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TASMINEX N.L.

EXPLORATION LICENCE 17/68

ANNUAL REPORT

FOR PERIOD

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4TH NOVEMBER 1984 - 3RD NOVEMBER 1985

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ANNUAL REPORT - EXPLORATION LICENCE 17/68PREAMBLE

Exploration activities within the Exploration Licence during the past twelve month period have been disrupted, initially by the legal proceedings with McIntyre Mines Australia Pty. Ltd. (McIntyre) which resulted in Tasminex N.L. (Tasminex) acquiring the interest of McIntyre. During this period little exploration activity was undertaken because of the uncertainty involved. Since the purchase of McIntyre's interest in the Kara deposit and surrounding Exploration Licence, work has concentrated on the upgrading of the activities associated with the known deposit. These activities have included extensive overburden removal, additional access tracks, upgrading of the current plant and the commencement of construction of a new mill.

Once the legal proceedings were resolved and the purchase of McIntyre's interests were completed, the technical files from McIntyre were transferred to Tasminex's offices. Because of Tasminex's lack of technical skills in the exploration area at that time (having previously relied exclusively on McIntyre's staff), Contract Geologist, David Simpson, was employed to review the McIntyre data. His report is enclosed with this Annual Report.

Simpson's review highlights the exploration potential that exists within Exploration Licence 17/68 and the management of Tasminex is excited at the overall exploration targets that could exist within the tenements. However the prime target for Tasminex remains the discovery of additional reserves of scheelite mineralization to ensure a continuing supply of ore to its new mill which is expected to be completed in April 1986 at a cost of \$2.2M. Thus the search for repetitions of the Kara and Kara No.1 type mineralization will remain the prime exploration thrust within the Exploration Licence.

The discovery of repetitions of Kara-style mineralization is the immediate exploration task at hand and to understand the geological setting of the Kara deposit, which is exposed in the Tasminex open cut workings, Bench plans, drill hole data, assay data and geological mapping of the open cut are in progress. Experienced Consultants have been commissioned to report

to report on the known geological ore controls which should assist with the discovery of repetitions of skarn deposits along the favourable "Transition Bed Series". Dr. Tim Hopwood, in particular, has been asked to report on the geological setting of the Kara deposit and to recommend ways of locating additional reserves within the Exploration Licence. Consulting visits have also been made by Anthony Jannink of Douglas McKenna & Partners, Melbourne, who has extensive experience in skarn deposits at Mt. Bishoff, and by John Lynch, General Manager of Pan Australian Mining Ltd., Brisbane, who has had extensive experience in the geological aspects of exploration, evaluation, development and mining of various sized orebodies.

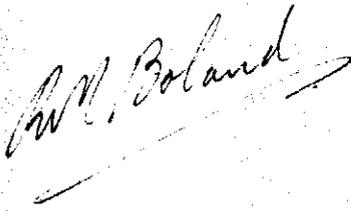
Future activities, in order of priority, will include the following:

- (a) Further assessment and refinement of the understanding of the current ore reserve at Kara.
- (b) Further assessment and upgrading of the reserves in Kara No.1.
- (c) Further drill programme to upgrade and prove continuity of reserves on the Eastern Ridge, L5 and Bob's Bonanza prospects and other known scheelite occurrences within Exploration Licence 17/68.
- (d) The exploration for new occurrences of scheelite mineralization using the information from previous aeromagnetic surveys flown by McIntyre Mines Australia Pty. Ltd. and ANZECO. To assist in the interpretation and prediction of additional tungsten, scheelite skarn occurrences, an experienced Consultant Geophysicist will be employed to work closely with the Tasminex geological personnel to identify further drill targets underneath the basalt cover.
- (e) The wollastonite occurrence is currently being assessed by Dr. Mike Everett, who is sampling and mapping the extent of the occurrence. In parallel to the geological assessment, metallurgical investigations are also in progress.

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(f) A further review and assessment of the potential for additional orebody types and models will be carried out during the life of the Licence.

The management of Tasminex N.L. believe the Exploration Licence surrounding the Kara deposit to be extremely important to the long term future of the Tasminex operations.



R.M. BOLAND

General Manager.

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TASMINEX N.L.
(Incorporated in Tasmania)

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Registered Office :
C/- FRENCH, LING & COMPANY
P.O. Box 644
BURNIE, TAS. 7320
Phone (004) 31 2911

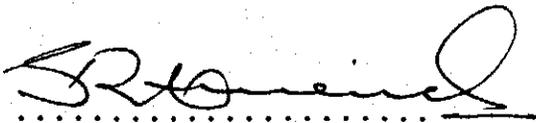
Exploration Office :
13 MARINE TERRACE
BURNIE 7320
Phone (004) 31 2277
P.O. Box 815

Mine Office :
KARA ROAD
HAMPSHIRE
Phone (004) 31 6573

EXPLORATION LICENCE E.L. 17/68

Expenditure on the above licence for the period 5th November, 1984 to November, 1985 is anticipated to total \$26,325.

This is comprised of actual expenditure to 25th September, 1985 of \$20,325 and a further estimated amount of \$6,000 in the period 26th September, 1985 to 31st October, 1985.



S. R. French
SECRETARY

KARA NORTH ASSESSMENT

BY

ABERFOYLE EXPLORATION PTY LTD

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Aberfoyle Exploration Pty Ltd 073007
INCORPORATED IN VICTORIA

144 Camberwell Road, Hawthorn East, Victoria 3123 Australia
Telephone: (03) 82 2226 Telex: AA38646

Aberfoyle Exploration Pty. Ltd.
Lot 9, River Rd., Wivenhoe
(P.O. Box 952, Burnie)
Tasmania 7320
Phone 31 6332

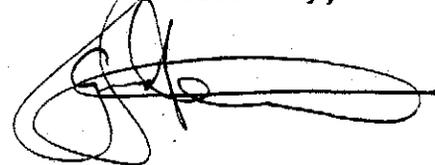
30th May, 1985

Mr. D. C. Simpson,
Consulting Geologist,
Tasminex N.L.,
19 Marine Terrace,
BURNIE. TAS. 7320

Dear Dave,

Enclosed is a short report with my comments and opinions concerning the resource estimates for the Kara North prospect.

Yours sincerely,



G. J. McArthur,
Supervising Geologist.

Encl.

COMMENTS ON THE KARA NORTH RESOURCE ESTIMATES1. GOLDER ASSOCIATES Aug. 1982 for Canadian Superior Exploration Ltd.

- * variable size block reserves calculated from bench plan areas interpreted from cross section - no examples of these sighted.
- * assignment of grade to each block poorly explained but involves averaging by weighting by length of intersection - no mention of assay cutting.
- * correctly recognised highly erratic nature of the grades but did not suggest this could in part be due to sample error.
- * contradiction : P. 2-8 "Tungsten grades are remarkably high and consistent", P. 2-12 "Also evident is the highly erratic nature of the grades within the ore zones".
- * recommended geostatistical analysis, but there is probably insufficient data to generate good variograms.
- * only 4 samples tested for S.G. and they were from Kara No. 1. ore with 60-70% magnetite. Ranged 3.86-4.44, 4.0 chosen for fresh ore, 3.7 for partially weathered. Considering the strong magnetite/scheelite association, high grade WO_3 could be expected to have a higher S.G. This means that weighting by volume (i.e. length of intersection) will result in grade under estimation. Golders recognised the problem (P. 2-15) but should have stressed the impact more.
- * it should have been pointed out that lack of confidence in S.G. corresponds directly to a lack of confidence in resource tonnage and tungsten metal content.
- * given the lack of S.G. data, quoting tonnages to the nearest 1 tonne is nonsensical. I would suggest 2 significant figures would be an absolute maximum.
- * very poor discussion of check sampling variances between 1/2 core and 1/4 core. Golders' statement on P. 2-15 "In addition, with the highly erratic nature of the mineralisation, comparison of individual core intervals is unlikely to be reliable" is contradictory. Surely the variability seen between 1/2 core and 1/4 core is a measure of the erratic nature of the mineralisation! No data was provided.
- * during discussion on core recovery, no mention made of likely impact on grade. Some of the coarse brittle scheelite may have been lost during drilling and splitting.
- * no reference to grade of dilution.

2. PINCOCK, ALLEN AND HOLT INC. Oct. 1983 for Superior Oil Co.

- * computerised block model approach to allow use of floating cone pit optimisation technique.
- * raw 1-m assay samples composited to 2.5 m intervals. 25% minimum sample requirement is dangerous. 50% is normally acceptable.
- * excellent use of geology - C. Whitehead involvement in calculation commendable.
- * PAH statement that "core losses were typically in high grade zones" backs up my point above.
- * PAH states "unmodified core assay grades are accepted by McIntyre as conservative grade estimates" indicates assay cutting not used. No mention of why McIntyre considered them conservative.
- * Statistics tables presented by PAH are a good practice but I am confused by their reference to "log mean". The normal term "geometric mean" is the antilog of the arithmetic mean of the logarithms of the values. I cannot reproduce their values for Kara North and suspect error on their part (see below). They state "as the WO_3 grade distributions are highly skewed, the log transform statistics are a more reliable estimate of the means and standard deviations" - this is true enough but not if the log transform statistics are calculated incorrectly.
- * PAH interpolation process is an unusually sophisticated inverse distance technique. Control by geology is very good practice and their use of "jack-knife" back estimation to optimise parameters, if done properly, is excellent. No data is provided to display jack-knife results unfortunately.
- * the use of zero power factor (arithmetic average) when data is spatially uncorrelated (i.e. large distance apart) is a correct procedure.
- * PAH states "efforts to compile variograms failed, indicating random fluctuations in the assay grades. In other words, no statistical influence on grade continuity can be made between any two sample locations". If this is the case how can PAH justify using variable power factors which simulate variable continuity. I suspect that the fluctuation in the variogram was due to a combination of insufficient samples and ~~spurious~~ spurious effects generated by the extreme skew distribution. No examples of experimental variograms were provided unfortunately.
- * Rock densities were supplied by McIntyre for 12 different rock types but the origin of these is not explained. Perhaps additional S.G. measurements were made between the Golder and PAH reports.

3. GENERAL COMMENTS

Neither of the resource estimates have considered the impact of the large high grade intersection (DDH 266) on the overall Kara North resource. One intersection represents approximately 20% of the tonnage and 35% of the tungsten metal. This is a dangerous situation in any deposit.

I have seen the DDH 266 intersection under UV lamp and note an amphibole - fluorite - scheelite vein at 54.7-55.3m. These are apparently rare at Kara. If the vein has had a concentrating effect on scheelite, the intersection may not be representative. From my preliminary examination of the core, there did not appear to be a noticeable difference in scheelite concentration proximal to the vein. I note that although assays are high 53-56m, 48-51m is also high some distance from the vein. The core axis to vein angle is difficult to establish.

My approach to decide whether this intersection is likely to be representative or not has been to consider 1m assay distributions for Kara North >0.2% WO_3 zone with and without the DDH 266 intersection. These are shown in figures 1-4. The distributions compare favourably - each shows a bimodal population, one peak at 0.2-0.3%, another at 1.6% WO_3 (probably fine disseminated scheelite and coarse crystalline scheelite respectively). Statistics are tabulated below :

	<u>Including DDH 266</u>	<u>Excluding DDH 266</u>
Samples	114	92
Mean	0.97	0.79
Variance	1.32	0.69
Relative variance	1.40	1.11
Geometric mean	0.56	0.50

I would conclude that the DDH 266 intersection is representative.

This cumulative frequency distribution is shown in fig. 5. This is a fairly good log normal fit. The skewness is shown by the discrepancy between mode (most frequent value) geometric mean and arithmetic mean. However with compositing e.g. 2.5 m samples as in PAH report or mining blocks, the skewness would decrease. However, I would regard the large difference between arithmetic and geometric mean as a signal for caution. I cannot understand how the PAH log mean can be so similar to the arithmetic mean for such a strongly skewed distribution - I strongly suspect PAH have made a serious calculation error.

Comparison of statistics for Kara North and Kara No. 1 indicates that although Kara North grade may be higher, the relative variance is identical to Kara No. 1. This means that if similar mining and grade control practices are followed for Kara North, head grades can be expected to fluctuate as they do for Kara No. 1.

The very coarse mineralisation seen in the high grade zones where individual scheelite crystals can be up to 10mm in size is likely to cause severe sampling problems. Apart from the brittle fracture causing loss during drilling and splitting, and possible bias by the splitter because of visibly obvious scheelite; the nuggety mineralisation will result in large sample reproducibility errors. These could be partially overcome by the use of large diameter core drilling and pulverising of a larger fraction of the half core sample - both impossible at this point in time. This only leaves the use of large composites to minimise sampling error.

4. CONCLUSIONS

From my rather cursory look at quite a complex problem I can conclude the following :

- (i) Resource tonnage and therefore tungsten metal content has a very wide confidence interval due to insufficient S.G. measurement.
- (ii) Negative bias (underestimates) introduced through weighting by volume rather than mass in all calculations (both Golder and PAH) and probable loss of brittle scheelite during drilling and sample splitting.
- (iii) Positive bias (overestimates) introduced by the use of arithmetic means in a strongly skewed lognormal distribution. This positive bias probably overcompensates the negative biases.
- (iv) The grades estimated by both Golders and PAH are likely to be slightly overestimated.
- (v) Given the uncertainties listed, the drill density is probably insufficient to allow confident mine planning on the Kara North prospect.

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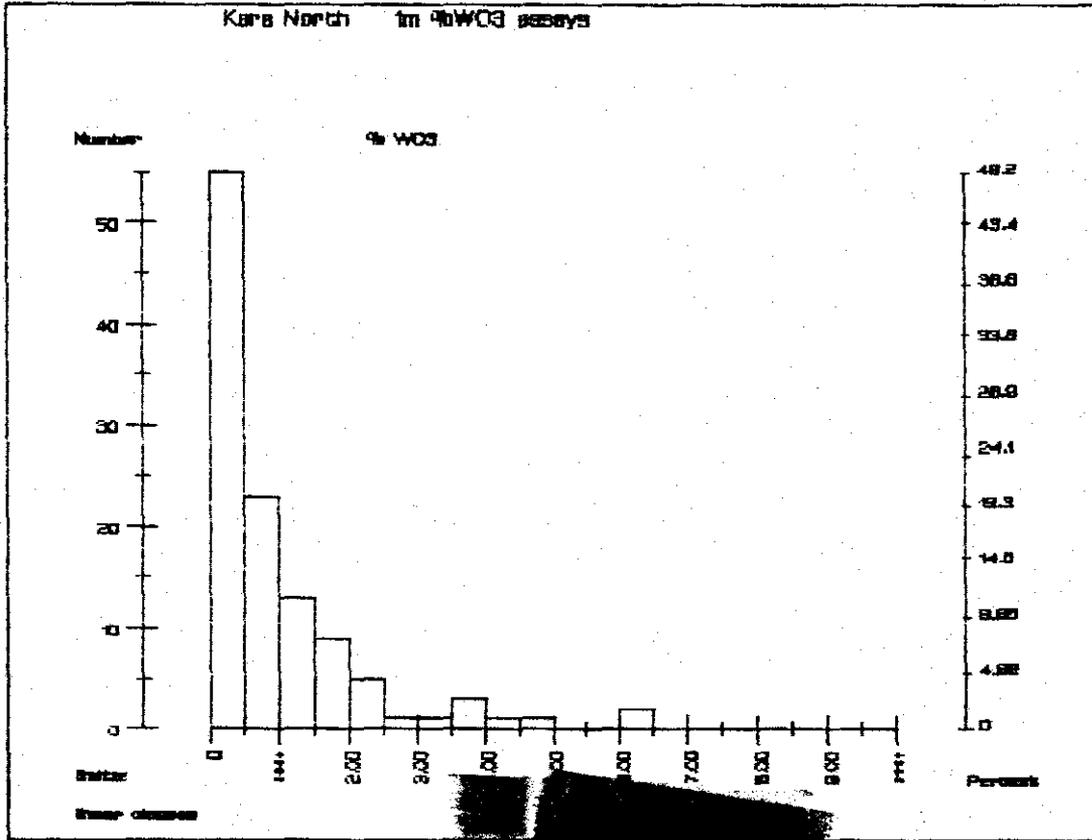


FIG. 1

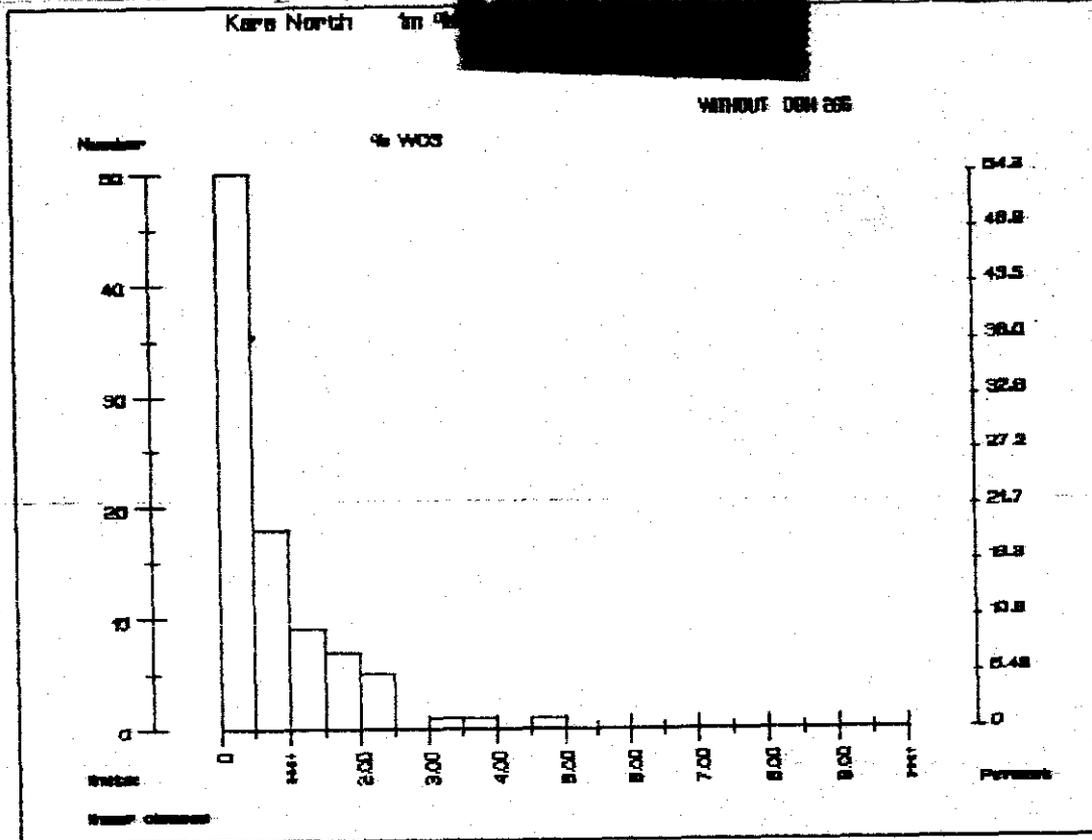


FIG. 2

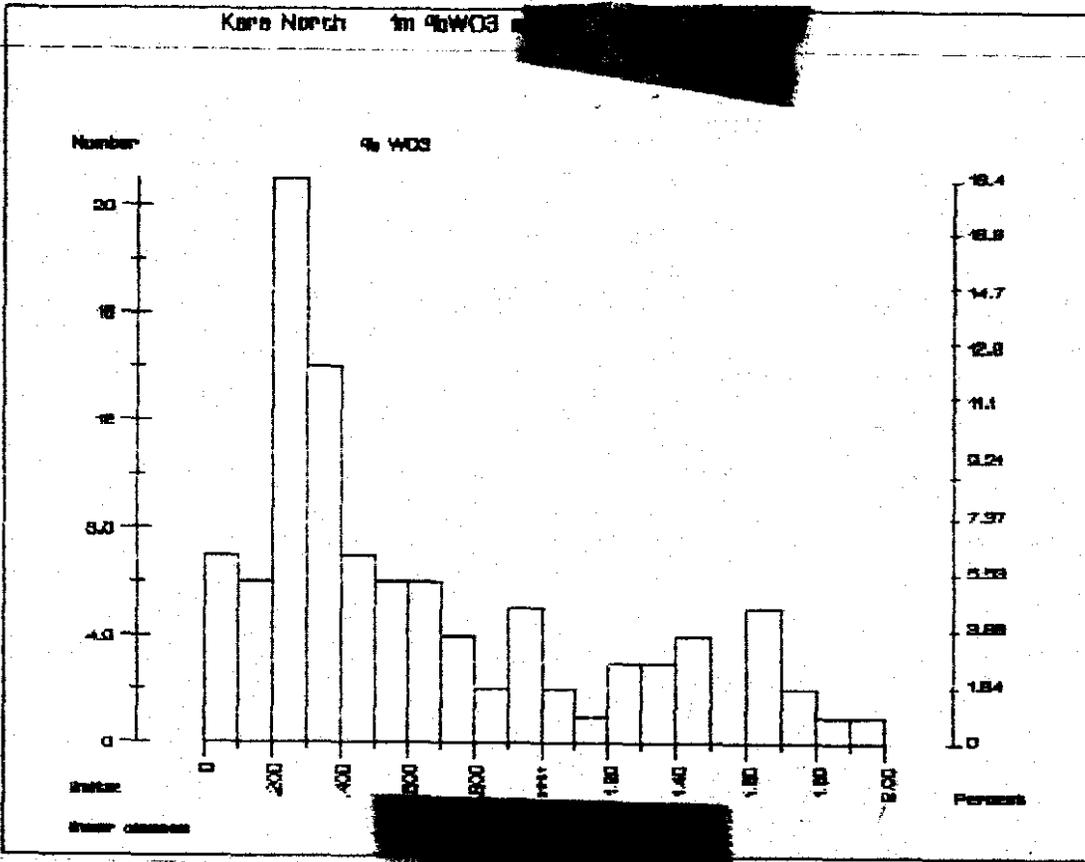


FIG. 3

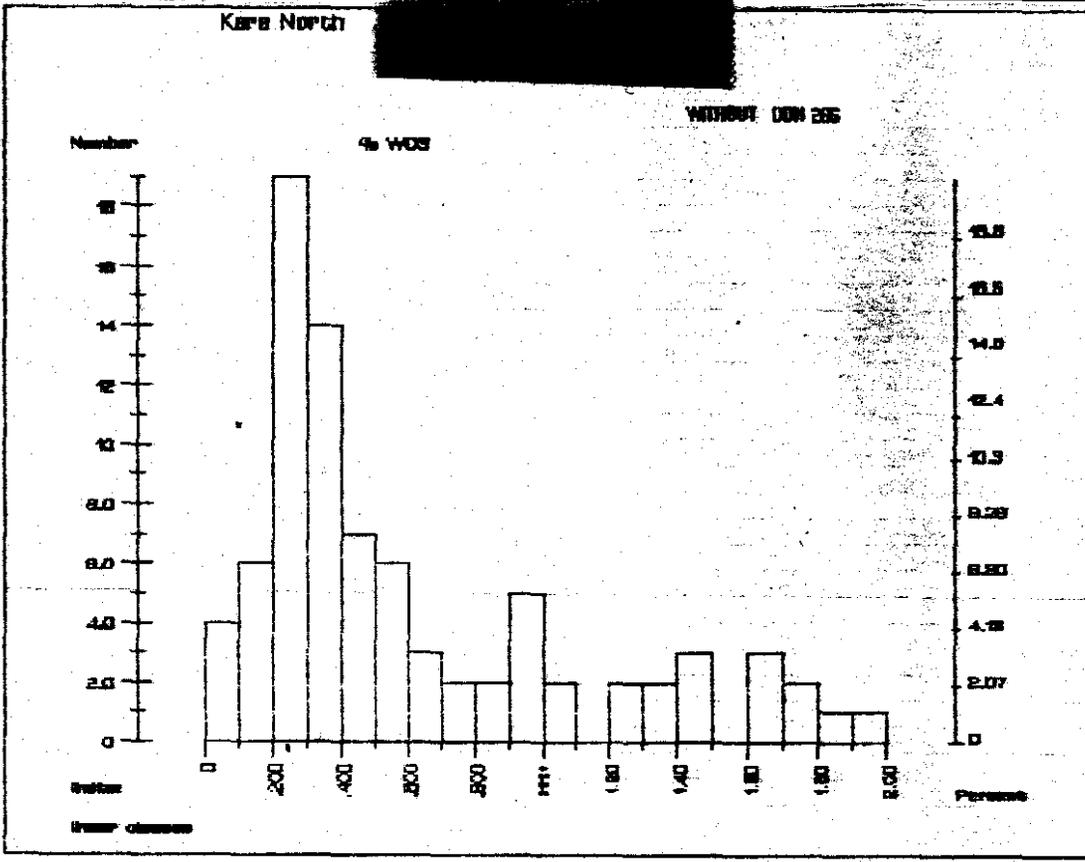


FIG. 4

KARA NORTH 1m RAW SAMPLES WITHIN $>0.2\%$ WO_3 ZONE

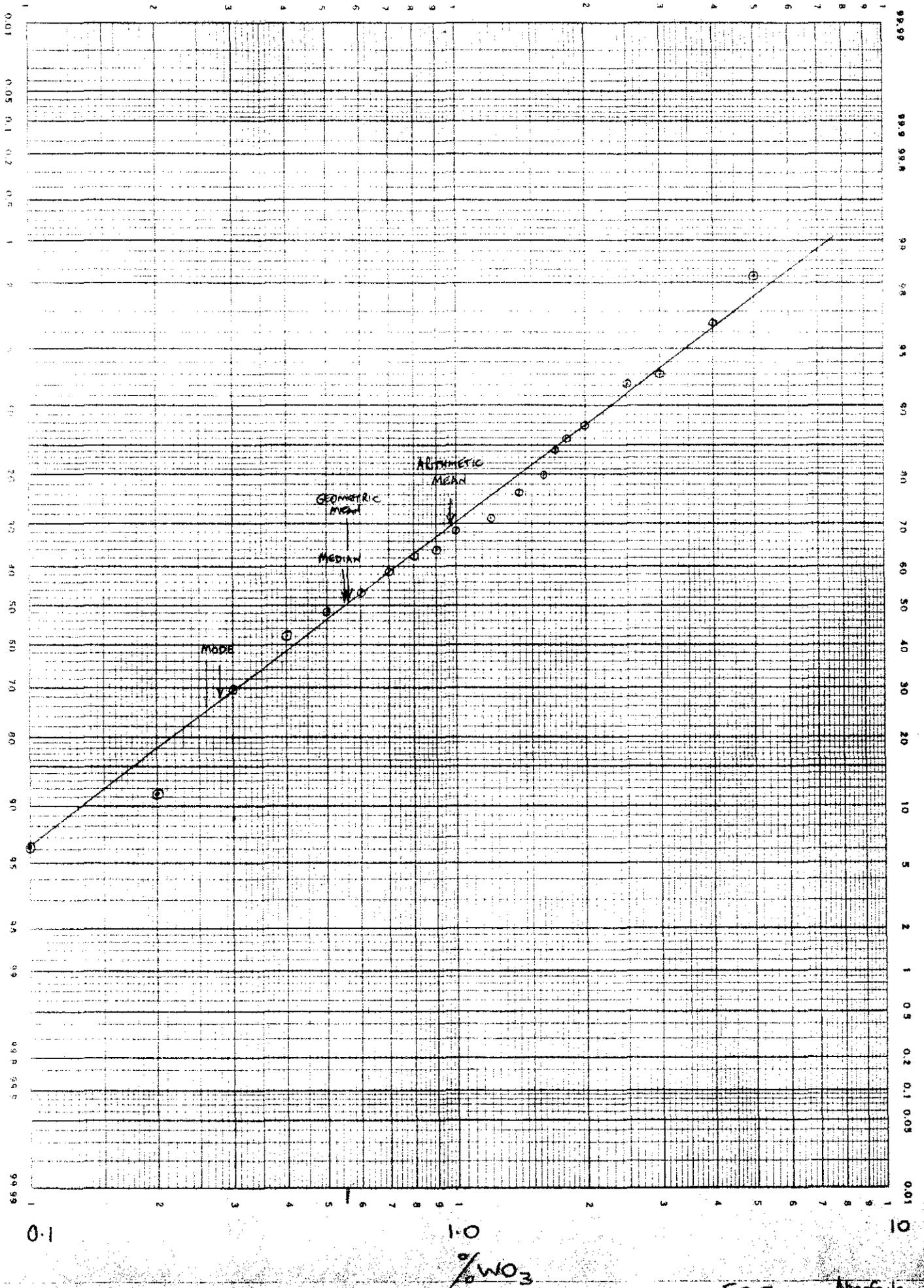


FIG. 5 Aberfoyle
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ASSESSMENT OF EXPLORATION

POTENTIAL OF E.L. 17/68

ASSESSMENT OF EXPLORATIONPOTENTIAL OF E.L. 17/68KARA PROPERTIESFORTASMINEX N.L.

D.C. SIMPSON
CONSULTING GEOLOGIST
19TH APRIL, 1985.

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1. Introduction and Objectives

On 21st March 1985, following discussions with Tasminex directors, Mr. E. Charlton asked the writer to make an assessment of data available on their E.L. 17/68 and in particular to determine whether Tasminex should retain their Exploration Licence or relinquish it.

An evaluation of specific prospects within the licence was requested.

Following commencement of the study a considerable amount of plans, files and reports was delivered to Tasminex from McIntyre's Burnie Office subsequent to the purchase of McIntyre's interest. This added much data never-before seen by Tasminex personnel. The evaluation as a whole was made difficult and in sections is inconclusive because of missing data and lack of concise notes of techniques used, assumptions made and interpretation criteria which were set. Bearing this in mind, however, I feel that the assessment should be of value to Tasminex directors in framing their strategies.

During the study several leads were followed which, although adding to the time taken for the assessment, are considered to have been justified by their importance.

In conducting this evaluation only written material was consulted. I consider that to assess the potential fully would require considerable amount of field work and re-logging of drill core.

This report summarises the observations made on areas within the E.L. and makes recommendations on the future of the ground.

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Tenure

Tasminex N.L. are the holders of Exploration Licence E.L. 17/68 of 75 sq. km. which is due to expire on 4th November, 1987.

Mining operations are conducted within Consolidated Lease 105M/77 of 264 hectares which is current to 1st February, 1999.

3. Overview of past exploration activities

Since E.L. 17/68 was granted in 1968 the majority of exploration work carried out was during the currency of two joint venture agreements, firstly with ANZECO and later with McIntyre Mines (Australia) Pty. Ltd. Combined, these two agreements ranged from 1971 - 1985 and in that time a great amount of exploration effort was expended on the licence.

The work conducted by McIntyre largely followed on directly from ANZECO's although there was some repetition, for example both Companies carried out airborne magnetic surveys of the licence area.

ANZECO geologically mapped the mine area in considerable detail and covered much of the exploration licence with detailed stream geochemical sampling especially for Tungsten, Copper, Lead, Zinc, Silver and Gold. There is no evidence in reports as to how drill targets were identified following these investigations.

McIntyre Mines, in their investigations, relied heavily on ground magnetic surveys to follow-up the identification of airborne magnetic anomalies. This apparently led directly to diamond drilling. Once again in the reports there is no detail on how holes were designed to test magnetic anomalies.

A common thread links the style of the programs carried out by the two Companies in that they both used the concept of scheelite occurring within a magnetite-bearing skarn as their exploration target. I believe this has been limiting in not considering other styles of mineralisation. A more laterally thought-out program would have given more opportunity to delineating other types of ore body within the licence. These other possibilities are discussed in Section 5.

Some specific aspects of the past exploration programs warrant further comment as follows:-

1. The aeromagnetic surveys that were conducted, one by Scintrex and one by Geox, resulted in no report in anomalies or interpretation by geophysicists as far as I can determine.

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2. Results from the Scintrex airborne radiometric survey have been lost and appear not to have been reported to the Mines Department by ANZECC in quarterly reports following the survey.
3. I can find no details on the methods used in collection of geochemical samples - i.e. the exact nature of the sediment sampled e.g. top sediment, bottom sediment, bank sediment. The critical point here is that ANZECC stream sediment samples were panned and analysed for gold and tungsten as well as Copper, Lead, Zinc and Silver but unless the samples were taken from some natural trap few heavy minerals would be detected. Conversely if only the panned concentrate was analysed Copper, Lead, Zinc and Silver, which are naturally absorbed onto clay particles, would not be detected. The amount of those metals expected to be in a panned concentrate would be very low as the sulphides are unstable in an oxidising environment so would not survive.

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4.

Potential for other styles of mineralisation

The Kara deposits are situated in Ordovician limestone, siltstone and quartz sandstone close to granite contacts and are therefore regarded as skarns. Tungsten - bearing skarn is usually located within a magnetite rich section of the sequence. In the history of exploration within the E.L. this model appears to have been the only one considered although when the adjacent E.L. 1/69 was current ANZECO did some geochemical sampling oriented towards exploration for volcanic hosted lead-zinc deposits in the area north of Loongana. However this does not seem to have extended to E.L. 17/68. Potential for this and other types of mineralisation are discussed in order below.

a. Volcanic-hosted Lead, Zinc, Silver and Gold Deposits

As part of the Cambrian Dundas Trough volcanic sequence occurs within E.L. 17/68, this area should be given early priority in exploration work to establish whether it is within a prospective section likely to be host to such a deposit. The 1 : 250,000 state series geological map of the area shows the south-west corner of the licence to contain acid volcanics of the same age as those that host the Que River and Hellyer deposits which lie approximately 27 km. to the south.

To increase the amount of prospective ground I recommend that Tasminex apply for extraground to the south-west to take in the acid volcanics outcropping between Valentine's Peak and the Tertiary basalt. Ground reconnaissance may establish early on whether the ground is prospective or not and it may be possible to evaluate the area before licence commitments come into force.

Priority: High

b. Mississippi Valley type Lead, Zinc Deposits

This style of deposit consists of lead and zinc as sulphides i.e. galena and sphalerite within limestone. As far as I am aware no deposits of this type have been discovered in Australia. However Amoco have searched for this style of deposit within the Gordon Limestone (i.e. the same unit that occurs at Kara) in the Zeehan area but their results are not known.

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As the Gordon Limestone is largely covered by swamp in E.L. 17/68 ground search for this style of deposit would be extremely difficult. However even though search for this style of ore-body is regarded as a low priority it should be kept in mind. I suggest that Tasminex keep in touch with the Tasmanian Mines Department and review Amoco's reports on the Zeehan areas as they become available. (Note: I understand that Amoco's exploration effort has been substantially cut recently and their E.L.'s may be relinquished. E.L. 4/78 held by Amoco is due for renewal on 14th July, 1985).

Priority: Low

c. Tin greisen deposits

This style of deposit usually occurs at the top of an intruding tin - granite either within the granite or within the intruded rocks. They are usually low grade but not always and several different geological settings contribute to similar styles of mineralisation. For example the Ardlethan tin deposit would fall into this category.

Assessment of the licence area for this style of mineralisation does not seem to have been considered in previous exploration programs. Gold Fields Exploration P.L. made similar observations in a report to Tasminex in June 1981. The authors of that report noted the presence of greisen veins on the track to Kara No.2 area which do not seem to have been assessed.

This style of deposit is regarded as having a good chance of occurring within the granites of the E.L. To assess the area for this style of deposit is more difficult than some other types of deposits as there is often no sulphide or magnetite associated to produce an anomalous response by some geophysical method. One of the best methods for coverage of the licence area for greisen - style deposits is an airborne radiometric survey using wavelengths designed to detect chemical alteration associated with introduction of radioactive potassium.

(Note: Results from a similar survey conducted by ANZECC in 1972 have been lost). A multi-spectral survey designed to detect

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uranium and thorium as well would be useful as these are both known to occur in the granite margins in skarn areas and would be a primary exploration tool for rapidly delineating prospective mineralised areas.

Priority: High

d. Tungsten skarns without magnetite

I regard this style of deposit as the top priority exploration target for Tasminex. Because they are often located some distance from the granite contact they have the potential to be much larger deposits than Kara. (Kara - style deposits are limited in size largely by close proximity to the granite contact).

Mineralogy of this style of deposit is as follows:

Garnet	Pyrrhotite
Pyroxene	Pyrite
Wollastonite	Molybdenite
Amphibole	
Epidote	

As can be seen this is not unlike that at Kara - except for the major opaque mineral - magnetite.

Some of the deposits which fall into this category are:-

<u>DEPOSIT NAME</u>	<u>LOCATION</u>	<u>TONNAGE</u> (Millions)	<u>GRADE</u> % WO ₃
Mactung	Yukon	63	0.95
Cantung	N.W. Territories	>6	1.6
Sandong	S. Korea	>10	1.0
King Island	Australia	14	0.8

This style of orebody does present an exploration problem in the Kara environment because its geophysical response would tend to be swamped by the massive magnetite bodies and to a lesser extent by the Tertiary basalts. However, I believe that a carefully planned and interpreted airborne electromagnetic survey would

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provide information of sufficient quality to enable such a deposit to be located within the licence if it exists. If such an orebody does exist in an uneroded state the tonnage potential would be many times greater than the magnetite skarn orebodies.

Priority: High

e. Mt. Pleasant Tungsten - Molybdenite - Bismuth stockwork type

Mt. Pleasant is a large stockwork (i.e. densely veined) orebody discovered in the last 10 years in New Brunswick Canada.

Reserves are currently put at 28 million tonnes @ 0.1% Molybdenite; 0.25% Tungsten and 0.08% Bismuth.

The potential for discovery of this style of orebody would necessitate a study of the alternation styles within the granite intrusives of the licence. Greisen veins noted by Goldfields personnel in 1981 could be related to this style of deposit.

A similar occurrence is known in Tasmania but is uneconomic - this being Foley's Zone at Cleveland. Tungsten in this body is primarily as wolframite with minor scheelite. Associated minerals are bismuthinite and molybdenite.

Priority: Medium

f. Sulphide - cassiterite style

(i.e. Cleveland or Renison type).

There is a possibility of this type of orebody existing in a situation located further from the granite than the tungsten deposits. Such a situation is apparent in the zoning at Cleveland and possibly Mt. Lindsay. Minor tin has been shown to be associated with the tungsten skarn but never in economic quantities. A tin deposit developed further from the granite contact would be more likely to contain the tin as cassiterite rather than in silicates such as malayaite.

This type of deposit is considered to be of a low priority principally because the Tasmanian examples all occur in the

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Cambrian sequences near the Precambrian boundary. At Kara the limestones are of Ordovician age.

An airborne E.M. survey covering the licence would probably establish the existence of such a body should it exist.

Priority: Low

g. Gold associated with Tungsten deposits

Goldfields, in their 1981 report, refer to the association between gold and tungsten in Nevada. Whether such an association is possible at Kara is unknown as it appears that E.L. 17/68 was not sampled for gold. Available literature should be studied on this association.

Priority: Low

h. Alluvial scheelite

As far as I am aware from the written records there appears to have been no assessment of the alluvial potential of the Kara deposit or the licence area. Tungsten is known to occur as anthoinite in the upper parts of Kara No.1 and presumably this mineral will contribute to the alluvial tungsten. However, alluvial scheelite may also be part of the stream sediments.

If easily recoverable scheelite is available it could add significantly to the number of metal units produced per quarter in the mill. Areas considered likely to contain scheelite are Kara South and the two large alluvial areas north of the mine near the Companion - Old Park River junction and the Loudwater Creek - Emu River junction.

Priority: High

5. Potential on individual prospects

At the commencement of this review for Tasminex I intended to look in some detail at all the prospects individually that occur throughout the licence. However it became apparent during the

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study that many of the prospects had been identified along similar lines, i.e. by magnetics, soil geochemical sampling and limited geological mapping. I concluded that several of the prospects were at a similar status and in fact recommended for drilling by McIntyre Mines. My belief is that this approach to delineating further ore reserves is time consuming, costly and is likely, in the geological environment, to establish small reserves in relation to the amount of drilling done.

As alluded to elsewhere in this report I believe Tasminex should assume a more broad-ranging approach to exploration than did either of their joint-venture partners and aim to find a larger ore-body.

However there are several areas within the licence which are worthy of separate observations as follows:-

Kara North

During the overall assessment for Tasminex this deposit became the subject of some detailed study which resulted in identification of some problems. These are reported on separately in a memo to R.M. Boland and E.N. Charlton dated 15th April, 1985.

Kara North has, in my opinion, limited potential for a small increase in ore reserves from the data available. The northern-most section 7260N contains an intersection of 4.0m at 0.28% WO_3 at an R.L. of approximately 430m. Continuity of ore to the north has not been tested but ore has thinned greatly to 7260N. One hole DDH 132 which is 100 metres to the north finished in garnet skarn while to the south DDH 346 and 347 did the same. As the garnite contact was not reached it is unknown whether the host rock horizon exists at these northings.

Location L5

This prospect is of some importance but its assessment is made difficult by being covered by basalt. Grades are very

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erratically developed and consistently good grades would have to be intersected for underground mining to be considered.

A re-interpretation of the zone should be conducted especially concentrating on (a) confirming that higher grade intersections due to veins have not been allowed to unduly influence calculation of ore potential and (b) checking the assumed position of the drill holes - (Note: there is no record on the logs of these holes having been surveyed).

Kara North Magnetite Anomaly

This anomaly is caused by a very large body of magnetite and illustrates well that drilling magnetite anomaly sources does not necessarily find scheelite. Over 150 metres of magnetite - bearing skarn was intersected in DDH 289 without any significant associated scheelite. A similar result was obtained in DDH 287.

I believe that diamond drilling within the source of a magnetic anomaly such as this could be very expensive unless some other ore control is known so targets may be better identified. (For example 5 holes like DDH 289 would cost in the vicinity of \$100,000).

As noted elsewhere this area requires a re-interpretation coupled with petrological data to assist with location of scheelite - bearing skarn.

Limestone Creek Wollastonite

Early investigation of this occurrence is recommended to assess the possible reserves available, quality of product and marketability.

Wollastonite occurs over a strike length of 800 metres associated with limestone and chert. Other dimensions of the deposit are unknown but Longman (1961) in a Mines Department Technical Report states that there is approximately 1,000,000 tons.

The deposit is about 700 metres from the Kara - Hampshire Road and about 800 metres from the Hampshire - Upper Natone Road.

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6. Discussion

I strongly believe that Tasminex should retain E.L. 17/68 for its full term and preferably conduct exploration in their own right rather than entering into another joint venture. This would entail financial drain on Tasminex but I believe it would enable the Company to conduct exploration as it sees fit. Previous exploration by ANZECO and McIntyre was very narrow in its outlook (i.e. considered only one ore model - tungsten associated with magnetite skarn) and apparently did not assess the potential for other styles of ore deposits.

Should Tasminex decide to joint venture I would recommend close consultations with all phases of exploration and regular joint venture meetings to ensure work is carried out in accord with Tasminex's wishes.

Finding another joint venture partner to work on the E.L. would have difficulties however. There are fewer Companies exploring in the current economic climate and of course the E.L. expires in only 2½ years. Because of difficult access in Tasmania this would be regarded as a short time by a majority of Companies.

In retaining the E.L. until November, 1987 Tasminex should concentrate on those parts of the E.L. which have either been virtually unexplored or not explored for other styles of mineralisation for which the area is prospective.

A re-interpretation of Kara North is recommended to determine whether a substantial increase in ore reserves can be made. I regard this as a lower priority than the coverage of the remainder of the E.L. because:

- (1) the area can be covered by extending the consolidated lease thereby fulfilling the lease work commitment.
- (2) reserve extensions could be drilled up following expiry of E.L. 17/68 but within the life of the Kara No.1 pit. (i.e. 4 years)

i.e. Leaving Kara North extension drilling for two years will still allow sufficient lead time (if Kara North is an economic proposition).

If Kara North is found to be uneconomic (i.e. no change from present

status) and no exploration is carried out on the licence, Tasminex's mining future would be finished in approximately 4½ years apart from small scale mining or gouging operations.

Bearing these facts in mind it is imperative that Tasminex delineate new ore deposits within the next 2 years if the Company is going to continue a mining operation of at least the present scale.

To increase the chances of finding new ore reserves I recommend that Tasminex broaden its exploration strategy to search for several other styles of ore deposit (not necessarily tungsten) which could exist within the exploration licence. The types of deposits to consider are listed under Section 5.

Exploration for the types of orebody currently being worked should be maintained to some extent but the following aspects need to be considered:

The magnetite - tungsten skarns delineated to date are limited in size by (a) narrow host rock units (b) proximity to the granite contact.

As there is only a short time to E.L. expiry (i.e. 2½ years) exploration effort should be commenced at an early date on as many fronts as possible. To this end I suggest Tasminex approach (i) the regional mapping section of the Mines Department for updated preliminary maps of the area, if available (ii) Dr. T. Kwak of Latrobe University for assistance in determining ore genesis, scheelite mineral association etc.

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Other initiatives should include:-

- (a) Obtain radiometric map from BMR Canberra covering Burnie - Waratah area (showed ANZECCO survey results not be found).
- (b) If anomalies are identified hire a multi-channel gamma-ray spectrometer and follow-up on ground.
(This is specifically designed to explore for alteration associated with greisen style mineralisation within the granites).
- (c) Selectively check drill core logging and interpretation of areas such as Kara North 266 and magnetite zone, L5 and assess reserves.

- (d) Determine reason for strong magnetic response from Monia Sandstone from Kara South tenements St. Valentines Peak. If formational, discontinue work on zone.
- (e) Rock chip sampling, limited mapping and stream geochem sampling (for Copper, Lead, Zinc and Gold) in acid volcanics in S.W. corner. Target Que River - Hellyer type deposit. Possibly some petrological examinations should be carried out to assist in rock identification.
- (f) Serious consideration should be given to search for non-magnetite bearing scheelite skarn e.g. Mactung, Sandong. Characteristically these contain a few percent sulphides and would require airborne electromagnetic techniques for discovery.
- (g) Apply for Guilford E.L. (ex Comalco) or part containing volcanics and carry out initial reconnaissance quickly and withdraw application before granting if indicated.

* The logic behind this is to attempt to find a positive mineralogical link with scheelite to improve chances of discovery of further orebodies.

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Recommendations

1. Tasminex should retain its E.L. 17/68 for its full term - i.e. until 4th November, 1987.
2. Provide coordinated geological control of exploration within the licence with the top priority being given to discovering substantial ore reserves.
3. The Company should commence a well-planned exploration program covering the fields discussed in the body of this report.
4. I recommend an early start be made to conduct a wide-ranging program because with the 1985 winter close at hand this will leave only the 85 - 86 and 86 - 87 field seasons in which to carry out some phases of the program.
5. At an early date commence assessment of alluvial areas within the lease and licence.
6. Conduct airborne electromagnetic survey over full licence area at no greater than 0.2km line spacing.
7. Re-interpret the geological information available on Kara North, Kara North Magnetite Anomaly, Eastern Ridge and L5 preferably making clear plastic models to assist in delineation of further reserves.
8. Obtain the services of Teunis Kwak of Latrobe University to help identify the ore controls at Kara.
9. Obtain airborne radiometric chart of area from BMR in Canberra. One of pre-1963 is available. 1983-84 survey results should be available June - July 1985.
10. Seriously consider an airborne radiometric survey to replace data lost from Scintrex 1972 licence survey. (Not needed - JCS)
11. Obtain latest aerial photographs of the licence area.

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12. Apply for E.L. over Housetop Granite - i.e. adjacent to eastern boundary of E.L. 17/68.
13. Consult T. Kwak and his student working on the Housetop Granite to see if Tasminex could obtain results of his thesis.
14. Examine rocks in the vicinity of the long N-S magnetic anomaly south of Kara to determine its source.
15. Obtain copy of G. Pike's thesis on geological mapping in the St. Valentine's Peak area. (Written 1964).
16. Examine wollastonite occurrence at Limestone Creek and evaluate marketability.
17. Follow-up the nature of occurrence of the rare-earth elements plus uranium and thorium in allanite, xenotime and monazite around the margins of the Kara Granite.
18. Contact the Tasmanian Mines Department for latest unpublished regional mapping in the area.
19. Obtain copy of D.Barrett's Honours Thesis on Kara.
20. Several samples from various parts of Kara No.1 should be assessed by a full spectrographic scan for minor metals and if detected their occurrence evaluated.