plan No. 1, Area Prospected, Scale 1 inch to 4 chains. Plan No. 2, Anchor Faces, Scale 1 inch to 1 chain. Plan No. 3, Anchor Lease and Surroundings, Scale 1 inch to 100 feet. Plan No. 4, Assay Plan, Scale 1 inch to 40 feet.

A Production Chart is attached to the report.

LITERATURE. The following publications have been referred to.

The Mines of the Blue Tier
(W.H. Twelvetrees, late Gov. Geologist 1901)
Blue Tin Field Geol. Survey, Bull. No. 38.
The Tin Field of the Blue Tier, Aust. Inst. of Mining
Engineers, Dec. 1912 (Malcolm Moore)
Articles by J.B. Lewis, late Manager the Anchor Mines in
Chemical Engineering & Mining Review, Dec. 5th, 1923 and
Sept. 5th, 1924, for reference called J.B.L. Nos 1 & 2.

I am indebted to the Secretary for Mines for his courtesy in placing the information obtained by the Mt. Lyell Coy. at my disposal.

TITLE

A special prospecting licence No.18 of 2500 acres has been granted by the Minister for Mines. It expires on Oct. 9th. 1936 under conditions set out in Appendix I.

An option of purchase of the property of the Anchor Tin Mining Syndicate has been secured, the general conditions of which are set out in Appendix I. It expires on Oct. 8th. 1936. A payment of £200 will be due on Oct.8th. next to secure option for the following six months.

PRODUCTION.

At various points within the prospecting area comparatively rich outcrops have been worked, in most cases more than 30 years ago.

Between April 1906 and June 1907, the Mt.Lyell Mining and Railway Coy. carried out extensive surface prospecting and diamond drilling operations, chiefly on the Western half of the prospecting area, without proceeding farther in the matter.

With the exception of the Anchor Company, no complete and reliable records of production can be obtained. The Anchor record indeed includes stone obtained from the Australia Mine. Rough estimates of production have been made and recorded on a production chart herewith, chiefly with the object of shewing the distances between the various outcrops that have been worked, and the impossibility of working any two of those already discovered as parts of the same open cut, as well as indicating the topography.

The prospecting area is shewn in Red Lines. The production chart gives some information outside this area.

PROSPECTING.

Two general methods of exploiting the tin granites of the district have been proposed.

I. The development of one or more large open cuts to deal with the low grade ore in a wholesale manner as proposed by the Blue Tier Tin Committee.

II. Erection of a large central treatment plant at the Anchor Mine, the supply of ore from which would be augmented by supplies of selected or crude ore from outlying mines, in an extension of J.B.Lewis' proposal at the Anchor Mine.

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PROSPECTING (cont)

The country rock of the Blue Tier is of granitic origin. Its alteration has resulted in the development of considerable areas of so-called Tin Granite, a rock of different appearance to the granite of the district. In parts this so-called Tin Granite is Stanniferous.

It is either exposed at the surface with or without a shallow detrital deposit, or is covered by greater depths of decomposed equidimensional granite which at times contains Tin bearing quartz veins. These occasionally are sufficiently close together to allow of the soft portions being Hydrauliced at a small profit. Where the granite cover is traversed by quartz veins there is a probability of the underlying Tin Granite being stanniferous.

With the object of first disclosing an area of about 300 acres which is definitely tin bearing and later on selecting within it a definitely payable area of 100 acres or so, lines, roughly North and South, and East and West, were cleared through the, in places, very heavy undergrowth, and shafts sunk as shewn on Plan No. I. Rough tests of chip samples and borings were made in the field, the Tin concentrate, if any, obtained from a definite weight of sample was measured in a glass tube, see Appendix II.

The only part at which it appeared likely that another mass of stanniferous granite might occur lies between the Western boundary of the Anchor Leases and the Crystal Creek. The pegmatite seam which apparently marks the top of the Tinstone, is exposed from the Western boundary of the Anchor lease to Mallets House. Tinstone has been traced up the Ariel Gully through a small stanniferous outcrop, South of Mallets House. This area is shewn on Plan No. II as having the possibility of extension of the Anchor ore body to the West. After some further prospecting of this spot, without further development, in view of the heavy expenditure incurred by the Mt. Lyell Coy. to the West and North West, (see Appendix I) attention was then given to the Anchor ore body and other known outcrops both with the view of proving their extension and of ascertaining the desirability of exercising the option of purchase held over the Anchor property.

The work included the observation and record of items of interest in regard to rock structure and mineral disposition contours etc. for submission for a geologist's opinion to be obtained later.

Results are shewn on Plans Nos. 12, 3, & 4, and include chips and jumper holes for rough preliminary samples and carefully cut chases 2" x 4½" in portions of the floors of the Anchor faces and some more or less deep jumper holes.

PROSPECTING (cont)

Samples from chases were put through a laboratory crusher and samples from chases and bores submitted to the Government Laboratory at Launceston for chemical determination of Tin contents. A set of duplicate samples has been retained for future reference.

The Tin Oxide occurs in either horizontal or in steeply dipping vertical seams.

Its deposition is irregular. The rich seams of either class frequently lacking continuity as well as being separated from each other by bands of barren and frequently harder stone.

Small quantities of Copper Pyrites and Wolfram are occasionally met with and the assay of the Mill concentrates at times shews traces of lead and Molybdenum.

Generally it appears to me at present that the vertical seams are the more important.

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The Anchor Tin Syndicate's Mine.

This Syndicate took up in April 1932 the old lease of the Anchor Tin Mine Limited which ceased operations in 1914.

Geological Bulletin No. 58 states that from 1898 to 1914, 1,395,750 tons of tinstone yielded 2723 tons of concentrates of an average value of 4.57 lbs. or approximately 0.14% metallic tin per ton. Prior to 1892 an old record shows 30734 tons yielded 288 tons of concentrates or 0.66 % of metallic tin per ton.

From 1914 to 1934 very little work was done. 1934

The Syndicate started crushing in October last with 10 heads of stamps and Wilfley tables (increased to 20 heads in May) driven by water power.

Two surveys of the open cut have been made.

The following results have been obtained.

Date of Survey	Total Excavation	Concentrates Procured.				% Metallic Tin Recovered.
	C.Yds.	Estim. Tons	T.	C.	lb. per Ton.	
1935						
Apr. 7th.	3339	6678	36	2	12.2	0.393
July 28.	7059	14118	70	23	11.2	0.354

The weight of one cub. foot of tinstone in place is taken at 166 lbs. or 2 tons per cub. yard. 1934

The present working costs of producing concentrates is approximately 4/3 per ton with a basic rate of wages of 11/- 1934

The capital expenditure of the Syndicate is approximately £3000 besides £800 spent in Labour conditions for holding the lease prior to initiation of the present work. Dividends amounting to £6000 have been paid and I am informed that at July 21st. £1000 over commitments was in hand towards next dividends.

460 Jms
Wick
800 say
3th

Indaloo
Lathhouse

$$\frac{4}{3} = \frac{51}{8} = 6\frac{3}{8}$$

The plant is in rather poor order, coarser screens than formerly (without recrushing) are being used, no vanners or appliances for saving the finer tin are being used. From rough tests, see Appendix II, I estimate a tailings loss of 0.14% to 0.18% metallic tin, making the average contents of the pulp before dressing about 0.51% metallic tin, indicating a recovery of nearly 70%.

Much of the fine tin is lost and the rest is mineral locked up in the coarser grains of sand.

The smelting and realisation charges of the Syndicate are high, being set for quantities of a few bags as won by small working parties. Including cartage etc, to Launceston at £3 per ton ($\frac{60}{10} = 10d.$ unit), the Syndicate's cost of freight, smelting and realisation (including smelting loss) is about 8/- to 8/6 per unit or 3/- per ton. The Syndicate's working profit is thus, allowing for a higher cost than 4/3 when opening out, well over 10/- per ton, confirming the financial statement above.

There remain in Newson's face by extension of the Syndicate's cut, about 80,400 tons of stone containing approximately 224 tons of metallic tin, an average tin content of 0.28%.

$$28 \times 224 = 6272 \text{ units} \times 0.07 = 439 \text{ tons}$$

Ore in Sight.

In the preliminary investigation it has not been possible to estimate the ore in sight in the Anchor Lease.

Some sampling however, has been done in order to ascertain the desirability of exercising the option.

As noted above, in Newson's face only, over 80,000 tons remain to be worked containing .28% metallic tin.

If another strip to the North West were taken say 120 yards long by 40 yards wide by 20 yards deep, 182,000 tons could be worked. This would probably have a recoverable metallic tin value of about .20%.

Large bodies of stone are available in the old working faces, but no tests of value exist except the old records given above.

OTHER MINES OF PRESENT INTEREST.

The production chart shows that other mines have produced relatively small quantities of Tin compared with the Anchor.

Their development was hindered by low prices for Tin at the end of the last century and the beginning of this.

It is not improbable that moderate sized opened cuts might be developed at several outcrops - the stone from which (possibly requiring selection) could be transported to the Anchor Mill, as was done with that from the Australia Mine by J.B. Lewis for some years prior to 1914.

Of these, nearest the Anchor, the Don and the Liberator are the most promising. In them the floor structure with occasional pegmatite seams, is highly developed. The Liberator sections are held by others. I think an option if desired, could be obtained under easy conditions.

Testing of chip samples from the old working faces of what appears to be granite of favourable appearance for Tin contents, frequently show little or no Tin, while others give good results. This irregularity in the occurrence of values embarrassed previous operators and in both cases led to abandonment.

The so-called Duco or Crystal Hill Mine, although on the whole poor, appears from the Mt. Lyell Coy's. work to contain bands of payable ore in places.

The peak of the Crystal Hill constitutes a prominent outcrop in the landscape viewed from the East and South, and in this respect is different from the flat outcrops of floor structure of the Liberator and Don. Floor structure has not been observed at Crystal Hill, but North and South vertical joints have been recorded.

The peak is entirely altered to pinitised Tin Stone containing Tin ore (Bulletin 38)

The Mt. Lyell Coy. cut 6058 feet of trench on this section, exposing a total width of Tinstone of 2479 feet of an average assay value of .012% Tin. Thirty feet of the best stone assayed 0.30%

The Mt. Lyell Drill holes do not expose anything of consequence.

A previous foreman of the Anchor Coy. asserts that the Tinstone above the Anchor Syndicate's present face rose as a pinnacle to 110 feet above it.

OTHER MINES OF PRESENT INTEREST (cont)

It probably had the appearance of the peak of the Crystal Hill. This similarity with the fact that the Crystal Hill peak consists of vertically jointed pinitised Tinstone as does the Anchor stone at this part of the Mine, where the floor structure appears to be of less prominence than in other parts, should be born in mind in future search for values.

The Hill is very favourably situated for open cut work.

The Australia Mine including the Summit Mine, is near the summit of the Blue Tier and outside the Anchor, has been most attractive to early operators and later on to the Anchor Coy. itself. Lewis erected a crusher and aerial tram to convey ore to the Anchor Battery.

Its workings are more extensive than elsewhere and extend to a greater depth.

The floor structure is not so much in evidence but the greisen veins are more so. Records of treatment of small quantities only of stone are available. That treated by the Anchor Coy. is not recorded separately

The Mt. Lyell Coy. cut 22 trenches aggregating 18,574 feet (average assay value .0188) of which the total width of Tinstone in the trenches was 8392 (average assay value .0375) 200 feet of best Tinstone (i.e. for an average width of each trench of 9 feet) assayed .425% Tin. There are undoubtedly good seams of Tin on the property, but their thorough testing would be expensive.

Mt. Michael Mine. This property is held by a Hobart Syndicate. Possibly a favourable option could be obtained. The property is situated at the top of the Tier. It has been worked more recently than the others, closing down about nine years ago. From Bulletin 38 it is noted that 217000 of Tin Oxide were won, representing approximately the sale of from 85 to 100 tons of metallic Tin. The grade of the ore is given (Bulletin 38) as 0.4% of concentrate, which appears to me to be rather high. From what I regard as a reliable source, the recovery is stated to have been 6 lbs. per "yard". The "yard" is probably a Cub. yard Truck Load of broken stone and might be between 1.3 and 1.5 tons.

The plant was an old one and recovery necessarily poor. Probably the grade was not far from 0.2% metallic Tin per ton.

OTHER MINES OF PRESENT INTEREST (cont)Mt. Michael Mine (Cont)

The floor structure is well developed here.

It is interesting to note that the floors worked in the open-face are two hundred feet below the top of Mt. Michael which in elevation to the South-East shows the floor structure in Tinstone to its summit. The Tinstone above the soft floors worked, are very much harder and of quite low Tin content, if any. This shows that Tin values are not necessarily confined to the topmost floors of the structure.

The Tinstone is soft and more easily worked than that of any of the old mines referred to above.

The elevation of this property renders a water supply for Mill purposes rather poor, and its transport to a dressing plant at a lower elevation would be desirable.

The faces are in a suitable state to obtain large bulk samples of say 100 tons or more which could be brought down to the Anchor battery (if acquired) by motor truck, and dressed there to determine the recoverable value.

A Government Shot Drill has been engaged in boring holes along the top of the face to the South East. The results are not known. Six holes have been put down producing a 4 inch core. The depths, I believe, are 4-40 feet, 1-50 feet, 1-100 feet, totalling 310 feet. A foreman and two men run the machine. Wages are approximately £16 per week or about £300. Allowing for fuel, stores etc, the cost must be well over £1 per foot, without allowing for transport of the plant to and from the work.

The ground is more easily drilled than that at the Anchor would be.

Present Working Costs and Desirability of Exercising the Anchor Option

The Syndicate's working costs as given above are approximately 4/3 per ton of stone.

Their smelting and realisation charges are high and should be reduced.

If the Anchor option were exercised and work continued for the present as it is, but with a few improvements to the Mill which would result in better recovery, the following results may be expected :-

*Sale to B.L. Bank
P.L. Bank 11/10/28
199.7.6
717.0
129.606
183.007
= 448/2 per ton
x 2 1/2
01 17.48 per ton B.L. Bank*

*123 unit
448/2
7.15
1/2 ton metal*

I. With tin at £200 sterling and £250 Australian currency, one unit is worth 50/-. For the present take Smelting, Realisation etc. at 8/- per unit, nett value is 42/-.

Recoverable value of ore (.28 units), with the small above improvements to the Mill, should be .23 units.

at 8290 recovery .23 units @ 42/- = 9/8 per ton.

Working costs which should be reduced later = 4/3 " "

Surplus over working costs = 5/5 " "

80,000 tons @ 5/5 = £21,600.

The working cost 4/3 is equivalent to 0.10% metallic tin.

II. If price of tin is £225 sterling and £281 Australian currency,

One unit is worth at Mine Bins 56/2 less 8/- = 48/2

0.23 units @ 48/- = 11/-

Working Costs = 4/3

Surplus over working costs = 6/9

80,000 tons @ 6/9 = £27,600.

The working cost 4/3 is equivalent to 0.089 Tin at this price.

General Prospects of Developing a Large Scale Proposition

On Plan 12 of the Anchor Lease is shown an area in red lines which it may reasonably be expected will, on fully testing, develop an area of about 50 acres of stanniferous stone suitable for open cutting on a large scale.

More payable ground may possibly be developed to the Westward as shown by dotted lines.

*This is only
how they cost
9/15
12.18 13/15
17*

013

This area is less than that suggested by the Blue Tier Tin Committee (100 acres). The probable payable depth is unknown, but that assumed by the Committee viz. 100 feet, is in my opinion quite reasonable.

There is thus a prospect of developing an open cut of half the size proposed by the Tin Committee, which would contain about 15,000,000 tons of payable Tinstone.

As noted above under Other Mines, there is a good prospect of developing some of these as ore suppliers to a central Mill at the Anchor Mine.

If the testing of this area does not yield satisfactory results, there is practically no doubt, that there remains sufficient payable ore under present conditions in the Anchor Lease for a mine of considerable size, which with additional ore supply from the outside mines, would provide an attractive proposition.

Recommendation.

- It is therefore recommended,
1. that the Anchor option should be exercised under either of the conditions noted in Appendix I, which would involve an expenditure of about £10,000 for an outright purchase or £5,000 cash with a 10% interest in a new Company.
 2. that provision of £5000 be made for improvement of present milling and mining (probably less would suffice) and that surplus profits or so much as is necessary, be applied to further testing of the Anchor deposit and such other outside mines as appear likely to supplement the ore supply at the Anchor.

APPENDIX IBLUE TIER NOTES ON PLANS

PLAN No. 1. Scale 1" = 4 chains. Shows entire area prospected.

- Note 1. Cleared lines form a grid over area.
 2. Cleared areas uncover outcrops.
 3. Shafts coloured red in splitic cover rock, blue - tinstone.

Plan No 297/35

Notes on Rock Structure.A. Floor Structure.

- (i) Anchor Mine. Strong pegmatite layer rises at 8-10 degrees to North West.
- (ii) Don Mine. Thin pegmatite layer lies horizontally.
- (iii) Liberator Mine. Floor structure present. Pegmatite layer absent.
- (iv) Duco Mine. As above
- (v) Outcrops near Mallets.
 - (a) Pegmatite floor on North side of road 5 chains East of house.
 - (b) Tinstone floor 5 chains West near bores which show poor prospects of tin in surrounding barren country.
 - (c) Floor in splitic cover in quarry 3 chains further West on South side of road.
 - (d) At highest point of road near Liberator, pegmatite floor dipping North East at low angle.
 - (e) In Crystal Creek and Groom River are floors dipping at low angles.

B. Vertical Joints. Indicated on plan.

Generally strike North South and East West within 20 degrees.

Dip at steep angles, with North South joints usually predominating.

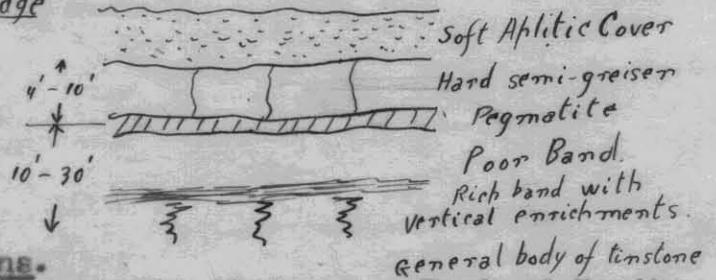
Cassiterite often found in more highly altered parts of rock striking in these directions.

APPENDIX I (Cont)

PLANS NOS. 2 & 3. Plan of Anchor Faces. Scale 1" = 1 chain.
Plan of Anchor Lease and surroundings.
Scale 1" = 100'

- Note
- A. Pegmatite Seam.
 - (1) Thickness up to 6 inches. Pentridge and Lower Haulage.
 - (11) Stanniferous in Pentridge, East wall of Lower Haulage faces, and on corner between Nos. 1 and 2 West faces.
 - (111) Dip. Usual 8 degrees to 10 degrees North West. In Syndicate's adit 42 degrees South.
 - (1v) Splitting of seam. In Syndicate's adit there is a seam at entrance to face and another 80 feet further South East in adit. Rich tin associated with both seams, the rock between being poor.
 - (v) Rich vertical seams associated with pegmatite, North walls of Pentridge and Upper Pentridge. Strike 20 degrees North of East. 20 feet deep from pegmatite.

Pentridge



- B. Greisen Veins.
 - (1) Newson's Face. Strike 10 degrees West of North to 30 degrees East of North. Width 6 inches to 2 feet.
 - (11) Heading Face. Strike 30 degrees East of North. Closely spaced at East end.
 - (111) Hodgman's Face. Strike 15 degrees East of North. Soft highly altered veins with fluorite abundant on joints.
- C. Silicified Tinstone.
 - (1) East wall of Pentridge. Hard copper pyrites just South of tunnel.
 - (11) Near Heading face. Pink silicious rock overlies soft micaceous type.

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APPENDIX I (Cont)

D. Evidence of Fracture Zones.

- (i) From Crusher Station North West up Ariel Gully.
- a. Crushed zone on point in No.2 West Face. Strike North West. Dip 80 degrees South West.
 - b. Pug seam with crushed material on wall North West of this point.
 - c. Rocks on North wall of No.3 West closely jointed.
 - d. Fractures in Lower Haulage face and Haulage face from 50 degrees East of North to East.
- (ii) From Newson's face to Pentridge.
- a. Close jointing in Syndicate's cut, Hodgman's face and North wall of Pentridge. Strike of laminations 15 to 20 degrees East of North.

E. Basic Dykes.

General strike North East. Dip 45 degrees to North West in Heading face, nearly vertical near Battery, 70 degrees West in Pentridge, nearly vertical above No.4 West face, nearly vertical but twisted at entrance to Syndicate's adit. Dyke on No.9 line (see plan 1) due North of No.2 West face ends abruptly at this point and is at contact of Aplitic Cover and tin granite.

F. Occurrence of Cassiterite.

- a. In Pegmatite Pentridge, Lower Haulage, corner between No.1 and No.2 West faces.
- b. As floor under pegmatite Pentridge, Syndicate's adit.
- c. In rich vertical veins under pegmatite, North walls of Pentridge and Upper Pentridge.

PLAN No. 4. Assay Plan. Scale 1" = 40'. *Plan No 298/33*

- Note
1. Chases laid out approximately normal to veins. Note that Cassiterite found in softer green veins. Details of chases on plan.
 2. Bores. Usually placed in harder material.
 3. Values. Several very rich definite veins have been traced, but as debris is heavy, this could only be done in exceptional cases. There are alternate zones of richer and poorer stone trending approximately North and South.

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APPENDIX I (Cont)TITLES.Special Prospectors Licence.

A special prospectors licence No.18 has been issued by the Minister for Mines in respect of 2500 acres in the vicinity of Lottah to be in force until October 9th, 1936, subject to the following conditions.

1. The licensee shall expend the sum of £500 in prospecting and examining the area in each six months of the first year of the term and thereafter a sum of £1000 in each succeeding period of six months.
2. A statement of expenditure, verified by Statutory Declaration and accompanied by a full report of prospecting operations, shall be lodged with the Secretary for Mines at the end of each six months of the term.

Option over the Anchor Syndicate's property made October 8th, 1934.General Conditions.

The Syndicate is an unregistered Syndicate but the Lessees are in the name of Jack Arthur Hodgman with whom the option agreement has been made - generally as follows:

Payments for Option.

£100 for first six months
£200 for each extension of six months till
October 8th, 1936.

In the event of purchase, these option payments shall be treated as part payment of the purchase consideration.

Purchase consideration. £10,000 in cash or £5000 in cash and the issue to the vendor of scrip for a fully paid up one tenth interest in the original nominal capital of a company to be formed to work the said lease and any adjacent areas it may acquire, and having a share capital of not less than £50,000.

APPENDIX I (Cont)

TITLES (cont)

The purchaser may exercise option at any time, by notice specified and shall be allowed one month to form company and satisfy purchase considerations.

Further considerations cover Transfers of Leases, etc in Blank, Right of purchaser to information as to vendors working results, Right of entry etc. of purchasers workmen to test ground etc.

Vendor to pay all rents and observe conditions of lease and licences.

Purchaser may give notice of intention to abandon option at any time and his obligations shall cease.

Schedule.

Mining Lease No. 10890M, dated April 26th, 1932, comprising 141 acres.

Licence of Water Right No. 2929W, 4 sluice heads
" " " " " No. 2888W, 2 " "

All in county of Dorset, State of Tasmania.

A supplementary agreement with Jack Arthur Hodgman, dated eighth day of March, 1935.

1. (a) Agrees to transfer freehold land in name of J.H. Dobson, Certificate of Title registered Vol. CCCXXIII, Folio 55, including house and improvements.
- (b) Plant and Machinery now on land to be included in property over which option is granted by principal agreement without any addition to purchase price.

2. A second ten head battery to be erected may be taken over and payment made as follows:-

- | | | | |
|-----|-------------------------------|---|------|
| (a) | if prior to October 8th, 1935 | - | £500 |
| (b) | " " " April 8th, 1936 | - | £300 |
| (c) | " " " October 8th, 1935 | - | £200 |

A Clause, at the vendors wish, clarifying conditions of option payment.

APPENDIX I

The Mt. Lyell Mining and Railway Coy. bored 7200 feet of diamond drill holes and cut 49,000 feet of trenches.

56,200 feet of trenches and bores averaged .0444% Met. Tin
of the above, 45,300 feet exposed widths of
ore channel and averaged .0666 " "
The widths of best grade stone was 2378 feet
and averaged .4008 " "

The average width of best stone was 10 feet 11 inches.

The cost of the above work must have been in the vicinity of £20,000.

While the results, which are to the North and West of the "Anchor" area, appear to be negative so far as a large open cut is concerned, much of the information would be valuable in developing mines outside the Anchor for production of selected ore to the central mill.

These results are dealt with in Geological Bulletin No. 38.

APPENDIX IISampling, Assaying Etc.

To, in the first instance, determine whether the Tinstone was barren or definitely stanniferous, chip samples or borings from jumper holes were panned off in the field, the concentrate being estimated by measuring in a glass tube. A depth of $\frac{1}{4}$ inch of concentrate obtained by panning of $2\frac{1}{2}$ lbs. of stone indicated a content of 1 lb. per ton or about 0.03 metallic tin.

The sampling by chases, after clearing heavy growth of reeds and debris and washing the surface of the rock, was done by cutting out a rectangular chase $2' \times 1\frac{1}{2}"$ in the solid stone as far as possible at right angles to the greisen veins which traverse the stone in a direction generally about 20 degrees East of North, and appear to indicate the direction of parallel bands of payable and unpayable ore. The veins generally dip roughly about 70 degrees to the East.

The chases thus cut them at a favourable angle. An effort was made to get the chase well in towards the toe of the face above (as being at a greater depth from the original surface) but generally the fallen debris and vegetable growth was too heavy. We were unfortunately unable to cut a chase North of No. X, shown on plan No. IV for the same reason.

To test the vertical disposition of values within the Anchor Coy's section, and at present chiefly for the purpose of arriving at a decision in regard to the Anchor option, vertical jumper holes were sunk to a depth at times of 25 feet.

Much difficulty was experienced in getting the holes down in the broken granite.

The volume of the borings was frequently less than what should have been brought up, and generally the jumper holes were very successful. They cut the ore veins which approach the vertical at an unfavourable angle and so unlike the chases, a few vertical holes cut few veins and afford little information.

021

APPENDIX II (cont)

559023

*Pass Screens about 8 1/2 with 17 1/2 in
w. 0.09 x .057*

Preparing Samples.

The chippings from the chases were crushed in a small laboratory crusher and a sample, about 1/2 lb. weight, sent for assay to the Government Analyst in Launceston, and a duplicate stored for future reference.

Approximate Tests of Battery Pulp and Tailings.

No facilities exist for making tests, but the following approximate results are of interest at the present stage of the work.

Sample Battery Pulp 8/3/35.

Government Assay 0.48 Tin.

Sieve Test of Above.

*for first
mine
25-025
020-004
020-004
020-004*

	% of weight	Assay	Contents	% Distribution of value.
-10+20 mesh	9.23	0.1	.0092	2.72 <i>all fine stuff not out</i>
-20+120 "	64.15	0.41	.2630	56
-120 "	26.61	0.76	.2022	42
average			<u>.4744%</u>	<u>100</u>

Assay of sample of pulp made 16/4/35

2.04% Tin } *0.6*

Check sample of above, assayed 24/5/35

1.98% Tin }

Mean Value

2.01% Tin.

*substantially
at least 90%
of pulp
is
25 para*

Tests of Pulp and Tailings Afternoon of 19/7/35.

*last
mine
pass
1000
1000*

Tailings and pulp tested by hand sampler cutting whole stream at intervals.

*242.0
25.0
40.1
42.1
40.1
18.1
27.1
67.1
188.5*

Tailings and pulp taken alternately about every half hour through the afternoon.

	Weight	Assay % Tin	Content	% Distribution of value.
+30 mesh	20.8	0.19	.0399	7.7
-30+100 mesh	41.5	0.43	.1784	34.3
-100	37.7	0.80	.3016	58
100	<u>100</u>		<u>.5199</u>	<u>100</u>

*Results very poor probably badly sieved & feed
between tests roughly say*

21	.19	-.09	.10
41	.43	-.06	.37
38	.80	-.35	.45

*21
15.2343
17.15*

*1.7
1.6 = .36
1.52 - 1.6 = .36*

APPENDIX II (cont)

Test of Pulp and Tailings Afternoon of 19/7/35 (cont)

<u>Tailings.</u>		Assay	Contents	% Distribu-
	% of Weight	% of Tin		tion of values
+30 mesh	27.5	0.09	.025	15.8
-30+100 mesh	41.5	0.06	.025	15.8
-100	31	0.35	<u>.108</u>	<u>68.4</u>
			<u>.158</u>	<u>100</u>

probably well sorted

Two separate samples of -100 were sent. The results were 0.37 and 0.33, mean = 0.35.

Loss $\frac{.158}{.5199} \times 100 = 31\%$ Recovery = 69%.

The assay of the sample of 38 bags of concentrates won in the following week returned Tin 71.9%, Tungstic Acid 1.08%, Copper 0.04%, Sulphur 0.19%, and a sieve test showed +30 mesh 3%, -30 mesh+60 mesh.16%, -60 mesh +100 mesh.34%, -100 mesh.47%.

A sample of pulp taken 9/4/35 of shorter duration than the above assayed.91% Tin, and of tailings taken at same time.18%.

*of -
Tailings
head "*
10 = .05
20 = .025
66 .0083
125 .0042

The distribution of values in tailings was as follows:-

	% of Weight	Assay % of Tin	Contents.	% Assay
-10+20 mesh	8.64	0.15	.0130	9 ✓
-20+60 "	31.97	0.09	.0287	20 ✓
-60+120 "	20.37	0.06	.0122	38.5 ✓
-120	39.09	<u>0.23</u>	<u>.0897</u>	62.5 ✓
			<u>.1436</u>	100
			Difference .037%	28.5 62.5

A panning and vanning test gave the following results, but the fines through 100 mesh were not highly concentrated as the operator had had no experience with a vanning shovel. Government Assayer's weights and assays W1, W2, W3 and W4 are concentrates from heads.

- W6 = tails from W4
 - W7 = " " W3
 - W8 = " " W2
 - W9 = " " W1
- Our weight 1246g of quoted above, of mean assay value 2.01%

Results very poor

APPENDIX II (cont)

W5 middlings recrushed.

	Weight Conc. ozs.	Assay % of Tin	Tin ozs.	% Distribu- tion values
W1 on 30 mesh	0.0261	72.0	.0155	6.4
W2 -30+60 "	0.1095	56.9	.00575	23.6
W3 -60+100"	0.08112	66.9	.0543	22.3
W4 -100	0.5357	18.1	.0972	40.0
W5 recrushed middlings	0.02312	20.3	.0042	1.7 94.0

Tailings

W6 from W4	3.3387	0.19	.00063	2.6
W7 from W3	2.9603	0.08	.0023	1.0
W8 from W2	2.5469	0.09	.0024	1.0
W9 from W1	2.5836	0.11	.0029	1.2 5.8
	<u>12.204 oz.</u>		<u>.2426</u>	<u>99.8</u>

	Weight	Assay	Tin	Values
W1+W9 -30 mesh	2.600 oz.	21.3		7.6
W2+W8 -30+60 mesh	2.656 "	21.8		24.6
W3+W7 -60+100 "	3.042 "	24.9		23.3
W4+W6 -100 "	3.875 "	31.8		42.6
W5	.023 "	0.2		1.7
	<u>12.196 oz.</u>	<u>100.</u>		<u>99.8</u>

The Government charges only 2/- each for the first of each Chemical determination and 1/- for each additional one. The chemist advised me that the assays of concentrates usually agree within about 0.1% and 0.3% is rare.

He has made no determination of differences in assaying poor tailings.

He advises that for a number of assays of tailings or poor ores a special assay at an increased cost would be made if desired.

This office has had a large experience in Tin assaying and a good reputation for careful work.

The above results appear to me to indicate an accuracy within about 0.03% for poor ores.

BLUE TIER TIN MINES.

Tinstone and average value of DIAMOND DRILL BORES.

Nos. 1 to 49.

No. of Borehole.	Mineral Lease.	Depth of Borehole	Angle of bore below horizontal	Best tinstone bored through.	Units of tin in best grade tinstone	Assay of best grade tinstone	Total tinstone bored through.	Units of tin in tinstone bored through.	Average assay of tinstone	Thickness of ore channel tested.	Total units of tin obtained by assay	Average assay of ore channel tested.
		Feet in.	Degrees	Feet in.			Feet in.			Feet in.		
1	577M	150	48	3 7	.0775	.0216	22 7	.0775	.0034	40 0	.0775	.0019
2	577M	167	48	nil	nil	nil	22 9	nil	nil	22 9	nil	nil
3	577M	194	45	5 2	.4216	.0817	9 2	.4216	.046	69 6	.4216	.0066
4	577M	123	45	3 3	.13	.04	24 0	.13	.0054	83 6	.13	.0015
5	577M	126	60	7 6	.32	.0426	16 7	.32	.0193	92 9	.32	.0073
6	573M	100	80	18 10	.3933	.0208	37 9	.3933	.0104	56 1	.3933	.007
7	573M	203	45	28 7	.2858	.01	59	.2858	.0048	136 11	.2858	.002
8	573M	104	7 80	23 11	1.132	.0473	48 11	1.132	.0231	76 0	1.132	.0148
9	573M	100	65	15 2	.6664	.0439	36 3	.6664	.0183	47 11	.6664	.0139
10	1155M	100	80		trace	trace	50 7	trace	trace	50 7	trace	trace
11	564M	110	80		trace	trace	5 2	trace	trace	65 9	trace	trace
12	564M	110	90		trace	trace	25 9	trace	trace	42 8	trace	trace
13	554M	150	90	6 1	2.3115	.38	145 1	2.9815	.0205	150 0	2.9815	.0198
14	554M	128	60	5 10	2.5652	.44	110 4	5.3201	.0482	128 0	5.3201	.0415
15	1154M	79	5 70		trace	trace	30 9	trace	trace	33 0	trace	trace
16	554M	129	60	20	.30	.015	113 6	.30	.0026	129 0	.30	.0023
17	637M	70	45	1 10	1.6470	.90	18 3	1.6470	.0902	34 4	1.6470	.0479
18	554M	150	6 60	5 6	2.805	.51	121 11	3.605	.0295	130 6	3.605	.0276
19	554M	131	45	6 5	1.9871	.31	47 3	3.9165	.0828	90 0	3.9165	.0435
20	573M	99	2 90	9 6	10.45	1.10	44 11	14.1879	.3158	61 0	14.1879	.2325
21	573M	108	90	27 10	3.853	.1384	58 1	5.0860	.0875	92 9	5.0860	.0548
22	554M	150	60	10 0	1.10	.11	128 0	1.9998	.0156	140 0	1.9998	.0142
23	554M	141	45	19 9	.4566	.0231	102 1	.4566	.0044	141 0	.4566	.0032
24	637M	150	45	11 8	.1166	.01	112 2	.1166	.001	150 0	.1166	.0007
25	554M	500	3 90	7 0	1.61	.23	266 6	3.7962	.0142	500 3	3.7962	.0075
26	637M	150	45	27 9	1.365	.0491	137 3	1.365	.0099	150 0	1.365	.0091
27	637M	150	45		trace	trace	138 6	trace	trace	150 0	trace	trace
28	1173-91M	150	45	6 8	3.4632	.52	122 1	9.9596	.0815	150	9.9596	.0663
29	554M	150	45	6 5	1.0897	.17	51 7	3.9022	.0426	112 6	3.9022	.0346
30	1174-91M	139	45	35 5	.5404	.0152	52 2	.5404	.0103	139 0	.5404	.0038
31	1256M	150	45		trace	trace	123 6	trace	trace	150 0	trace	trace
32	1174-91M	150	90	2 8	1.4364	.54	91 4	1.9787	.0216	130 0	1.9787	.0153
33	198-91M	100	45	7 9	.775	.10	74 8	1.1066	.0148	100 0	1.1066	.011
34	1158M	150	45		trace	trace	142 8	trace	trace	150 0	trace	trace
35	198-91M	100	45		trace	trace	63 3	trace	trace	100 0	trace	trace
36	1158M	100	45		trace	trace	53 4	trace	trace	82 0	trace	trace
37	1515M	150	20	30 0	.60	.02	121 5	.60	.0049	150 0	.60	.004
38	1158M	100	45		trace	trace	86 8	trace	trace	100 0	trace	trace
39	1515M	150	20	6 6	1.365	.21	127 7	4.3782	.0343	150 0	4.3782	.0291
40	1157M	100	45		trace	trace	99 6	trace	trace	100 0	trace	trace
41	343-91M	100	45		trace	trace	94 10	.4741	.005	100 0	.4741	.0047
42	1157M	100	45	4 4	3.464	.80	57 2	4.4531	.0779	100 0	4.4531	.0445
43	746-93M	100	70	9 6	8.645	.91	89 10	10.2664	.1142	100 0	10.2664	.1026
44	746-93M	100	80	2 3	.4725	.21	75 7	1.6237	.0214	100 0	1.6237	.0162
45	746-93M	100	45	19 5	2.2233	.1145	97 7	2.5965	.0266	100 0	2.5965	.0259
46	746-93M	100	60	33 4	1.3271	.0398	78 3	1.5159	.0193	86 6	1.5159	.0175
47	746-93M	100	45		trace	trace	94 11	.2847	.003	100 0	.2847	.0028
48	746-93M	72	6 60	11 6	.115	.01	58 3	.2085	.0035	58 3	.2085	.0035
49	746-93M	79	6 90	27 9	.8865	.0289	69 9	.8865	.0127	69 9	.8865	.0127

49 6394 11 468 8 60.3967 .1288 3899 0 92.9799 .0238 5286 3 92.9799 .0175

49 average 130' 6" average 9' 6".77 .1288% average 79' 6".8 .023% average 107' 10 1/2" .0175%

Total averages 6394' 11" = .0145% in total stuff bored through.

No. of trenches.	Lode or Mine.	Total lengths of trenches etc.	Width of best grade tinstone	Units of best grade tinstone	Average assay of best grade tinstone.	Total width of tinstone in trenches	Units of tin from full width of tinstone.	Average assay of tin-stone.	Total width of ore channel exposed in trenches.	Total units of tin obtained by assay	Average assay of ore channel tested				
40	Haleys Lode	6110	9	262	6	81.720	.3113	2205	6	126.7721	.0574	2802	4	126.7721	.0452
6	637M	3581	0	50	0	13.25	.265	1585	0	50.12	.0316	2383	0	50.12	.0210
22	Australia	18574	0	200	0	99.00	.495	8392	6	314.765	.0375	16657	0	314.765	.0188
7	Crystal Hill	6058	0	30	0	11.10	.37	2479	0	29.87	.012	5861	0	29.87	.005
7	Direens Lode	1381	6	1	6	29.645	6.43	510	0	11.455	.0224	594	0	11.455	.0192
12	Moon	3006	0	50	0	30.5	.61	670	3	62.32	.0929	1092	9	62.32	.057
		average		average		average		average		average		average		average	
94	averages	38711	3	594	0	245.215	.4128	15842	3	595.3021	.0375	29390	1	595.3021	.0202
		411'	9"	6'	3"			168'	6"			312'7"			

	Length of Chases.	Best grade tinstone sampled.	Units of tin in Chases.	Average assay of best grade tinstone	Length of Chases.	Units of tin in Chases	Average assay of tinstone	Total length of Chases cut	Total units of tin from Chases.	Average assay of Chases Cut.	
11	Haleys lease open cuts, shafts and tunnel.....	2006	1	667	10	134.246	.201	2006	1	318.2159	.1585
1	Australia "Don" face.....	1319	0	32	0	25.92	.81	1319	0	109.72	.0831
1	Australia "Puzzle" face.....	712	0	35	0	28.35	.81	712	0	161.235	.2264
6	Crystal Hill open cuts Costeans.....	342	3	56	6	24.63	.4359	342	3	42.0125	.1227
9	Haleys.....	600	9					216	6	2.6775	.0123
1	Youngs Vein.....	73	0					73	0	13.87	.19
1	White's Vein.....	5	0					5	0	95	.19
30		5058	1	791	4	213.14	.2693	4673	10	648.6809	.1387
49	(Diamond Drill Bored)	6394	11	468	8	60.3967	.1288	5286	3	92.9799	.0238
General average of Total Amount bored											.0145
173		50164	3	1854	0	518.7577	.2798	24415	1	1336.9629	.0547
173	average	289'	11"	10'	8"		.2798	141'	1"		.0547

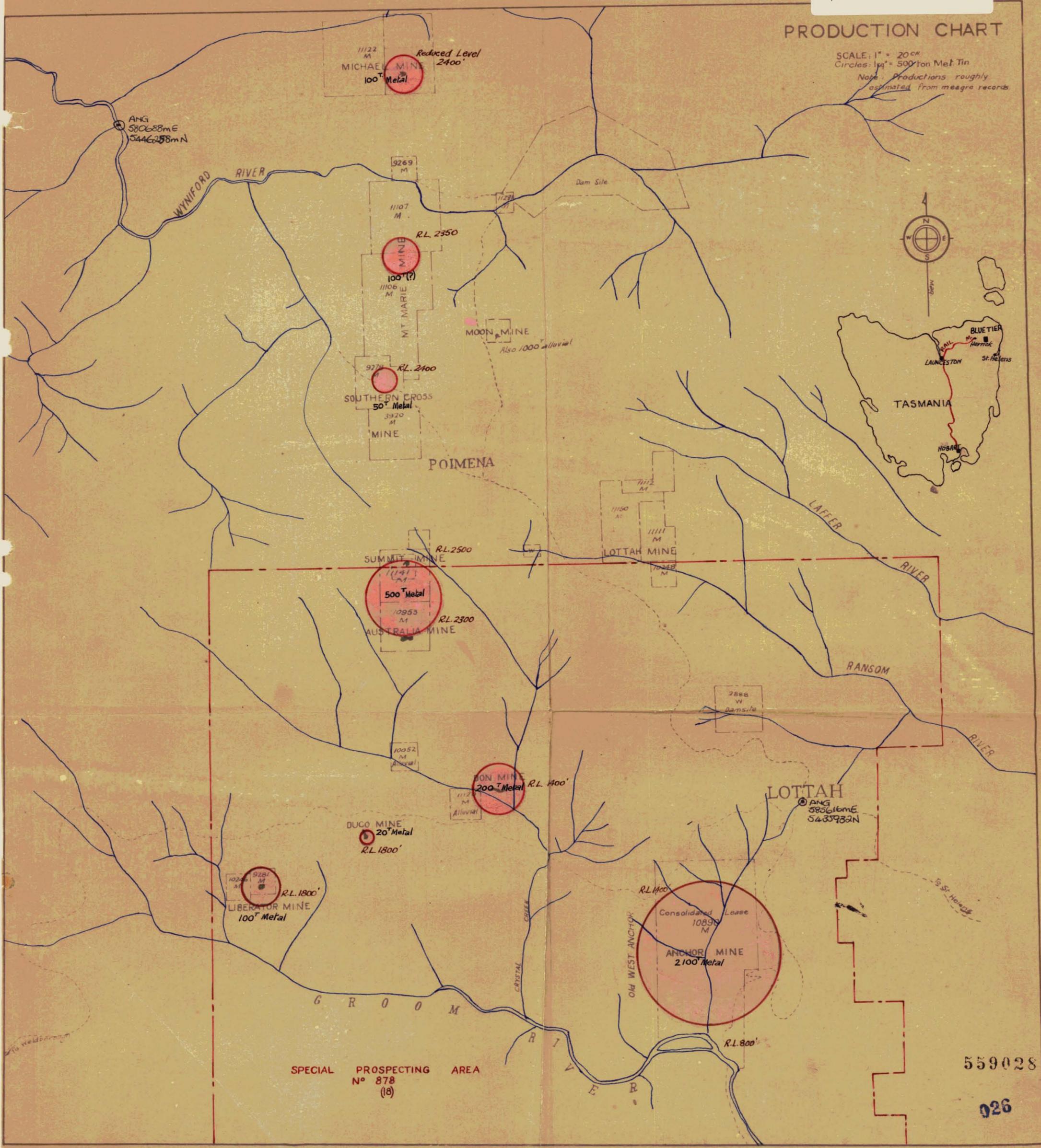
TOTAL LENGTH OF LODES TESTED = 3 miles 24.39 chains. From Al. Trench on 1858M to No.24 Trench on 1157M Crystal Hill.

No. of Trenches &c.	Lode or Mine.	Total lengths of trenches or chases.	Width of best grade tinstone	Units of best grade tinstone	Average assay of best grade tinstone	Total width of tinstone in Trenches etc.	Units of tin from full widths of tinstone.	Average assay of tinstone.	Total widths of ore channel exposed in trenches.	Total units of tin obtained by assay	Average assay of ore channel tested.	
Bgt. Forward		Feet	in.	Feet	in.	%	Feet	in.	%	Feet	in.	%
173	"Moon" Open cut	554M	373	6	43	0	18.92	.44	373	6	55.48	.1485
	"Perennial" 6	554M										
	trenches and open cuts	1156M	1008	6					1008	6	5.215	.0051
	"Lines" 4	1161M &										
	Cream Creek	1162M	540	0	50	0	12.50	.25	540	0	25.855	.0478
	Open cuts Cream	1161M &										
	Creek 9	1162M	2467	6	198	3	56.73	.2861	2467	6	118.992	.0482
	Spinks Cream	871M &										
	Creek 6	1134M	570	3	117	3	274.44	2.3406	566	3	394.82	.6923
	"Kent" 2	1160M	195	0	18	0	14.76	.82	195	0	15.26	.0782
	F.B. 9	2296M,										
	5286/93M &	2294M	168	9	65	0	31.675	.4873	171	6	27.895	.1626
	Diamond Drill	1161M										
	Bored "Cream"	5286/93M										
	Creek and	1162M										
	"Kent" 8	871M, 2296M,										
	1134M	828	0	33	2	25.6523	.7735	444	11	31.632	.071	
218		56315	9	2378	8	953.435	.4008	30182	3	2012.1119	.0666	
218	average	258'3".9	10'10".9	average	.4008	138'5".4	average	.0666	207'10".4	average	.0444	

The above totals represent the complete sampling of the tin deposits in Dykes, Lodes, and veins on the Blue Tier, North East Tasmania by the Mt. Lyell Co. between April 9th, 1906, and June 8th, 1907.

PRODUCTION CHART

SCALE: 1" = 20 CM
Circles: 1" = 500 Ton Met. Tin
Note: Productions roughly estimated from meagre records



SPECIAL PROSPECTING AREA No 878 (18)

559028

026

5 cm



M^o LYELL C^o BORES

N ^o	LINE	DEPTH	GEOL.	R ^o
N ^o 42	Bore	45'		
N ^o 34				
N ^o 36	Bore	45'		
N ^o 38	Bore			
N ^o 47				
N ^o 44				
N ^o 45				
N ^o 46				

DETAILS OF SHAFTS

N ^o	LINE	DEPTH	GEOL.	R ^o
106				
107				
108				
109				
110				
111				
112				
113				
114				
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116				
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N ^o	LINE	DEPTH	GEOL.	R ^o
151				
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BLUE TIER REPORT
PROSPECTED AREA

SCALE 1" = 40'

DATE 20 7 35

LEGEND

- Shaft
- Tin
- Copper
- Lead
- Zinc
- Silver
- Gold
- Iron
- Nickel
- Cobalt
- Manganese
- Magnesium
- Potassium
- Sodium
- Calcium
- Barium
- Strontium
- Bismuth
- Antimony
- Arsenic
- Vanadium
- Chromium
- Molybdenum
- Niobium
- Tantalum
- Rhenium
- Platinum
- Palladium
- Rhodium
- Ruthenium
- Selenium
- Tellurium
- Polonium
- Astatine
- Francium
- Radium
- Actinium
- Thorium
- Protactinium
- Uranium
- Neptunium
- Plutonium
- Americium
- Curium
- Berkelium
- Californium
- Einsteinium
- Fermium
- Mendelevium
- Nobelium
- Lawrencium
- Rutherfordium
- Dubnium
- Seaborgium
- Bohrium
- Hassium
- Meitnerium
- Darmstadtium
- Roentgenium
- Copernicium
- Nihonium
- Flerovium
- Tennessine
- Oganesson

5 cm

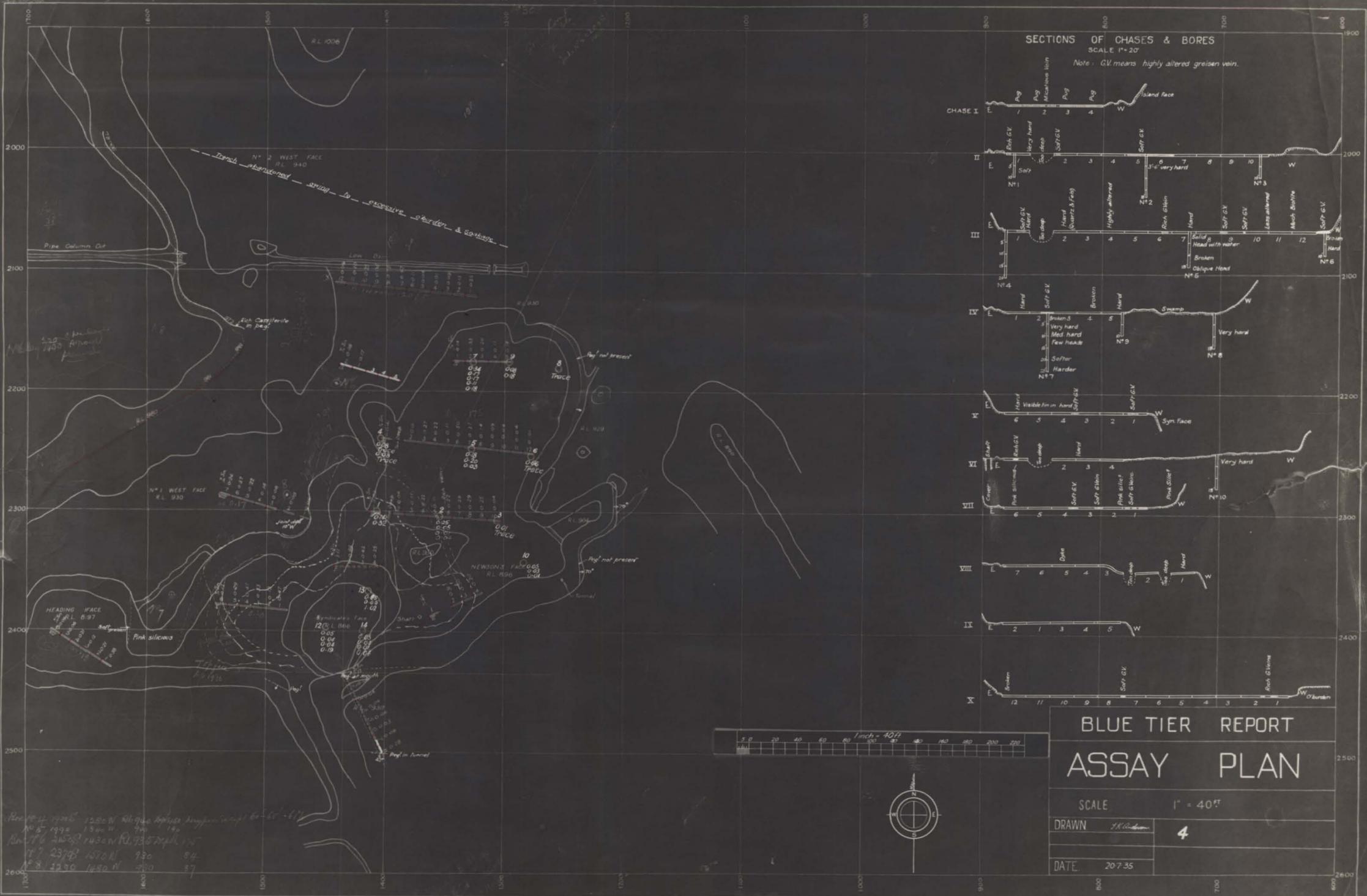
See Olden FILE REPORT
N^o Quad. 33 N^o 11

297/33

298
559030



5 cm



5 cm

SEE OLEN FILE REPORT
QUAD. 33 N° 11

298/33