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GENERAL BUSINESS

GEOPEKO

DKSG

A DIVISION OF PEKO-WALLSEND OPERATIONS LIMITED

REPORT

ON

THE FLY - BY - NIGHT TIN PROSPECT,

GLADSTONE, N.E. TASMANIA.

by

G.L. BUCKLAND

OPEN FILE

DEVONPORT

APRIL, 1979.

79-1354

7/79

AMG REFERENCE POINTS ADDED

SUMMARY

The Fly-By-Night prospect which is held under an Option Agreement by Geopeko, consists of an irregularly shaped body of Upper Devonian cassiterite bearing greisen and altered granite flanked by biotite granite to the south and obscured by barren quartzwacke turbidite sequences to the east, north and northwest.

Geological mapping and drilling have outlined a resource to 4 metres depth, estimated to be 658,500 tonnes at 290± 50ppm total tin. This is classified as "Probable". A further "Possible" resource of 220,500 tonnes at lower grades is evident.

Results of one auger hole to 20.5 metres depth in greisen, indicate the possibility of an increase in the possible resource category of a further 2.6 million tonnes at grades estimated at between 110 - 316ppm total tin.

Mineralogical, petrological and heavy mineral separation studies indicate that most of the cassiterite is around 200 microns size and that only about 30% of the total tin recorded is present as 'recoverable' cassiterite. The bulk of the remainder occurs as substitutes in the lattice of muscovite plates.

Insufficient resource tonnage, low cassiterite grades and the inhomogeneous distribution of cassiterite in the body probably renders the prospect uneconomic.

*Identify which we
can report the sampling
as relative assaying*
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CONCLUSIONS

1. The total "probable" resource to 4 metres depth is estimated to be 274,425 cubic metres or 658,500 tonnes at 290 ± 50ppm total Sn.

A further "possible" resource of 91,935 cubic metres or 220,500 tonnes is evident to 4 metres depth.
2. Results of one auger hole drilled to 20.5 metres depth in greisen indicate that it is possible for the resource tonnage to be increased a further 4 fold, to approach 2.6 million tonnes. Grade would probably approximate 110 - 316ppm total Sn.
3. Analysis of samples by XRF recorded values of total tin present. Tin is commonly found as fine particles within the lattice of muscovite and is therefore not recoverable. Exhaustive tests indicated that the amount of tin present as "recoverable" cassiterite" is around 30%.
4. Sizing analyses on greisen feed samples indicate that about 50% of the cassiterite present is finer than 300 microns. Most is reported as around 200 microns size, with the range being 50 - 1000 microns.
5. Analytical results from A.C.S. Laboratories indicate that the average grades for greisen samples is approximately 320ppm, altered granite 75ppm and granite 23ppm.
6. Analytical results for XRF analysis of total tin content from the Gordon Laboratory on samples produced from reverse circulation and percussion drilling show a high variability. The peak result was 16,000ppm, the next highest 2089ppm while the lowest value was 1ppm. 68.78% of reverse circulation samples reported total Sn grades less than 100ppm, while 26.10% of samples had values from 100 - 500ppm, with only 5.12% of samples yielding grades greater than 500ppm.
7. Plotting of 151 replicate samples sent to both A.C.S. Laboratories and the Geopeko Gordon Laboratory indicates that A.C.S. Laboratories results are generally of higher magnitude compared to the Gordon Laboratory results. A sample variance of approximately ± 50ppm is apparent.

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8. A comparison of percussion drilling (2 holes) to reverse circulation drilling (95 holes) indicates that:
- percussion drilling penetration rates are quicker than those for reverse circulation in comparable rock types.
 - percussion drilling was able to penetrate to greater depths.
 - percussion drilling occasionally produces an erratic sample return when drilling below the water table.
 - sample grades produced from percussion drilling are generally higher and less variance is noted between adjacent down hole samples.
9. Grade is highly variable not only between adjacent (approx 50 metres) reverse circulation holes but between adjacent downhole samples.
10. Reverse circulation drilling penetration rate comparisons between "soft" and "hard" rock indicate that the down-hole position of this interface is highly variable across the prospect - ranging from 0.5 to 1.5 metres near the old workings to 5.0 to 5.5 metres further east. This parameter is considered important as it probably represents the lower depth limit of extraction for a hydraulic sluicing operation.
11. It would appear from the results of this project that greisen deposits in N.E. Tasmania probably have limited potential in either tonnage or grade and that they therefore should command low priority as a potential tin source target for exploration.

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RECOMMENDATION

That Geopeko terminate the Option Agreement prior to the expiry date of 26th April, 1979.

FLY-BY-NIGHT TIN PROSPECTINTRODUCTION

The purpose of this memorandum is to collate all data concerning this prospect and to review Geopeko's work programmes and results achieved since the commencement of the company's interest in this prospect.

Location, Access, Topography, Vegetation

The Fly-By-Night workings are located approximately 1 kilometre south of the township of Gladstone in N.E. Tasmania, on the western side of the Gladstone - South Mt. Cameron Road.

Access to the prospect is gained by travelling south from Gladstone. At a point approximately 1 kilometre south of the township, a bulldozed track off this road heads west, to the site of the former workings. Vehicular movement is restricted to this track, some bulldozed grid lines and another bulldozed track following the H.E.C. electricity supply line.

The topography is predominantly gently undulating. Several small streams have cut narrow deeply incised channels into soft weathered lithologies. A major creek flowing S.W. through the western grid sector is deeply incised into soft greisen along the unconformable contact with indurated quartzwackes of the Mathinna Beds facies.

Vegetation consists of sparsely located stunted eucalypts, minor sedge grass and stunted bottle brush. The uppermost thin surface horizon consists of abundant quartz crystals and small twigs.

*Banksia*Previous Worka) Pre 1900's

Limited data is held on file at Geopeko concerning past mining activities at the site.

Sluicing operations had exposed stanniferous veins in a granitic bedrock.

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Four types of veins were recognised:

- quartz greisen veins,
- mica greisen veins,
- quartz-mica greisen veins and
- quartz veins.

The veins have an irregular structural orientation, are thin and generally vertical. Cassiterite occurs as discrete grains within the veins, being typically brown in colour.

Minor cassiterite had been recovered from alluvial deposits derived from weathering of nearby source stanniferous veined granitic rock.

Two shafts were excavated in the greisenised granite - one on a quartz vein and the second on a quartz mica vein. These excavations exposed veins containing erratic grades of tin mineralisation. Following further limited trenching at the site, mining operations were abandoned in the early 1900's.

b) Hydraulic Sluicing Operation of the Optioner

The Fly-By-Night area had not been actively mined since the early 1900's.

A hydraulic sluicing operation was commenced during July 1978 by the Optioner (Mr. Ron Lawry) and under the Option Agreement terms extraction was not to exceed 60,000 cubic yards of material per year.

Mr. Lawrys' operation experienced severe difficulties in mining, concentrating and recovering sufficient tin for economic viability. Difficulty was experienced in comminuting the insitu rock - (refer to plate 2.), several areas of the face were too hard to permit rapid mining advancement in the greisen body. Cassiterite recovery was low and after an estimated (Buckland) 12,700 tonnes of greisen had been mined for a production of 18 cwt's of cassiterite concentrates. The operation was abandoned in September, 1978 after expenditure estimated at between \$50 - 60,000 (R. Lawry pers. comm.) had been incurred.

Mr. Lawry consulted the Department of Mines on two occasions for advice concerning the viability of his mining operation.

The operator's previous experience was confined to sluicing Tertiary alluvials. Sluicing semi-rotten greissen resulted in a very thick slurry (1% clay) and ultra-fine-grained SnO₂. Banks of jigs, plus a vibrating table failed to effect an acceptable recovery. Geopko accept that only 30% of SnO₂ is recoverable

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1. A brief report dated 21st September 1978 (Reference 10, Appended), provides details of sizing analyses, magnetic separations, assaying and mineralogical examinations on three pan concentrate samples.

The concentrate mineralogy consisted of magnetite, spinel, ferro-magnesian, monazite, minor gold with the principal economic mineral being cassiterite. Sizing analysis on one sample (782819) indicated that 92.80% of the non-magnetic fraction (principally cassiterite) range from +63 to +125 microns in size.

2. A more detailed Department of Mines Report of Rhodes, dated 15th November 1978 (Reference 11 Appended) provides details of the mining operation, sizing analyses, assaying and magnetic separations.

Briefly, Rhodes reported that:

- mineralogy of samples of feed consists of ilmenite, spinel, monazite, quartz, topaz, rutile, zircon and cassiterite.
- sizing analyses of coarse feed (coarse grained greisen) and fine feed (fine grained greisen) were similar.
- about 50% of the tin is finer than 300 microns.
- very fine grained cassiterite commonly occurs as composite grains with quartz crystals.
- recovery in the jigs was poor, thereby resulting in an uneconomic operation. Screening of tin dressings followed by tabling would probably increase the concentrate grade.
- the fine feed (fine grained greisen) sample has a calculated head assay of between 0.018 and 0.020% Sn, while the coarse feed (coarse grained greisen) has a calculated head assay of 0.021% Sn.

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Plate 1

View of the hydraulic sluicing Operations conducted by R. Lawry. Looking grid N.E. into the main greisen lode (Area 1 of Resource).



Plate 2

View of the nozzle and excavation rubble. Note the presence of abundant hard kernals of greisen unable to be comminuted by the nozzle.

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Geopeko initial follow-up work

Company interest in the prospect was initiated following a literature review of records held on file at the Department of Mines - Hobart.

As a result of this work, the owner of the leases was approached concerning the possibility of Geopeko conducting reconnaissance geological mapping and geochemical sampling with a view to securing an option over the leases if initial investigations proved encouraging.

Initial investigations had two phases:

- 1) reconnaissance geological mapping and bulk sampling of greisen and greisenised granite.
- 2) a second batch of samples were collected for assaying, heavy mineral separation, mineralogical and petrological examination.

Phase 1

Results of the geochemical sampling program indicated that tin grades were highly variable:

Sample 1.	Soft greisen granite	27.59 Kg sample @ 19.5 ppm Sn.
2.	Soft greisen granite	33.76 Kg sample @ 28.4 ppm Sn.
3.	Soft greisen muscovite granite	32.32 Kg sample @ 9.2 ppm Sn.
4.	Hard quartz mica greisen	33.23 Kg sample @ 54.6 ppm Sn.
5.	Massive muscovite greisen	21.37 Kg sample @ 317.2 ppm Sn.
6.	Soft greisen muscovite granite	40.57 Kg sample @ 5.83 ppm Sn.
7.	Hard quartz muscovite greisen	52.28 Kg sample @ 220.1 ppm Sn.

(For a rough rule of thumb, 350ppm represents 1 lb/yd³.)

The sampling has probably brought out the point that the cassiterite must be variably distributed throughout the various greisen types and altered granite.

Geological reconnaissance mapping and sampling had also indicated that:

1. The mineralized greisen is exposed over a vertical height of 20 metres and may extend to a depth of 10-20 metres or more.
2. The greisen extends out from the slate contact to the west, a distance of approx. 220 yards (reported in literature) and 300 - 400 metres as roughly mapped. The "along strike" extent is unknown but is at least 600 metres.
3. The greisenised granite possibly occurs over an area of some 400m x 700m. At an assumed thickness of 10m, some 4.5 million tonnes of material may be minable.

4. One bulk sample of greisenised granite was panned to give a grade estimate - yielding approximately 0.008% SnO₂.
5. It was considered that further potential for the occurrence of greisenised granite at depth and to the east of the Gladstone road existed at the site.

Details of the initial geological - geochemical reconnaissance investigations are reported by Burlinson (Reference 1).

Phase 2

Following disappointing results from the assaying of the first batch of samples from this prospect it was suspected that the cassiterite may be either very fine and was being lost in the fines over the side of the pan, or that Sn could be locked in the lattice of muscovite.

A second batch of samples was collected, 11 large samples (20-30kg size) were taken from the old workings, 6 were forwarded to A.C.S. Laboratories and 6 to Geopeko Sydney for despatch to Newcastle.

The A.C.S.L. samples were crushed to 1mm and successively split to 500g samples. One 500g split from each sample was forwarded to Mr. W. Fander for heavy mineral separation using heavy liquids. The light fraction was weighed and the heavy fraction computed from the initial weight of the sample.

Sample No.	% heavies by weight	Sn ppm as received	Sn ppm in light fraction
KR 2903 Soft musc. greisen	0.04	460	280
KR 2905 Soft musc. greisen	0.05	420	200
KR 2906 Hard quartz musc. greisen	0.38	970	550
KR 2907 Soft musc. greisen	0.14	1,480	370
KR 2908 Soft musc. greisen	0.18	1,420	390
KR 2911 Soft musc. greisen	0.02	190	100

(As a rough rule of thumb, 1lb per yd³ represents approximately 350ppm)

Mr. W. Fander estimated that the bulk of the cassiterite is approximately 200 micron size or less, the range being 50 - 600 microns. Samples KR 2903, KR 2905, KR 2907 and KR 2908 contain (visibly) 80 - 90% cassiterite, and sample KR 2906 and KR 2911 about 30%, the bulk of the Sn in the fines is as fine cassiterite locked in quartz.

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Detailed information concerning assaying, heavy mineral separation and mineralogical investigations is appended and reported under:

- Reference 2, Beevers' letter of 30/3/78
 Reference 3, A.C.S. Laboratories
 Analytical Report on Batch Numbers:
 A 2321, 2336 and 2361.
 Reference 4, Fander - 13/3/79
 Reference 5, Fander - 13/4/79
 Reference 6, Fander - 12/5/79
 Reference 7, Rayner letter of 17/5/79
 Reference 8, Burlinson memo of 7/6/79
 Reference 9, Beevers' letter of 17/7/79

It was considered that the results of these detailed investigations upgraded the prospect and negotiations were commenced with the owner regarding an Option Agreement.

Option Agreement Negotiations

The Fly-By-Night prospect is held under 5 Mineral Leases, 2 Prospecting Claims and a Water Right by Mr. Ron Lawry of Gladstone.

The respective leases, prospecting claims and water right are:

Mineral lease	88M/67	50 acres
Mineral lease	36M/70	12 hectares
Mineral lease	44M/70	8 hectares
Mineral lease	43M/70	29 hectares
Mineral lease	100M/77	25 hectares

Prospecting claim Licence Numbers 1361 and 1373.

Water right 21W/70

Meetings with Mr. Ron Lawry were held on two occasions during April 1978. At the second meeting on 26th April a "Heads of Agreement" was signed, whereby Geopeko secured an option on the prospect for a twelve month period after 26th April 1978 with provision for 2 further yearly extensions and the option for outright purchase of the Mining Tenements at any time during the Exploration Period.

Signing of this agreement allowed Geopeko's detailed prospect evaluation program to proceed. A formal Option Agreement was later signed by the parties on 24th November, 1978.

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Regional Geological Setting

The Upper Devonian Blue Tier Batholith of N.E. Tasmania is a composite granitic body, dominantly composed of porphyritic biotite granite/adamellite. The granitic plutons are normally steep sided with emplacement being controlled by fractures in the pre-intrusion Siluro-Devonian Mathinna Beds quartzwacke turbidite sequences which are locally metamorphosed to psammites and spotted pelites.

The plutons have sharp, discordant contacts, narrow zones of contact metamorphism and appear to be high level passively emplaced intrusions. Associated with irregularities in the upper contact of the muscovite-biotite granite sheets are cassiterite bearing greisenised granites and greisens.

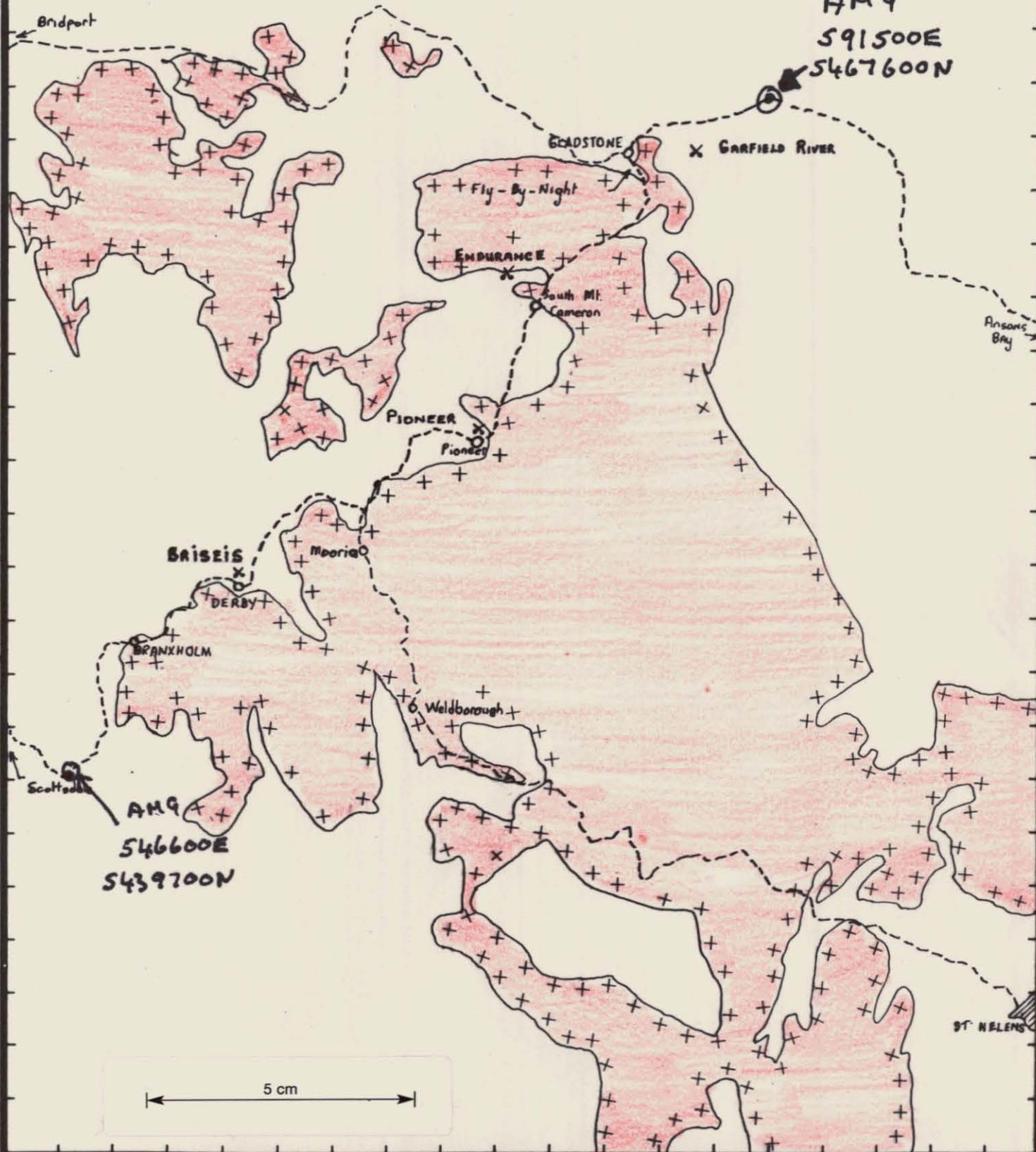
Several small lode tin deposits have been worked throughout the area with the bulk of production being derived from alluvial deposits sourced from the granitic hosts. Large alluvial operations existed at the Briseis' Mine at Derby with alluvial mining currently being conducted at the Pioneer Mine at Pioneer, the Endurance Mine at South Mt. Cameron and at the Garfield River Mine (Manager-Mr. Ron Lawry) east of Gladstone.

Figure 1 simplified from the Department of Mines 1:250,000 Launceston Sheet (SK 55-4), shows the major area of granitic rock and locations of mines.

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LEGEND:

-  Alluvial Tin Mine
-  Dominantly a biotite granite/adamellite



GEOPEKO LIMITED
KING ISLAND

Scale: 1 : 250,000

No K Fig 1a

DATE: Apr. 79
 GEOL: G.L.B.
 DWN: V.J.P.
 CHKD: G.L.B.

BLUE TIER BATHOLITH

Detailed Prospect Evaluation

Geopeko's follow-up detailed prospect evaluation comprised seven steps. The ultimate aim of these work programmes was to assess the tin resource potential.

Work programmes completed included

1. Gridding
2. Surveying
3. Geological Mapping
4. Drilling
 - reverse circulation
 - percussion
 - diamond
5. Geochemistry
 - sampling
 - a. field sampling
 - b. sample preparation
 - c. sampling of tailings
 - sample analysis
 - a. Gordon Laboratory
 - b. A.C.S. Laboratories
 - c. Laboratory assay comparison
 - d. Drilling method grade comparison
6. Resource Calculation
7. Reporting

Gridding was undertaken during the period late May - early June, 1978 with drilling and geological mapping beginning on 19th October. All field work was completed by 14th December, 1978. A farmhouse was rented at "Boobyalla Estates", Gladstone to serve as a base for field programmes.

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1. GRIDDING

A total of 5,973 metres of gridding was completed. Grid lines were 50 metres apart with pegs placed at 50 metre centres. Bulldozing to clear the lines of light scrub was required along 4,523 metres while the remaining 1,450 metres was hand-cut.

2. SURVEYING

Surveying and levelling of the entire grid and former workings was conducted in conjunction with the gridding.

The datum for reduced levelling calculations was at 10,000N; 10,000E at 100.000 metres R.L.

This work facilitated the compilation of a topographic base map at 1:1000 Scale - refer to Map No KFBN .2

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3. GEOLOGICAL MAPPING.

Geological mapping was recorded at 1:1000 scale on a film copy of the topographic base map. All grid lines, areas between grids, areas surrounding the former workings and regions immediately adjacent to the prospect were traversed.

Outcrop at the prospect is restricted to:

- areas within former workings.
- bulldozed tracks.
- hillocks to the S.W. of the grid
and
- along the creek flowing S.W. across the western grid extremities.

The geological map Number KFBN-3 was compiled from an assessment of :

- surface outcrop mapping.
- logging of drill sample cuttings from the reverse circulation and percussion drilling program and logging of diamond drill hole F/B/N-1.

Four lithologies are recognised - granite, altered granite, greisen and quartzwackes - mudstones.

Upper Devonian - Lower Carboniferous.

1. Granite.

This is manifested as a holocrystalline rock of dominantly quartz, K-feldspar and biotite composition. It outcrops extensively over the southwestern portions of the grid, and is observed as exfoliated tors on hillocks in this region.

2. Altered Granite.

Flanking the granite to the immediate grid north and northeast is a zone of altered granite composed essentially of quartz, kaolinised K-feldspar, chloritised biotite and minor muscovite. This zone varies in width from approximately 90 to 5 metres outward from the granite contact, being generally about 40 metres wide.

3. Greisen.

A rock of quartz and muscovite composition has been formed from the action of high temperature pneumatolytic - hydrothermal solutions rich in volatiles from a granitic source rock.

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This resultant rock is a greisen. It forms a halo surrounding altered granite being confined to areas within and to the immediate north and east of the southern most extensive former workings. Greisen was intersected in A.Q. diamond drill core from DDH F/B/N - 1 below 19.8m depth after the hole passed from the mudstones - indurated siltstones of the Mathinna Beds, in which it was collared. This diamond drill hole indicated the apparent continuation of the greisen body beneath Mathinna Beds to at least 50 metres west of the former workings.

Within the former workings numerous narrow (up to 10cm.) quartz and greisen veins were mapped. Occasionally, some greisen veins carry sporadic coarse cassiterite mineralisation. Structural mapping indicates that the veins have an irregular orientation - commonly striking grid west, northwest and northerly with steep dips of 73 to 87° to the S.W. and N.E.

At approximately 9,895E; 10,140N a raft of fine grained sediment. siltstone of the Mathinna Beds facies, lies in a horizontal structural orientation and has an exposed length of 10 metres. It seems probable that the intrusion of greisen-like rock was a fairly placid tectonic event as bedding is well preserved in the raft sediment.

Siluro - Devonian

4. Mathinna Beds.

The granitic rocks described above have intruded Siluro - Devonian age quartzwackes and mudstones - the Mathinna Beds. Local contact metamorphic processes have altered these rocks to quartzites, indurated mudstones and psammites. At some northwestern locations on the grid the unconformity is obscured by hillwash debris.

Commonly the quartzwackes are manifested as fine grained subrounded quartz/cohesive clay in drilling samples.

Drill cuttings interpretation.

1. Identification of drilling cuttings samples indicates that altered granite exists within and to the north and northeast of the northern most former workings.

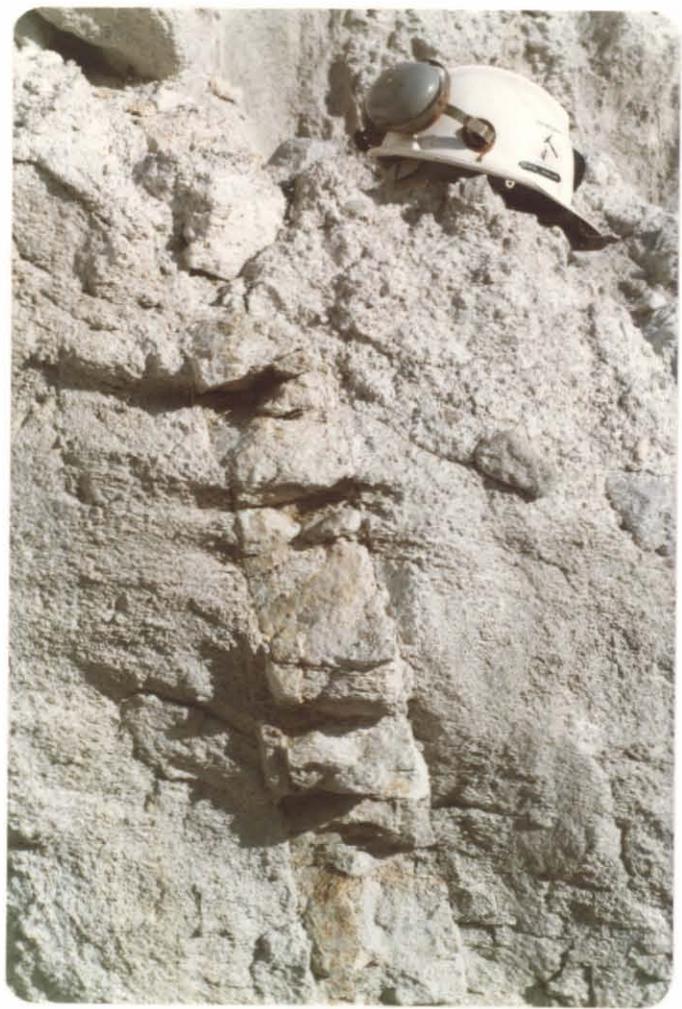
Isolated areas of granite (approximately centring at 10,000E; 10,200N and 10,150E; 10,250N) and a minor area of greisen (10,050E; 10,300N) occur within the altered granite body in addition to two inliers of Mathinna Beds (approximately centring at 9,990E; 10,145N and 9,950 to 10,000E; 10,250N.)

- 2. Logging of reverse circulation drill cuttings has enabled an interpretation to be made of the geology immediately underlying the Mathinna Beds in the north and east grid regions.

The Mathinna Beds were intersected generally from 1 to 3m down hole depth in areas close to the unconformity, increasing to 4m thick in the area to the east of the Gladstone - Pioneer Road.

Altered granite is the most extensive sub-Mathinna Beds rock type with granite interpreted to be present in the region of the southern most drilled grid line - 10,000N.

An extension of the main greisen lode grid northeast under Mathinna Beds is interpreted in the area of 10,075N to 10,200N at about 10,250E to 10,350E. Greisen was intersected from 2-3 metres down hole depth. (Area 4 in resource calculations.)



A steeply dipping quartz vein intruding greisen, exposed in the eastern face of the southern - most former workings.

4. DRILLING

The majority of drilling at the prospect was by the reverse circulation technique, however limited percussion and diamond drilling was also undertaken.

Preamble

Initial sampling and mineralogical investigations had indicated that most of the cassiterite in samples of greisen and altered granite was approximately 200 microns and that grades were highly variable.

Subsequent drilling of the prospect would need to be undertaken using a technique that provided good sample recovery with minimal uphole contamination, was quick and relatively cheaper compared to coring techniques.

Reverse circulation drilling

This drilling technique was selected as an appropriate method to test the near surface weathered cassiterite bearing greisen and altered granite.

The rig used was a converted Jacro 200 - 27 rig, modified by Kitching Drilling Consultants and Supplies Pty. Ltd. - Brisbane. This Geopeko owned rig was mounted on a Muskeg Tractor Bombardier. Auxiliary water was stored in a tank mounted to the Bombardier Tray while air supplies were provided by hiring a compressor.

All holes were drilled with BQ rods with the inner tube being 3.4cm in diameter. The bit used was a BQ blank, set with 6 tungsten carbide inserts in the face. (bit diameter is 5.6cm)

Drilling was conducted 50m centres on the grid with holes being collared as close to grid pegs as access permitted. Extra lengths of hose were hired to facilitate this operation as the dissected nature of the greisen in and surrounding the former workings made towing the compressor difficult.

A total of 95 holes were drilled for a total of 535.67 metres with the average hole depth being 5.64 metres. The deepest hole was located at 10,105N; 10,000E being terminated at 15 metres.

Drilling rates were rapid (approximately 1 metre/minute) through the soft surface weathered material but slowed markedly in the underlying unweathered harder rock. (approximately 1 metre/40 minutes toward the end-of-hole position.)

Percussion Drilling

The converted Jacro 200 - 27 rig is also capable of shallow percussion and diamond drilling. Percussion drilling was undertaken for orientation comparative purposes, using a 100mm diameter button drag bit with AQ rods.

A total of 2 holes were drilled for a total of 24.0 metres.

The first hole was collared at 10,198.5E; 10,097N, terminated at 14 metres.

The second hole was collared at 10,096E; 10,103N, terminated at 10 metres. This hole was terminated within greisen after the hired compressor broke down.

When compared to the reverse circulation drilling technique, percussion drilling was quicker, able to penetrate to greater depths with the 100mm diameter drag bit, but occasionally produced an erratic sample return when drilling below the water table. Water combined with the cuttings to form a cohesive mud which blocked the sample return hose.

Diamond drilling

This work was performed using Geopeko's converted Jacro 200 - 27 producing AQ core.

Initial plans were to complete a diamond drill hole at 10,002E; 10,107N, for orientation purposes. Pre-collaring augering with 3 inch diameter augers failed to intersect competent enough rock in which coring could commence.

The auger hole was terminated at 20.5m, with one sample of greisen (KR 3811) being collected from the interval 20.3 - 20.5m. The unavailability of additional auger rods led to the abandonment of this site for diamond drilling.

A hole was planned to be collared in quartzwackes of the Mathinna Beds and to test for a continuation of greisen in the region immediately grid north-west of the old workings.

Brief details of the hole are:

Hole No;	DDH F/B/N - 1
Collar co-ordinates:	9,778E; 10,200N.
Inclination:	- 90°
R.L.	76 metres.

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A brief geology log of the hole is:

0 - 2.96m	No core.
2.96 - 7.62m	Slightly weathered cream coloured fractured quartzite.
7.62 - 19.81m	Hard white quartzite.
19.81 - 24.38m	Greisen.

This hole was terminated at 24,38m owing to very low core recovery (16%) in the greisen zone.

2.96 - 19.81m represents contact metamorphosed quartzwacke of the Mathinna Beds.

Refer to Appendix 4 for details of the hole log.

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5. GEOCHEMISTRYSampling

a) Field drilling sampling

Reverse circulation samples were retrieved at 1 metre down hole intervals (except the first hole collared at 10,105 N; 10,000E which had a 1.5 metre interval), collected in large plastic bags (456 x 608mm x 0.006) with excess water being decanted off prior to tagging and storage.

Percussion drilling samples were also taken over 1 metre down hole intervals except where sample return problems necessitated a greater sampling interval - refer to hole at 10,097N; 10,198.5E.

Diamond drilling enabled the sampling of greisen beneath Mathinna Beds to the immediate grid N.W. of the former workings. Two samples of core (KR 2887 and KR 2888) were collected - refer to map number KFBN-4

b) Sample Preparation

Drilling at the prospect produced 486 reverse circulation samples and 21 percussion samples.

All samples collected were either in a slurry (reverse circulation) or moist (percussion). A problem arose as how the samples could be dried to enable splitting of the large bulk of material down to a representative size prior to analysis for tin. Drying of the samples in sunlight while remaining in the plastic bags proved to be ineffective.

Arrangements were made with the Zolati Brick Works at Dulverton for drying the samples in the pre-drying kiln. This operates at 130°F over a 15 hour overnight period. Each sample had to be transferred from the plastic bag to a ½ baking dish prior to insertion in the kiln, which is capable of drying 42 samples concurrently.

Briefly, the sample preparation procedure consisted of the following steps:

- sample was transferred from the large plastic sample bag to a ½ baking dish. Water addition was necessary to ensure that all the fine grained sample material was transferred.
- sample trays were placed in the pre-drying brick kiln for 15 hours at 130°F.
- dried sample was recovered from the baking dish and transferred to a plastic sample bag.
- baking dish was washed, in preparation for the next sample batch drying.

- the dry crusty sample was tipped into a baby bath and lightly crushed in a 'rolling' pin fashion.
- sample sieved through a 5mm sieve to allow the -5mm material to pass through into a second baby bath. The +5mm material (composite grains, quartz vein fragments) was returned to the large plastic sample bag.
- sample was split down using a 12mm riffle splitter to produce two subsamples each of approximately 100g. Excess sample material was returned to the large plastic bag for storage.
- the two subsamples were given their respective KR numbers - A and B.

c) Sampling of Tailings

At two sites within the tailings race material, large bulk samples were taken for tailings grade estimation.

Six samples, each of approximately 20kg were taken in a "channel fashion" across the race, producing a total of 12 bulk samples (KR 2485 - 2496).

The position of the sample sites are shown on map number KFBN-4. Analytical results from the Gordon Laboratory are plotted on map number KFBN-5, while those from A.C.S. Laboratories are plotted on map number KFBN-6.

The average results for the 12 samples for the Gordon Laboratory was 274ppm while that for samples analysed at A.C.S. Laboratories was 356ppm.

Results for each line of samples with laboratory assay details are tabulated:

Line	Assay Range (lowest -highest) (ppm)	Gordon Average Assay (ppm)	A.C.S. Laboratories Average Assay (ppm)
1	230 - 390	213	272
2	330 - 720	335	440

No attempt was made to estimate the tonnage of tailings material available in the dam to the west of the former workings.

Sample Analysis

Riffle splitting of samples produced by reverse circulation and percussion drilling was undertaken to provide two subsamples - designated "A" to "B".

A total of 422 B samples were analysed at the Geopeko Gordon Laboratory, Sydney while a further 203 A samples were analysed at Analytical Consulting Services Laboratory (A.C.S. Laboratories) - Adelaide.

a) Gordon Laboratory

Tin analysis was by energy dispersive XRF on a 1.25 inch pressed powder disc.

A total of 443 samples were submitted for analysis - comprising 21 percussion, 12 tailings and 410 reverse circulation samples.

Analytical results are plotted on map number KFBN-5

Results show a high variability. The peak value was 16,000ppm with the next highest being 2089ppm, while the lowest value was 1ppm. Results less than 50ppm are below the limit of detection and are not considered significant.

To provide an indication of the variability of sample values (excluding the 21 percussion and 12 samples of tailings material), an arbitrary classification was compiled on reverse circulation samples:

Number of Samples	Arbitrary Range (ppm)	% of Population
10	> 1000	2.44
11	500 - 1000	2.68
107	100 - 500	26.10
282	< 100	68.78
410		100.00

Analysis of this tabulation indicates that 68.78% of samples reported Sn grades <100ppm, while 26.10% had values from 100 - 500ppm, with only 5.12% of samples yielding grades > 500ppm.

Samples submitted for analysis included greisen, altered granite and granite samples.

Approximate average grades for these lithologies are:

Greisen - 428 ppm (107 samples included, 15 excluded)
 Altered Granite - 132 ppm (63 samples included, 114 excluded)
 Granite - 180 ppm (26 samples included, 36 excluded)

Note:

1. All assays reported as ≤ 50 ppm have been excluded from the average calculations as such assays are below the limit of detection and are not therefore considered significant.
2. The average granite assay of 180ppm is erroneously high owing to "nugget effects". (KR 2383, KR 2424)

Plotting of Gordon laboratory results on map number KFBN-5 indicates that:

1. Grade varies highly not only between adjacent reverse circulation holes but also up and down a particular hole. For example - holes approximately 50m apart produced values of 250ppm (KR 2249 hole) and 520ppm (KR 2247 hole). Values increased as the E.O.H. was approached in the hole at 10,200E; 10,051N (120 - 520ppm at E.O.H.), while conversely, grades decreased toward the E.O.H. in the hole at 9,924E; 10,097N. (179 - 32ppm at E.O.H.). This latter type of variability may well be due to principally sampling problems.
2. Grade to the north of the major workings also is highly variable.
3. Areas of greisen immediately beneath the Mathinna Beds also have a highly variable grade distribution. For example - to the north, 15ppm at KR 2457 hole and 40 and 50ppm at KR 2475 location; up to 800 and 242ppm at KR 2297 site which is immediately west of the former workings.

b) A.C.S. Laboratories

Tin analysis was by XRF. Analytical results are plotted on map number KFBN-6

A total of 203 samples were submitted for analysis - comprising 21 percussion, 12 tailings, 2 diamond drill hole and 168 reverse circulation samples.

The 168 "A" samples derived from reverse circulation drilling, submitted as assay check samples, comprised 135 greisen, 29 altered granite and 4 granite samples.

The peak result was 10,070ppm Sn, with the next highest being 2020ppm while the lowest value was 20ppm. To provide an indication of the variability of values an arbitrary classification was compiled:

Number of Samples	Arbitrary Range (ppm)	% of Population
7	> 1000	4.17
9	500 - 1000	5.36
82	100 - 500	48.81
70	< 100	41.67
<u>168</u>		<u>100.01</u>

From this tabulation it is evident that 41.67% of samples had grades less than 100ppm, 48.81% had grades from 100 - 500ppm while only 9.53% of samples had grades greater than 500ppm.

Approximate average grades for these lithologies are:

- Greisen - 320 ppm (135 samples)
- Altered granite - 75 ppm (29 samples)
- Granite - 23 ppm (4 samples)

027

c) Laboratory assay comparison

To visually compare the variability of assays for replicate A and B samples common to each laboratory, an arithmetic scale plot of A.C.S. Laboratories results against Geopeko Gordon Laboratory results was completed. Refer to figure 1.

Of the total of 201 replicate samples, several samples were not plotted:

- 47 B samples from Gordon Laboratory that reported values less than 50ppm, being below the limit of detection and not therefore considered significant.
- One sample (KR 2152) reporting a result which plots "off graph scale limits". The A sample yielded 1.07% Sn and the B sample 1.60% Sn.
- Two samples (KR 2207 and KR 2208) where it is suspected that sample tags were swapped during the splitting procedure. That is, KR 2207 A reports 110ppm and KR 2208 A 1470ppm while KR 2207 B yielded 1350ppm and KR 2208 B reported 72ppm.

The total number of samples available to plot was therefore 151.

When the 1:1 ratio line is plotted on the graph, it is evident that A.C.S. Laboratories results are commonly higher compared to Gordon results. For sample points plotting above the 1:1 ratio line - it is apparent that 66% of points (1 standard deviation) fall approximately within a ± 50 ppm Limit.

d) Grade comparison - Percussion drilling results versus reverse circulation drilling results.

At two sites a percussion drill hole was drilled adjacent to the completed reverse circulation drill hole. The purpose of this work was to facilitate a comparison of drilling performances and grades.

Site 1

The percussion drill hole was collared at 10,097N; 10,198.5E, while the adjacent reverse circulation hole was located at 10,098N; 10,198E.

Grade versus depth profile plotting (Refer to figures 2 and 3) of results indicates that:

- Gordon laboratory average percussion grade (132.6ppm) is higher than the Gordon average reverse circulation grade (97.3ppm) by a figure of 35.3ppm.

028

- A.C.S. Laboratories average percussion grade (201.4ppm) is higher than the A.C.S. Laboratories average reverse circulation grade (121.4ppm) by 80ppm.
- A.C.S. Laboratories average percussion grade (201.4ppm) is higher than the Gordon average percussion grade (132.6ppm) by 68.80ppm.
- A.C.S. Laboratories average reverse circulation grade (121.4ppm) is higher than the Gordon average reverse circulation grade (97.3ppm) by 24.1ppm.

The higher A.C.S. Laboratories results compared to Gordon results probably reflect laboratory standard sample calibration factors.

Percussion grade results are higher when compared to reverse circulation sample grade results because percussion drilling produces a greater volume of sample material which when riffle split provides a more representative sample of the insitu rock.

Grades are highly variable between adjacent down hole samples for both percussion and reverse circulation results. No obvious trends were noted to indicate grade increases or decreases with hole depth.

Site 2

The percussion drill hole was collared at 10,103N; 10,096E while the adjacent reverse circulation drill hole was located at 10,105N; 10,100E.

In general, results for comparisons at this site are contrary to trends reported for Site 1. The high initial reverse circulation assay results for KR 2218 (KR 2218A 630ppm; KR 2218B 600ppm) are much higher than subsequent down hole assays. (approx. 160ppm). This "nugget effect" is not reflected in the initial percussion drill hole sample KR 3823 (KR 3823A 170ppm), KR 3823B 190ppm), therefore partly negating meaningful grade comparisons.

Grade versus depth profile plotting (Refer to figures 4 and 5) of results indicates that:

- Gordon Laboratory average percussion grade (166.7ppm) is lower than the Gordon Laboratory average reverse circulation grade (253.3ppm) by 86.6ppm.

- A.C.S. Laboratories average percussion grade (183.3ppm) is lower than the A.C.S. Laboratories average reverse circulation grade (238.3ppm) by 55ppm.
- A.C.S. Laboratories average percussion grade (183.3) is higher than the Gordon average percussion grade (166.7ppm) by 16.6ppm.
- A.C.S. Laboratories average reverse circulation grade (238.3ppm) is higher than the Gordon average reverse circulation grade (253.3ppm) by 15ppm.

As reported earlier under Site 1 - grades are highly variable between adjacent down hole samples for both percussion and reverse circulation results. No obvious trends were noted to indicate grade increases or decreases with depth.

6. RESOURCE CALCULATION

Preamble

Initial sampling at the prospect during February and March 1978 had indicated a highly variable Sn grade distribution in the greisen and altered granite.

The subsequent reverse circulation drilling at the prospect was directed at establishing the resource tonnage and grade.

Surface weathered rock is softer than the underlying less weathered material. During drilling, the position of this "soft" to "hard" interface was approximately determined through drilling penetration rate comparisons - the penetration rate decreased rapidly on entering the harder rock. The position of this interface was denoted - S/H 2.3m (ie soft to hard at 2.3m down hole depth.)

This parameter was considered important as it was thought to approximate a lower depth limit for material that could probably be mined using hydraulic techniques. A similar technique was used by the Optioner, which subsequently proved uneconomic. Harder rock types would probably require ripping and crushing/grinding to liberate the cassiterite grains prior to concentration.

Resource Areas

The resource is divided into four areas based on geology and drilling grade information.

Area 1, consists of the greisen mass surrounding the southern most former workings, extending to approximately 250 metres east. A total of 14 reverse circulation and 1 percussion drill hole have intersected this material. This area of the resource is classified as "Probable".

Area 2, consists of the greisen body north of 10,150N - an area immediately north of Area 1. Area 2 has no drilling data. This area of the resource is classified as "Possible".

Area 3, consists of an extensive body of altered granite approximately centring around 10,250N; 9,950E. 13 shallow reverse circulation holes have intersected this body - the area is classified as "Probable".

Area 4, is an extension of the main greisen lode (Area 1) grid northeast under a thin (2-3metre) capping of Mathinna Beds. A total of 5 reverse circulation and 1 percussion drill hole have intersected this body. As this area has a barren 2 - 3m thick capping of Mathinna Beds and it's presence is based on drill hole interpretation only (no surface expression) it is classified as "Possible".

The resource for these four areas to 4 metres depth is estimated to be:

Area	Cubic metres (m ³)	Tonnes (t)	Grade (ppm)	Classification
1 (*)	139,400	334,500	400	Probable
2 (+)	35,535	85,200	?	Possible
3 (+)	135,025	324,000	180	Probable
4	56,400	135,300	(82)	Possible

The total resource to 4 metres depth is estimated to be:

- A) 274,425m³, 658,500t at 290ppm Sn Probable
 B) 91,935m³, 220,500t Possible

Notes:

- (*) for area 1, drilling at depth (one reverse circulation hole) indicates that the greisen body probably extends to 15 metres below the surface, but remains untested below this depth. The resource of Area 1 can probably be increased a further 3 fold, (say 1,003,500 tonnes) down to 15 metres depth. Grade would approximately be 316ppm - an arithmetic average of 7 assays from 4.5 to 15.0 metres.
- (+) The resource at depth in Areas 2 and 3 could probably be increased following further deeper percussion drilling testing.
- Tonnes figures are rounded to nearest 100.
- Grade is calculated from the top 4 metres (generally - refer to Appendices 1 and 2) of assays, being an arithmetic average of the Gordon Laboratory results.

032

5. Grade limits are approximately \pm 50ppm.
6. The Specific Gravity used was 2.4 tonnes/m³ for "surface weathered granite" (K.Burlinson, Geopeko Report No. 78/3, Appendix 2)
7. Assumed mining height was 4 metres -this is an approximation of the "soft" to "hard" interface position based on drilling penetration rate data.

The depth to this interface is highly variable - for example; ranging from 0.5 to 2.5 metres down hole depth around the former workings to 5.0 - 5.5 metres about 250 metres further east.

8. An estimation of the tonnes mined from previous operations has been deducted from the resource figures.
9. Grade in Area 4 is estimated at 82ppm - arithmetic average from 4 reverse circulation arnd 1 percussion drill hole assay data, Refer to Appendix 3.
10. Grade of Area 1 is rounded to nearest 10ppm. (Refer to Appendix 1),
11. Grade of Area 3 is rounded to nearest 10ppm. (Refer to Appendix 2).

DISCUSSION OF RESULTS

Resource Grade

The XRF assaying at both A.C.S. Laboratories and the Geopeko Gordon Laboratory recorded values for total Sn present - not tin present as cassiterite. Tin is commonly substituted within the lattice of various minerals - notably magnetite, K-feldspar, muscovite and biotite.

Burlinson (1978) reports typical tin contents for these minerals as:

Magnetite	5 - 50ppm
K-feldspar	0.1 - 10ppm
Muscovite	2 - 50ppm
Biotite	10 - 500ppm

The Fly-By-Night greisen and altered granite is composed of several of these minerals: ilmenite, spinel, monazite, topaz, rutile, zircon and magnetite as minor constituents with K-feldspar, muscovite biotite, quartz and cassiterite as major constituents.

Tin in the lattice of muscovite and biotite is not recoverable. Exhaustive tests at the Fly-By-Night indicated (Burlinson, 1979 pp 57-63) that "the amount of tin actually present as cassiterite are around 30%".

The probable resource grade is quoted as 290ppm. Laboratory assay comparisons between A.C.S. Laboratories and the Geopeko Gordon Laboratory indicate a sample variance of the order of ± 50 ppm. Limits on this grade figure should be considered with the probable resource grade quoted as 290 ± 50 ppm.

Resource tonnage

The total resource to 4 metres depth is estimated to be 274,425 cubic metres or 658,500 tonnes - probable.

As previously reported under Resource Notes 1, results of one reverse circulation drill hole to 15 metres depth indicate that the resource tonnage could probably be increased a further 3 fold - say 1.9 million tonnes.

Further - an auger pre-collared diamond drill hole site at 10,107N; 10,002E intersected greisen to 20.5 metres termination depth. A diamond drill hole was abandoned at this site as the rock was not competent enough in which to begin coring. Based on the results of this auger hole, greisen occurs at this location to at least 20.5 metres depth - but remains untested below this depth. Assuming uniform greisen body volume across Area 1, it is possible that the resource tonnage could actually be increased a further 4 fold to - say 2.6 million tonnes.

034

It is stressed that this possible resource extension figure is only an estimate based on the result of one auger hole at depth. The three dimensional shape of the greisen body at depth probably does not have constant volume characteristics.

It is also noted that the greisen grade appears to decrease with depth - as the sample (KR 5811) from the auger flights between 20.3 - 20.5 metres assayed 110ppm Sn. At these depths the greisen would probably be classified as "hard".

Diamond Drill Hole F/F/N - 1

This hole was collared in Mathinna Beds to the immediate grid NW of the former major workings and was planned to test for a continuation of the greisen body under this cap rock.

The hole intersected greisen from 19.31 to 24.38 metres (E.O.H.) and was terminated at this depth owing to the poor (16%) core recoveries in the soft greisen zone.

Analyses on two AQ whole core samples (KR 2887 and 2888) yielded fluctuating grades - 180ppm and 790ppm respectively. (average 485ppm)

It seems unlikely that this area of low grade greisen beneath approximately 20 metres of barren Mathinna Beds capping could constitute a viable resource extension.

Selected References

Burlinson, K. 1978

Interim Report on Tin -
A Preliminary Survey of the
literature and comments on
practical Exploration Methods.

Unpublished Geopeko Report No. 78/3.

Burlinson, K. 1979

The Tin Potential of Australia.

Unpublished Geopeko Report No. D79/1.

Groves, D.I. et all, 1977.

Geol. Surv. Tas. Bull 55.
The Blue Tier Batholith.

G.L. Buckland 25/4/79.

G.L. BUCKLAND.

036

FLY - BY - NIGHT AREA 1 GRADE DATA

Hole Collar Position	Av. assay (ppm)	Remarks
10 052.5N 9,850E	91	Top 4m assays
10 100N 9,852E	1424	3 assays over 2.7m total depth
10 141N 9,900E	114	Top 4m assays
10 091N 9,890E	74	Top 4m assays
10 103.5N 9,900E	216	Top 4m assays
10 097N 9,924E	117	Top 4m assays
10 087N 9,923E	169	Top 4m assays
10 106N 9,948E	1633	3 assays over 3m total depth
10 105N 10,000E	540	3 assays over 4.5m hole depth
10 112N 10,050E and 10 111.5N 10,050E	810	2 assays for each hole. Treat as 1 hole as respective hole collars are 0.5m apart.
10 049.5N 10,048E	39	Top 4m assays
10 105N 10,100E	305	Top 4m assays
10 049N 10,152E	133	Top 4m assays
10 051N 10,200E	109	Top 4m assays
10 103N 10,096E	165	Top 4m assays

Average 396ppm
(say 400ppm)

Note: The hole collared at 10,103N; 10,096E is a percussion drill hole. The remainder are reverse circulation drill holes.

FLY - BY - NIGHT AREA 3 GRADE DATA

Hole Collar position	Av assay (ppm)	Remarks
10 301N 10 098.5E	264	Top 4m of assays
10 351.5N 10 052E	67	Top 3m of assays
10 300N 10 048E	217	Top 4m of assays
10 253N 10 049.5E	183	Top 3m of assays
10 299.6N 9 996E	114	Top 4m of assays
10 253.5N 10 001E	626	4m of resource below 1m of Mathinna Beds
10 208N 9 999E	80	Top 3m of assays
10 147.5N 9 994E	114	4m of resource below 1m of Mathinna Beds
10 248.5N 9 951E	94	3m of resource below 1m of Mathinna Beds
10 198.5N 9 949E	180	Top 2m of assays
10 163N 9 953E	133	Top 3m of assays
10 306N 9 903E	136	2 assays over 3m interval (0-1m; and 2-2.7m)
10 248.5N 9 902E	150	Top 4m of assays

Average 181ppm (say 180ppm)

Note: All holes are reverse circulation drill holes.

FLY - BY - NIGHT AREA 4 GRADE DATA

Hole Collar Position	Average assay (ppm)	Remarks
10,200N 10,349.5E	33	Top 4m of greisen below a 2m capping of Mathinna Beds.
10,099N 10,302E	33	3 assays over 3 metres, below a 2 metre capping of Mathinna Beds.
10,101N 10,250E	100	3 assays over 3 metres, below a 2 metre capping of Mathinna Beds
10,098N 10,198E	85	Top 4m of assays below 1 metre capping of Mathinna Beds
10,100N 10,151E	86	3 assays over 3 metres, below a 1 metre capping of Mathinna Beds
10,097N 10,198.5E	152	4 assays over top 5 metres
Average (say)	<u>81.5ppm</u> 82ppm)	

Note: The hole at 10,097N; 10,198.5E was a percussion drill hole, the remainder are reverse circulation drill holes.

GEOPEKOA DIVISION OF PEKO-WALLSEND OPERATIONS LTD.LOG. OF D.D.H. F/B/N-1, FLY-BY-NIGHT TIN PROSPECT.PLANNING

Proposer: G.L. Buckland.
 Depth: 30m.
 Location: North of tailings dam at Fly-By-Night.
 Collared on Mathinna Beds.
 Purpose of hole: To test for a continuation of the greisen
 body grid N.W. from the former workings
 under the Mathinna Beds.
 Co-ordinates: 9,778E; 10,200N.
 Inclination: -90°
 R.L. approx. -76m.
 Approved by: M.C. Rogers.
 Date: 1/12/78.

SUMMARY

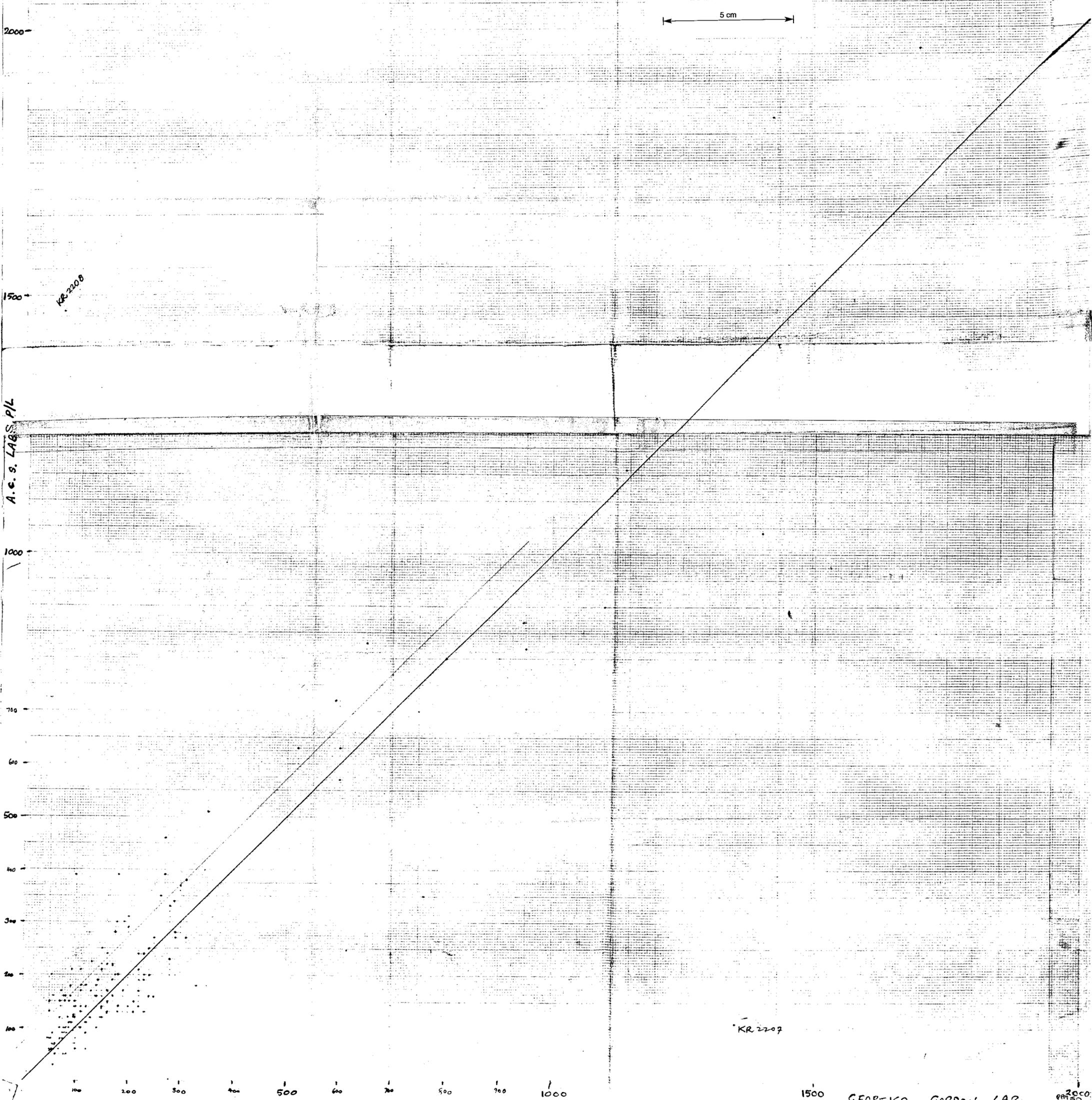
Logged by: G.L. Buckland.
 Results: 0-2.96m, No core.
 2.96-7.62m Slightly weathered cream
 coloured fractured quartzwacke.
 7.62-19.81 Hard white quartzite.
 19.81-24.38m. E.O.H. Greisen.
 Note: 2.96-19.81m represents contact metamorphosed
 Mathinna Beds quartzwacke.

DRILLING

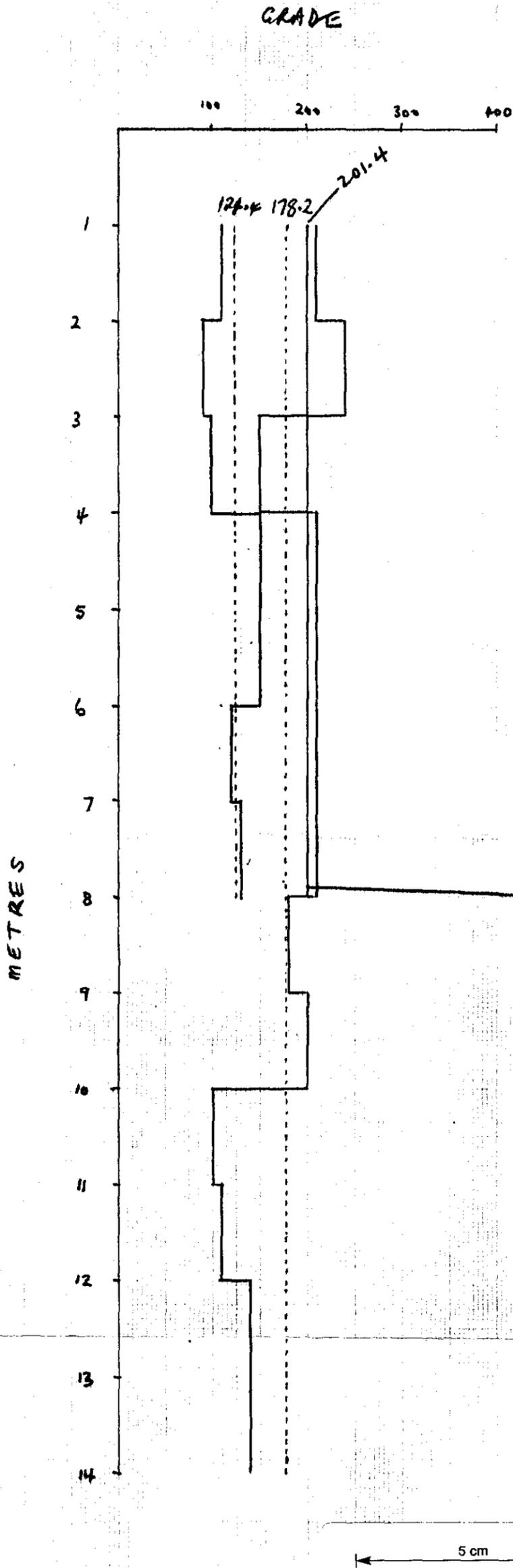
Date terminated: 13/12/78
 Driller: M.W. Longmore.
 Core: A.Q. to E.O.H.
 Final depth: 24.38m.
 Reasons for termination:
 1. Hole intersected greisen.
 2. Poor core recoveries were
 achieved in the greisen zone.
 3. Preparations for the approaching
 Elliott Bay field season were
 pending urgently.
 Water: Normal water return throughout.
 Comments on Drilling Conditions:
 1. Augered to 2.96m
 2. Slow drilling rate owing to necessity to
 pull core barrel and remove broken
 wedged core.

FLY-BY-NIGHT TIN PROSPECT
ASSAY COMPARISON ON 157 REPLICATE SAMPLES
A.C.S. LABS. P/L vs GEOPEKO GORDON LAB.

FIGURE 1



041



2m sample interval
from 6-8m.

2m sample interval
from 12-14m.

A.C.S.L. pdh average
grade to end of rev.
circ. dh. = 201.43 ppm

- A.C.S. LABS PERCUSSION GRADE
- - - - - A.C.S. LABS. AV. PER. GRADE.
- A.C.S. LABS. REVERSE CIRCULATION GRADE
- - - - - A.C.S. LABS. REVERSE CIRC. AV. GRADE.

P.D.H. COLLAR 10 097 N
10 198.5 E

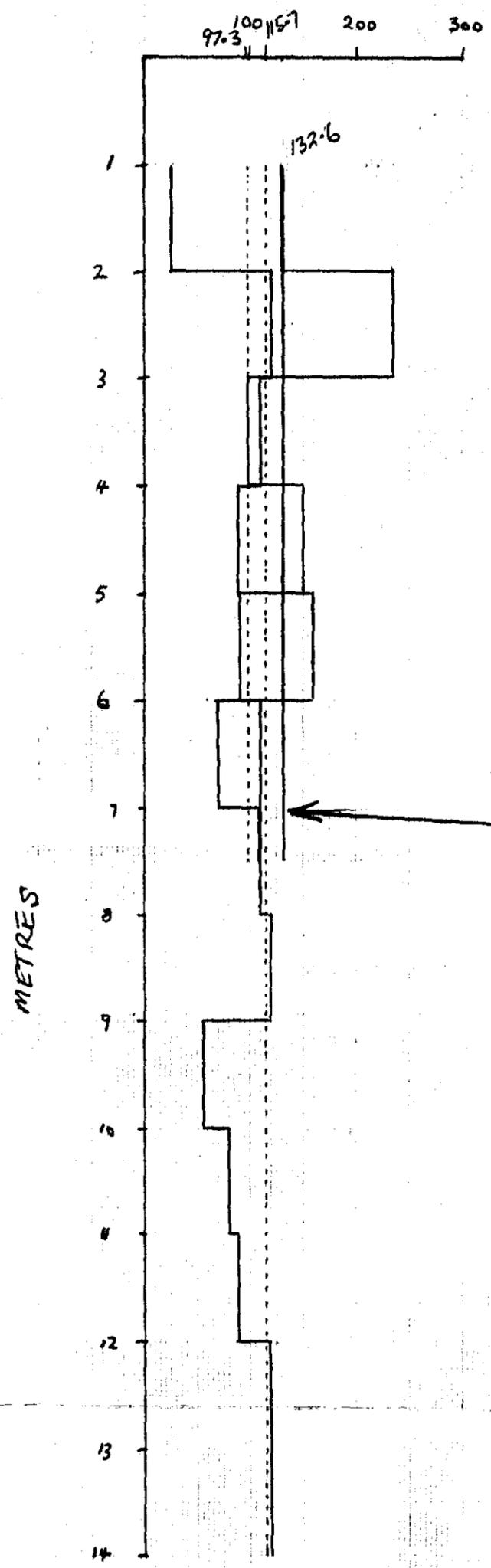
R.C.H. COLLAR 10 098 N
10 198 E

A.C.S. LABORATORIES RESULTS

DRILLING GRADE PROFILE COMPARISONS - PERCUSSION VS. REVERSE CIRCULATION.

10041

0.2



NO SAMPLE TAKEN FROM 0-1 m.

2m sample interval from 6-8 m.

2m sample interval from 12-14 m.

GORDON LAB. average grade to E.O. Rev. circ. dh = 132.57 ppm

- GORDON PERCUSSION GRADE
- - - - GORDON PERCUSSION AV. GRADE.
- GORDON REVERSE CIRCULATION GRADE
- - - - GORDON REVERSE CIRCULATION AV. GRADE.

5 cm

P.D.H. COLLAR

10 097 N
10 198.5 E.

GORDON LAB. RESULTS

R.C.D.H. COLLAR.

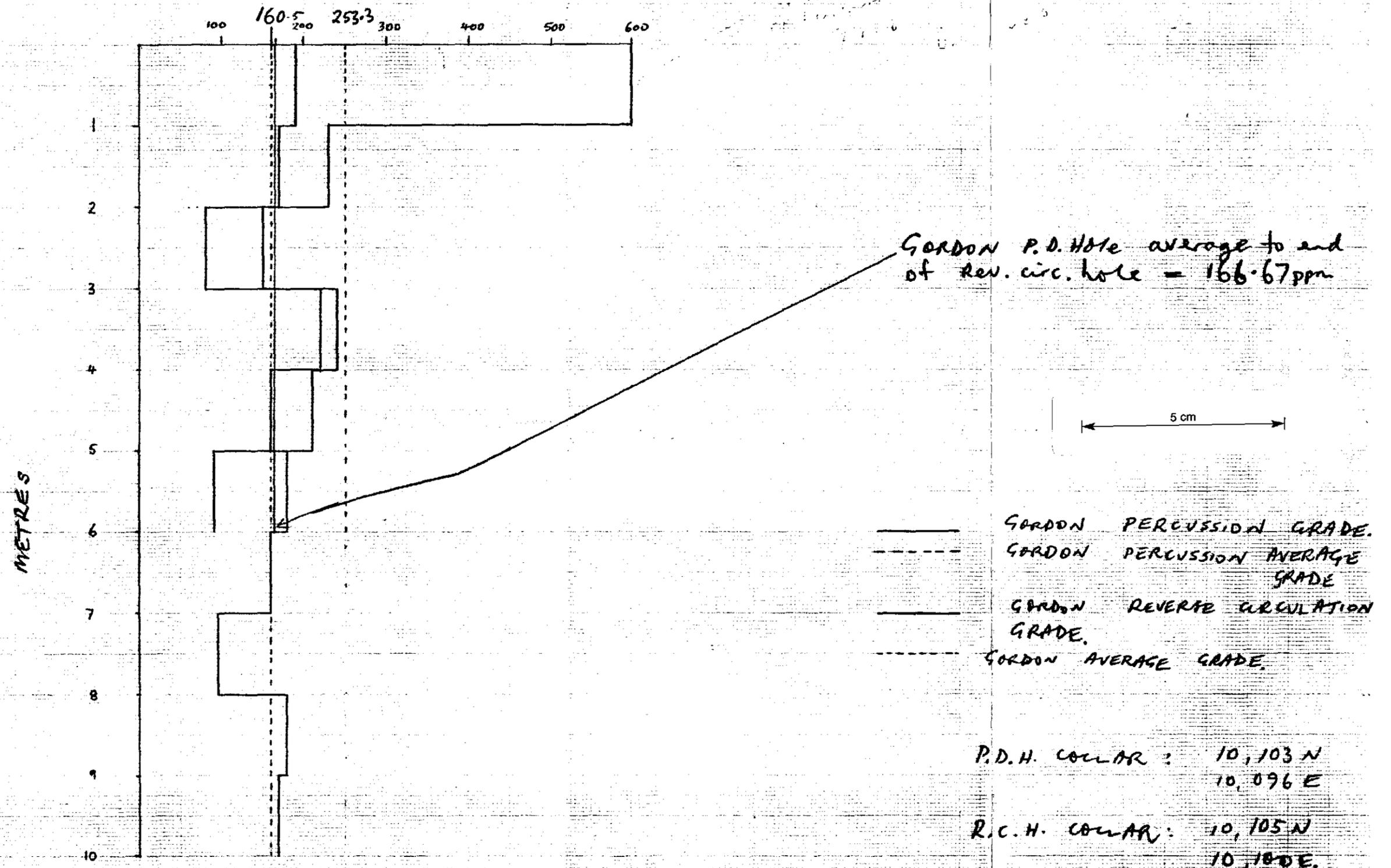
10 098 N
10 198 E

166042

FIG 2

043

GRADE



GORDON P.D. Hole average to end of Rev. circ. hole = 166.67 ppm

5 cm

- GORDON PERCUSSION GRADE.
- - - - GORDON PERCUSSION AVERAGE GRADE
- GORDON REVERSE CIRCULATION GRADE.
- - - - GORDON AVERAGE GRADE.

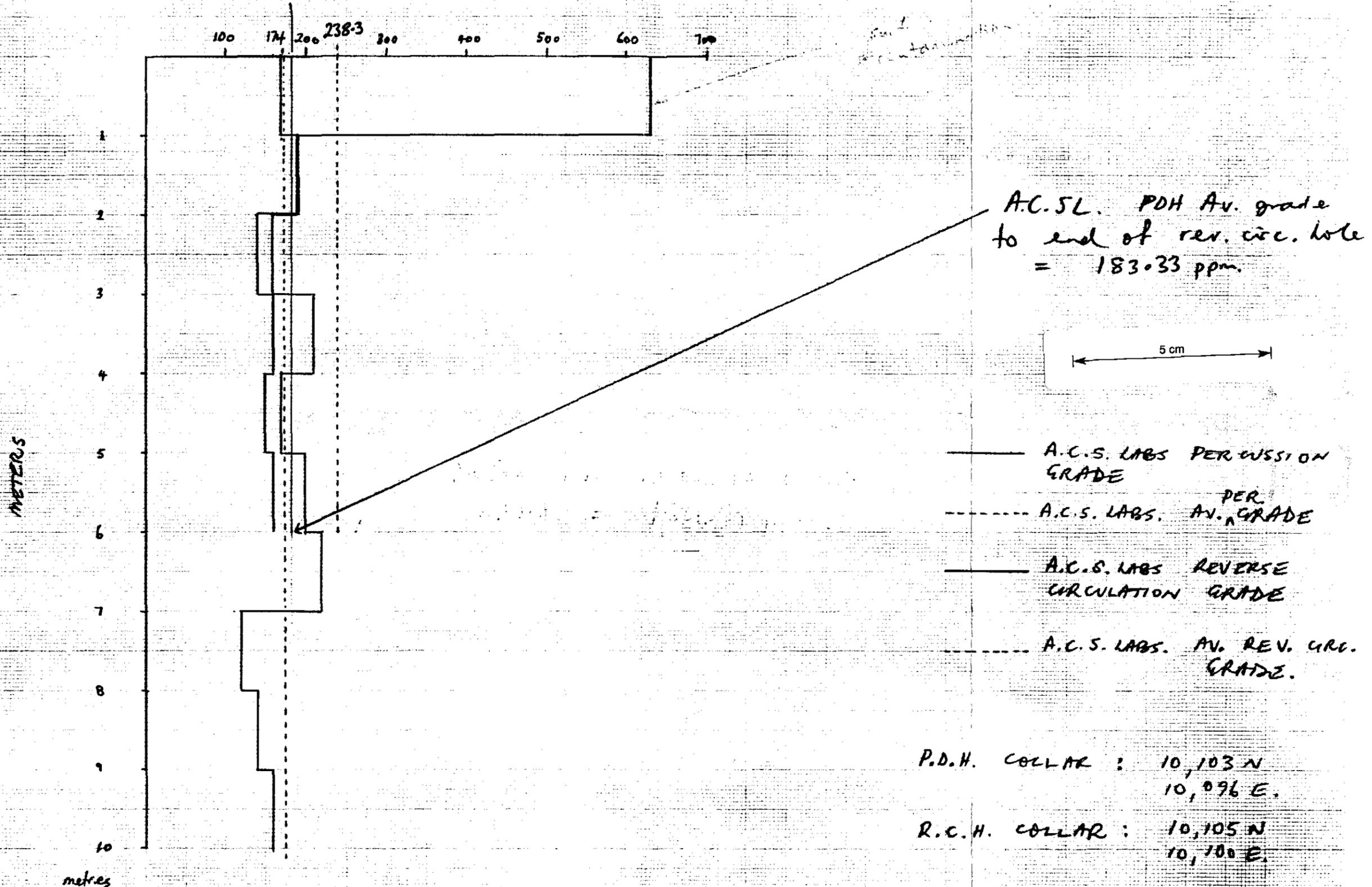
P.D.H. COLLAR : 10,103 N
 10,096 E

R.C.H. COLLAR : 10,105 N
 10,100 E.

GEOPEKO GORDON LAB. RESULTS.
 DRILLING GRADE PROFILE COMPARISONS - PERCUSSION VS. REVERSE CIRCULATION.

044

181 GRADE



A.C.S. LABS. P/L RESULTS.

DRILLING GRADE PROFILE COMPARISONS - PERCUSSION VS REVERSE CIRCULATION.

SITE 2 ; FIG 5.

043
GEOPEKO LIMITED

INTER - OFFICE MEMO

160045

TO M. ROGERS
FROM K. BURLINSON

Field Office, P.O. Box 120, Grassy, King Island, Tasmania 7256

Date..... 2-3-78

INSPECTION OF FLY BY NIGHT CLAIMS AT GLADSTONE 23-2-78 - 27-2-78.

The Fly By Night group of claims are held by Mr. R. Lawry of Gladstone, and are about 1Km South of the township of Gladstone, adjacent to the Gladstone - Stockdale Road. The claims were inspected with a view to arranging an option for a more detailed appraisal of the tin resources present.

The tin resource consists of a greisenized granite in which all the feldspars have been kaolinized. This greisenized granite is now a leucocratic muscovite bearing biotite free material, either due to its originally being a muscovite granite or being altered during greisenization and weathering. Through this unit there are numerous greisen veins, which are invariably harder than the greisenized granite. These are of 3 types:

- 1) quartz-muscovite, the most common
- 2) muscovite, where in excess of 90% of the rock is muscovite with minor quartz
- 3) quartz, showing a distinct granular texture

In addition some normal quartz veins occur which are of massive milky quartz.

Cassiterite is often visible in the greisen and quartz veins. According to Mr. Lawry the muscovite greisen veins are very rich. No assessment of the grade of the quartz or quartz bearing greisen veins has been made due to the lack of facilities for rock crushing. The grade of the greisen has been assessed during a small plant trial during which 500 cubic yards of material were washed. This produced an estimated grade of .02% SnO₂. During this trial only the soft greisenized granite contributed to the cassiterite collected as none of the harder materials were crushed. Some loss probably also occurred due to incomplete comminution of the material. I would therefore expect that complete processing of the body would give an average grade somewhat higher than this.

One sample of soft greisenized granite was panned to give a further grade estimate. The material was deliberately chosen remote from any greisen veins in order to assess the greisenized granite content itself. 12.25kg of sample gave a heavy mineral content of about 2 grams, probably 1 gram of which was SnO₂. This is about .008%.

The greisenized granite has been mapped, and possibly occurs over an area of some 400 m by 700m. At an assumed thickness of 10m some 4.5 million tonnes of material may be minable.

046

This figure is very rough and would need confirmation by a more detailed program involving drilling.

To the east, the degree of greisenization may be lessening, and this would need to be checked. About 1.5km to the N.E. there is an old worked area called Hardens Ravine. A brief inspection showed this also to be a greisenized granite, heavily kaolinized, leucocratic and muscovite bearing. The old workings here are much less extensive, which may not necessarily be due to lower grades as water availability may have been a problem for the old miners.

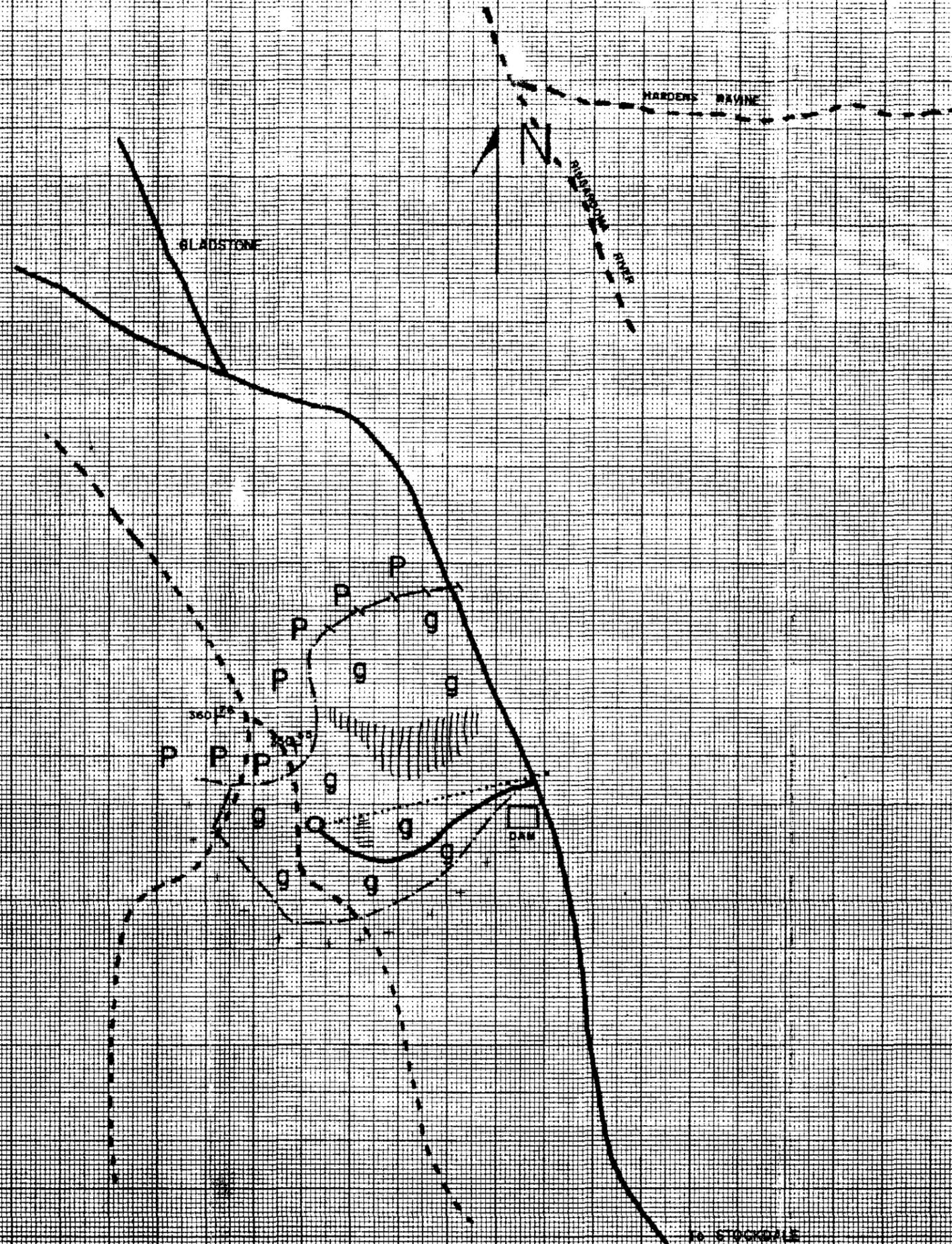
This greisenized zone may be connected with that at Fly By Night, which would considerably increase the potential of the area. However proper mapping of the area is needed to confirm this guess, as the intervening area was not inspected properly.

Seven bulk rock samples were collected within the Fly By Night area to provide estimates of the grade. Each of these samples is comprised of some 20 or 30 rock chips from scattered areas, and weighs some 25kg, in order to minimize the effect of localized variations upon the grade estimate.

Subject to confirmation of reasonable grade values, the Fly By Night seems to have sufficient volume of greisenized granite to warrant a closer inspection.

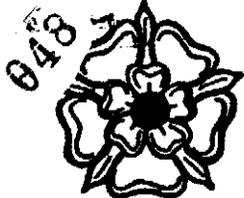
K. Burlinson

LAWRY'S "Fly by night" lease - GLADSTONE



5 cm

- LEGEND Scale: 1:10,000
- Road
 - Creek
 - Power line
 - Contact
 - Inferred contact
 - Unexploded mine
 - Plant site
 - Pyrites
 - Greenized ground with green veins
 - Old workings



166048

REFERENCE 2.

ANALYTICAL CONSULTING SERVICES LABORATORIES PTY. LTD.

50 MARY STREET, UNLEY, SOUTH AUSTRALIA
 P.O. BOX 3, UNLEY, S.A. 5061
 PHONE: 272-0442, 272-2378
 Telex: JAA82688

5733

MANAGING DIRECTOR: J. R. BEEVERS, B.Sc., Ph.D.

30th March 1978.

Mr. M. Rogers.,
 Geopeko Limited.,
 Devonport,
Tasmania.

Dear Murray,

From the message I got from my Laboratory manager yesterday, I presume you have not yet received my hand written letter giving the results of the tests on your large samples. This was posted on Thursday March 23rd. I can only assume it has got lost or delayed in the Australia Post dispute.

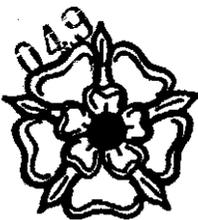
This letter is to be sent Ansett Air Express in the hope you will get it tomorrow, Friday March 31st.

I'll present the results in four separate tables.

WEIGHT OF FRACTIONS.

Sample No.	Before Crushing (KG)	After Crushing (KG)	Light Fraction After Panning (KG)	Rough heavies After Panning (G)	Bromo- form Heavis (G)
KR 2858	27.59	Not Known	15.32	208	1.01
9	33.77	"	21.30	141	2.05
60	32.32	"	15.30	180	1.02
1	33.23	"	22.82	266	6.17
2	21.38	"	15.12	335	35.12
3	40.57	"	22.88	336	1.46
4	52.28	"	27.75	433	30.60

Sample No.	Before Panning Sn ppm.	Light Fraction Sn ppm	Rough Heavies Sn ppm.	Bromoform Heavies Sn %
------------	------------------------------	-----------------------------	-----------------------------	------------------------------



166049

ANALYTICAL CONSULTING SERVICES LABORATORIES PTY. LTD.

60 MARY STREET, UNLEY, SOUTH AUSTRALIA
P.O. BOX 8, UNLEY, S.A. 5061
PHONE: 272 2412, 272 2578
Telex: AA82623

MANAGING DIRECTOR: J. R. BEEVERS, B.Sc., Ph.D.

71

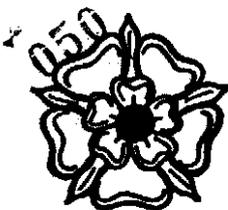
Kr 2858	330	340	1140	26.1
9	540	490	530	46.8
60	380	360	460	29.2
1	940	740	1230	29.4
2	2780	2440	1230	19.3
3	360	350	560	16.2
KR 2864	2830	2070	3620	37.6

Pontifex did a further panning on a new sample and retained some of the slimes. Results of this exercise are;

SMALLER STARTING WEIGHT.

Sample no.	Starting Weight (G)	Light Fraction (g)	Slimes (solids) Recovered (g)	Slimes lost (suspension) (g)	Rough Conc. (g).
KR 2858	199.6	102.5	52.5	28.7	15.9
9	166.5	94.1	39.8	21.0	11.6
60	132.1	72.3	31.2	20.0	8.7
1	199.2	125.2	36.2	14.2	23.6
2	199.1	153.0	15.0	10.1	21.9
3	241.3	136.1	40.3	32.4	32.5
KR 2854	241.2	148.6	43.5	15.4	33.7

The recovered slimes are clays and very fine mica⁴s which float on gentle agitation but sink relatively quickly when gentle agitation stops.



166050

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Telex: AAS2823

MANAGING DIRECTOR: J. R. BEEVERS, B.Sc., Ph.D.

Page 3.

TIN CONTENT OF FRACTIONS.

Sample No.	Starting Material Sn ppm .	Light Fraction Sn ppm .	Recovered Slime Sn ppm .	Rough Conc. Sn ppm.
KR 2858	330	220	510	1280
9	540	430	640	3220
60	380	250	520	480
1	1170	880	940	2930
2	2780	1550	1220	12350
3	360	230	410	690
KR 2864	2830	1060	880	16080

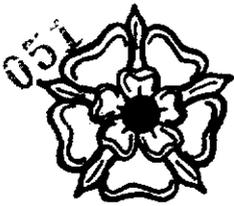
The calculated weight of Sn in each fraction doesn't sum up to the Sn in the starting material quite as well as I would have liked, but then we don't know just how much Sn has gone off in the slimes and I have no doubt that some (or a lot) did.

Most importantly, the 2mm size for pulverising is by no means optimum. Secondly it is almost certain that much of the Sn in most of the samples is fixed in the mica's either as finely divided cassiterite or tied up in the lattice.

Give me a call when you have had time to study the results.

Yours Sincerely


J.R. Beavers.



A.C.S. Laboratories Pty. Ltd.

50 MARY STREET

UNLEY, S.A. 5061

P.O. BOX 3

UNLEY, S.A. 5061

PHONE: 272 5733

166051

ANALYTICAL RESULTS

REFERENCE 3.

Samples from: Geopeko Ltd.

Area: Devonport

Samples of: Rocks

Preparation: crushed and Pulverised to 1mm

Batch No.: A 2321

Sheet No.:

Date:

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

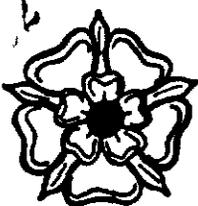
Sample Description	Sn ppm	Li ppm	Be ppm	F ppm	Mo ppm	W ppm
As-Received Samples						
KR 2858	330	575	25	4000	5	<20
KR2859	540	490	<20	6000	5	<20
KR2860	380	390	<20	4750	10	<20
KR2861	940	600	<20	8500	5	28
KR2862	2780	1250	35	19000	5	67
KR 2863	360	450	<20	4500	5	23
KR2864	2830	670	<20	9500	5	23
Y, Sc, Rb results to follow						

ANALYTICAL METHODS: Sn, Mo, W by G.F., F by Specific Ion Electrode

DISTRIBUTION: Devonport and Sydney



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A.C.S. Laboratories Pty. Ltd.

50 MARY STREET

UNLEY, S.A. 5061

P.O. BOX 3

UNLEY, S.A. 5061

PHONE: 272 5733

166052

ANALYTICAL RESULTS

Samples from: Geopako Limited.

Area: Devonport - Tasmania.

Samples of: Rocks.

Preparation: Crushed and pulverised.

Sheet No.: 1.

Batch No.: A 2336. Your O/N : K. No. 178.

Date: 16th May 1978.

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Sn ppm						
<u>As Received.</u>							
KR 2867	2840						
8	360						
KR 2869	760						
<u>Light Fraction.</u>							
KR 2867	1060						
8	240						
KR 2869	190						

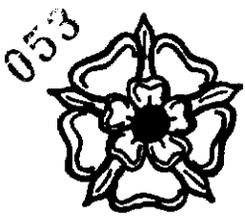
ANALYTICAL METHODS: Sn ppm by XRF.

DISTRIBUTION: Geopako Limited,
Devonport.

*4217

Signed *HL Bennett*

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A.C.S. Laboratories Pty. Ltd.

50 MARY STREET
UNLEY, S.A. 5081
P.O. BOX 3
UNLEY, S.A. 5081
PHONE: 272 5733

166053

ANALYTICAL RESULTS

Samples from: Geopeko Limited, P.O. Box 598,
Devonport
Area: Devonport Your Order KL3984

Samples of:

Preparation: Crushed and milled to 1 mm

Sheet No.: 1

Batch No.: A 2361

Date: 14.4.78

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Weight Kg	Sn ppm					
Original Sample							
KR 2903	23.926	460					
5	19.419	420					
6	24.919	970					
7	21.517	1480					
8	19.959	1420					
2911	17.293	190					
Light Fractions after Heavy Mineral Separation							
KR 2903		280					
5		200					
6		370					
7		550					
8		390					
11		100					

ANALYTICAL METHODS: XRF

DISTRIBUTION:

Signed



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166054

054

Central Mineralogical Services Pty. Ltd.



231 Magill Road
Maylands, S.A. 5069
Telephone 42 5659

13th March 1978

Dr. J.R. Beevers,
A.C.S. Laboratories Pty. Ltd.,
50 Mary Street,
UNLEY, SOUTH AUSTRALIA. 5061

REPORT CMS 78/3/14

YOUR REFERENCE: Verbal request,
Dr. J.R. Beevers

DATE RECEIVED: 9th March 1978

SAMPLE NOS.: KR 2858 - KR 2864

SUBMITTED BY: Dr. J.R. Beevers

WORK REQUESTED: Separation of Bulk
Samples

H.W. Fander
H.W. Fander, M.Sc.

053

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

166055

Date 13.3.78

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

IDENTIFICATION

Job No. CMS 78/3/14 Date Received: 9.3.78

Reference Verbal request, Dr. J.R. Beevers

Sample No. See below

Nature of Sample: Sands

DESCRIPTION **SECTION No. —**

a. Hand Specimen:

—

b. Microscopic:

As requested, the samples were separated in toto, using TBE (D=2.95). Sink and float products were returned to Dr. Beevers. The following weight percentages of heavy (sink) fractions were obtained.

<u>Sample No.</u>	<u>Weight of Total Sample</u>	<u>Wt. Sink Fraction</u>	<u>% Heavies</u>
KR 2858	208g	1.01g	0.49%
KR 2859	141g	2.05g	1.45%
KR 2860	180g	1.02g	0.57%
KR 2861	266g	6.17g	2.32%
KR 2862	335g	35.12g	10.48%
KR 2863	336g	1.46g	0.43%
KR 2864	433g	30.60g	7.07%

Due to the small amount of sink fraction, compared with float fraction, in most samples, minor mechanical entrainment of small, heavy grains in the float fraction is almost inevitable.

H.W. Fander, M.Sc.

056

166056 REFERENCE 2

Central Mineralogical Services Pty. Ltd.



231 McGill Road
Maylands, S.A. 5069
Telephone 42 5659

13th April 1978

Dr. J.R. Beevers,
A.C.S. Laboratories Pty. Ltd.,
50 Mary Street,
UNLEY. S.A. 5061

REPORT CMS 78/4/9

YOUR REFERENCE: Verbal request, Dr.
J.R. Beevers, 7.4.78

DATE RECEIVED: 7.4.78

SAMPLE NOS.: KR 2903, 2905-2908
and 2911

SUBMITTED BY: Dr. Beevers

WORK REQUESTED: Mineralogy

H.W. Fander
H.W. Fander, M.Sc.

Introduction, Comments

Six ground samples of tin-bearing rock material were received for heavy-liquid separation and mineralogical examination. Sample numbers were KR 2903, 2905, 2906, 2907, 2908 and 2911.

Representative 50 gram fractions were obtained by riffling the samples as received. They were separated (without further treatment) in TBE (D=2.95) and the heavy fractions were washed, dried, weighed and mineralogically examined. The light fractions were returned to A.C.S. Laboratories for analysis.

In all samples the heavy fractions were very small, and in order to produce sufficient material for assay, very large amounts of initial sample would have had to be separated, which seemed impractical. Instead, semi-quantitative mineralogical estimates of the cassiterite in the heavy fractions were made. This, together with light-fraction Sn analyses, will give fairly complete information on the distribution of cassiterite.

It can be seen that cassiterite in the heavy fractions accounts for the bulk of the total Sn present in the samples. The balance, which occurs in the light fractions, is probably present as very small cassiterite inclusions in quartz, and/or in solid solution in biotite mechanically entrained in those fractions, and from a practical point of view would not be recoverable in any case. Thus the evaluation of the prospect hinges on its grade and on the recoverability of cassiterite as demonstrated in the results of the heavy-liquid (i.e. gravity) separations. Naturally the situation will be strongly influenced by the amenability of such low-grade material to simple, cheap treatment methods. For instance, grinding may not be economic; hydraulic mining, Reichert Cones and tabling may be feasible, and unless the harder rocks (i.e. those not affected by hydraulic methods) carry higher Sn grades, they may have to be ignored or left in the ground at present. The economics would make the recovery of the finer cassiterite essential; sluicing is not likely to achieve this.

Results of Heavy-Liquid Separations

The following results were obtained on separating 50-gram representative samples in TBE.

KR 2903 - 0.020g = 0.04% Heavies	KR 2907 - 0.07g = 0.14% heavies
KR 2905 - 0.025g = 0.05% Heavies	KR 2908 - 0.09g = 0.18% "
KR 2906 - 0.19g = 0.38% Heavies	KR 2911 - <0.01g = <0.02% "

The percentages of heavy (sink) fractions are roughly in proportion to the Sn assays of the head samples, except in KR 2906 where

058

abundant topaz also occurs. Thus the situation is basically very favourable for a simple gravity separation, providing good, easy liberation can be achieved.

Mineralogy of Heavy Fractions

KR 2903 This consists of 85-90% cassiterite, almost entirely of free grains ranging from 50 μ to 600 μ in size, but mostly > 100 μ , with rare composite cassiterite/quartz composites. The cassiterite occurs as splinters, and is strongly pleochroic brown/red, with color zoning. The remainder consists mainly of topaz, with minor muscovite, traces of monazite, sphene, garnet and siderite.

KR 2905 About 80% of this fraction is cassiterite, as free grains 50 μ to 750 μ in size, with the bulk in the 100-150 μ range; traces of quartz/cassiterite composites occur. The remaining 20% is composed of biotite, topaz, goethite and muscovite, with minor monazite, traces of zircon, brookite and garnet.

KR 2906 Composed of 25-30% of cassiterite, as free grains 60-400 μ , mostly 100-150 μ , and occasional quartz/cassiterite composites. The bulk of the remainder (60-65%) is topaz (150-1000 μ , average 300 μ) with minor goethite, traces of muscovite and biotite.

KR 2907 Over 95% of this fraction consists of free cassiterite, ranging from 40 μ to 600 μ in size, and mostly around 150 μ . The remainder is goethite, topaz, muscovite and biotite.

KR 2908 Over 95% of this fraction is composed of free cassiterite, 50 μ to 1000 μ ; the bulk is around 300 μ , i.e. somewhat coarser than in the other samples. There are occasional quartz/cassiterite composites. The remainder consists of topaz and muscovite.

KR 2911 A very small sample, consisting of 30-40% of free cassiterite, 50 - 150 μ in size, with topaz, goethite, muscovite, traces of zircon and monazite. In view of the very small size of this sample, the results should be regarded with caution.

H.W. Fander, M.Sc.

166059

Central Mineralogical Services Pty. Ltd.

231 McGill Road
Maylands, S.A. 5069
Telephone 42 5659

12th May 1978

Dr. J.R. Beevers,
A.C.S. Laboratories Pty. Ltd.,
50 Mary Street,
UNLEY. S.A. 5061

REPORT CMS 78/5/6

YOUR REFERENCE: Verbal request,
Dr. J.R. Beevers

DATE RECEIVED: 2nd May 1978

SAMPLE NOS.: 2867, 2868, 2869

SUBMITTED BY: Dr. Beevers

WORK REQUESTED: Mineralogy

H.W. Fander
H.W. Fander, M.Sc.

060

166060

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 12.5.78

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/5/6 Date Received: 2.5.78
 Reference Verbal request, Dr. Beevers
 Sample No. 2867, 2868, 2869
 Nature of Sample: crushed rock

IDENTIFICATION
2867, 2868, 2869
CASSITERITE-BEARING SAMPLES

DESCRIPTION SECTION No.

a. Hand Specimen:

b. Microscopic:

Representative fractions were riffled out of each sample, and 50g portions were separated in TBE (SG = 2.95). The sink fractions were dried, weighed and mineralogically examined. Quantitative estimates were not possible, because of the wide grainsize range and the presence of coarse composite grains.

2867 Sink Fraction 0.90% of sample (by weight)

Composed of approximately 40% of fine, magnetic opaques, believed to be mainly rust (i.e. artificial contaminants), with 50 - 55% cassiterite, and 5 - 10% quartz and apatite; the quartz is composite with cassiterite. Free cassiterite ranges from 20 μ splinters to euhedral crystals up to 1mm; most crystals are > 100 μ .

2868 Sink Fraction 2.3% of sample

The bulk of this fraction consists of muscovite and topaz, with 2 - 3% magnetic opaques, and about 2% (or less) cassiterite, as grains and crystals from 0.3mm to 1 mm in size.

2869 Sink Fraction 0.34% of sample

Contains an estimated 20 - 30% cassiterite, as abraded grains (i.e. alluvial), with zircon (3-4%), magnetic opaques (10%), topaz (about 50%), muscovite, and traces of spinel and tourmaline. There are grains of limonite, and the grains are generally iron-stained. Cassiterite grains range from about 0.1mm to 0.4mm in size.

H.W. Fander, M.Sc.

166061

061
WARMAN INTERNATIONAL LTD.

(INCORPORATED IN VIC.)

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78/2224

RESEARCH & DEVELOPMENT DIVISION

17th May, 1978

Mr. K. Wright
Geopeko Ltd
Ridge Street
Gordon 2072

Dear Sir

Following our telephone conversation of the 16th May, I have prepared some suggestions which may help you evaluate the alluvial tin samples discussed. Cost breakdowns are based on the processing of some one hundred samples of 1-2 kg each. The suggestions are intended only as a guide and should be subject to final review when the samples become available.

1. Head assays

Consists of drying the samples at 100°C in an air oven, weighing, mixing on a rolling mat and taking an assay split of approximately 1/8 th (200 g) by quartering. Pulverise assay sample and analyse by atomic absorption spectroscopy or X-ray fluorescence. A further 1/8 th split to be retained as a check sample.

per sample \$9.20

2. Tin distribution

The remaining 3/4 sample will be wet or dry screened, depending on the amount of fines into three fractions;

coarse	+850 µm	(18 BS mesh)
sandy	+106 µm	(150 BS mesh)
fine	-106 µm	

062

.2.

The detailed procedure would consist of the following steps; weighing, screening, weighing fractions, sampling and assaying each of the fractions by atomic absorption or X-ray fluorescence.

per sample - \$20.00

Tin distribution between the above fractions should give some idea of the treatment methods and recoveries that could be expected. For instance coarse tin may indicate screening and jigging, sandy tin may indicate spirals and/or shaking tables and fine tin may indicate a flotation stage.

A first step may be to conduct the 'head assays' and evaluate these results before proceeding further.

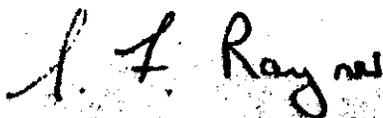
A note on analytical procedures. It is our practice to include repeating reference samples with each batch of assays as an internal check. On other occasions the client may request one in ten samples be checked by an alternative method or external laboratory. This latter case involves an extra cost factor.

Any further larger scale ore dressing operations could be performed on composites of the sizing samples.

I trust the above comments are sufficient for the moment. Should you wish to discuss the subject further please feel free to phone.

Yours faithfully

WARMAN INTERNATIONAL LTD.



S.F. Rayner

Metallurgist, Research and Development Division

GEOPEKO LIMITED

(Incorporated in New South Wales)

Phone: (02) 498-4566

INTER-OFFICE MEMO

Our Ref.: KGB:CC

Gordon, 7/6/78

Your Ref.:

From: K. Burlinson

To: M. Rogers

Re: Tin Determination at Fly by Night Leases

Enclosed are the results of the heavy mineral separations done by RZM on the second series of samples from these leases. The fractions were analysed on the company XRF at Gordon after careful pulverizing and splitting to minimize sampling errors in accordance with Kleeman 1967.

Analyses results on the fractions are:-

Sample No.	% Sn			
	Concentrates	Middlings	Tailings	Slimes
KR 2901	.131	.009	.008	.042
2902	.041	.028	.018	.041
2904	.093	.010	BLD	.033
2909	.228	.033	.017	.042
2910	.019	.007	.012	*

*: Slimes were not separated from this sample - they are included in tailings.

BLD: Below limit of Detection (about 50 ppm)

NB: The analyses are only of normal geochemical accuracy and not of ultimate assay standard.

Summary of my recalculations:-

Brief

1.

2.

3.

4.

Sample	Assay Type	%SnO ₂ in Sample	%Sn Present as Cassiterite	PpmSn on Original Sample	
				Analysed	Calculated
2858	CPX	.0012	.3	330	£
2859	"	.0037	5	540	£
2860	"	.0012	2.5	380	£
2861	"	.007	6	940	£
2862	"	.04	11	2780	£
2863	"	.0007	1.5	360	£
2864	"	.028	7.8	2830	£
2903	CHP	.036	-	460	563
2905	"	.04	-	420	515
2906	"	.11	-	970	1267
2907	"	.13	-	1480	1597
2908	"	.17	-	1420	1736
2911	"	LT.003	-	190	124
2901	CTX	.011	21	*	420
2902	"	.0025	6	*	320
2904	"	.004	13	*	230
2909	"	.018	27	*	500
2910	"	.00037	2	*	120

CPX - Heavy mineral conc formed by panning followed by XRF Sn at ACS.

CHP - " " " by heavy media followed by petrological estimation of cassiterite percentage.

CTX - Heavy mineral conc formed by tabling followed by XRF Sn at Gordon office.

* - Calculated value only - not analysed.

£ - Recalculations of raw grade on these samples give non-sensical results - presumably because of severe sampling error problems during sub sampling of analytical sized fractions by the laboratory.

LT - Less than.

Brief Conclusions:-

1. Sampling error on unconcentrated samples is severe and has rendered some of the original sample analyses to be useless.
2. The petrological estimate recalculations are consistently high whereas I would expect a statistical random fluctuation above and below the actual analysed raw value. Perhaps petrological misidentification - misestimation has occurred. These results are not trusted.
3. The two heavy mineral concentration methods are in reasonable self-agreement and also agree with Lawry's plant trial grades.
4. Pan and Table preconcentration followed by heavy media separation and XRF analysis is probably a valid technique for estimation of Sn as cassiterite which is both free milling and greater than 80 micron diameter.



K. BURLINSON
GEOCHEMIST

066 From:

The Metallurgist,
R.Z. Mines (Newcastle) Pty. Ltd.

Date: 10/4/78

Our reference: CD/AS

To: The Manager,
Geopeko Limited.

Your reference:

LABORATORY MEMO 23-78

Five Tin Bearing Samples Received from
Geopeko for Evaluation.

SAMPLE DESIGNATION

KR 2901	Crushed granite
KR 2902	"
KR 2904	"
KR 2909	"
KR 2910	"



Samples received were in a wet precrushed condition.

Sample KR 2909. (only)

Sieve Analysis.

B.S.S.	WT%	Cum WT%
+ 9.50 mm	NIL	NIL
+ 4.75 mm	2.86	2.86
+ 2.36 mm	18.67	21.53
+ 1.18 mm	21.85	43.38
+ 1.00 mm	5.82	49.20
+600 μ	15.25	64.45
+425 .	7.31	71.76
+300 .	6.11	77.87
+212 .	5.26	83.13
+150 .	4.80	87.93
+106 .	3.64	91.57
+ 75 .	2.68	94.25
Pan.	5.75	100.00
	100.00	

Samples were dried and split down by cone and quartering for sink float analysis. (T.B.E.) S G 2.96

166067

067

Sink Float Analysis. on subsample of unconcentrated -12 Slime free material

SLIME FREE	-12 Product		-12 Product Slime
Sample	WT% Sink	grams	WT% Sink
KR 2901	0.0114	.66	NIL
KR 2902	0.0237	1.73	NIL
KR 2904	0.2764	13.20	NIL
KR 2909	0.0479	2.97	NIL
KR 2910	0.0113	1.09	NIL

Approximate Loose Bulk Density.

Sample	WT lbs	Volume CuFt	B/D lbs CuFt	lbs. CuYd
KR 2901	48.50	0.522	92.91	F = 57.59
KR 2902	46.25	0.498	92.87	= 60.39
KR 2904	36.50	0.393	92.88	= 76.52
KR 2909	36.40	0.392	92.86	= 76.73
KR 2910	38.75	0.417	92.93	= 72.08
Average			93.0	2793.0

Primary Screening 12* (Kason Separator)

Sample	lbs WT u/s	lbs WT o/s	WT% o/s	WT% u/s
KR 2901	30.00	18.50	38.14	61.86
KR 2902	25.50	20.75	44.87	55.13
KR 2904	21.50	15.00	41.10	58.90
KR 2909	22.15	14.25	39.15	60.85
KR 2910	21.25	17.50	45.16	54.84

Sample Head WT lbs WT lbs +12* WT lbs -12* WT lbs -12* Slime WTlbs -12* Coarse

KR 2901	48.50	18.50	30.00	17.30	12.70
KR 2902	46.25	20.75	25.50	9.46	16.04
KR 2904	36.50	15.00	21.50	10.98	10.52
KR 2909	36.40	14.25	22.15	8.50	13.65
KR 2910	38.75	17.50	21.25	nd	nd

Sample	Head WT%	WT%	WT%	WT%	WT%
KR 2901	100.00	38.14	61.86	35.67	26.19
KR 2902	100.00	44.87	55.13	20.45	34.68
KR 2904	100.00	41.10	58.90	30.08	28.82
KR 2909	100.00	39.15	60.85	23.35	37.50
KR 2910	100.00	45.16	54.84	nd	nd

166068

 068
 Wet Table Feed -12* Coarse Material.

Sample	WTlbs Feed		WTlbs Conc.		WTlbs Mids		WTlbs Tail	
	WT%		WT%		WT%		WT%	
KR 2901	12.61	100.00	3.46	27.44	1.59	12.61	7.56	59.95
KR 2902	15.30	100.00	4.36	28.50	2.42	15.82	8.52	55.68
KR 2904	10.46	100.00	1.28	12.24	1.29	12.33	7.89	75.43
KR 2909	14.19	100.00	2.42	17.05	1.48	10.43	10.29	72.52
KR 2910*	21.25	100.00	1.59	7.48	0.14	0.66	19.52	91.86

***Note**

This sample was not deslimed before wet tabling.

Wet Table Sample Fractions as Weight % of Head Sample.

Sample	WT%		
	Conc.	Mids	Tail
KR 2901	7.13	3.28	15.59
KR 2902	9.43	5.23	18.42
KR 2904	3.51	3.53	21.62
KR 2909	6.63	4.07	28.27
KR 2910*	4.10	0.36	50.37

Comment.

The fine material in the samples was very difficult to wet table in the Laboratory due mainly to its sticky nature. These fines tended to be lost in the bin overflow.

Desliming of the samples was carried out by decantation of the -12* screen product.

FLWSHEET.

As received head sample.

12* screen oversize product.

12* screen undersize product.

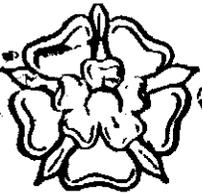
12* screen undersize slime product.

12* screen undersize deslimed product, wet table feed.

Wet table concentrate product.

Wet table middling product.

Wet table tailing product.



ANALYTICAL CONSULTING SERVICES LABORATORIES PTY. LTD.



80 MARY STREET, UNLEY, SOUTH AUSTRALIA
 P.O. BOX 3, UNLEY, S.A. 5001
 PHONE: 322-2412-272-2578
 Telex: AA82623

272 5733

MANAGING DIRECTOR: J. R. BEEVERS, B.Sc., Ph.D.

17th July 1978.

19 JUL 1978

Geopko Limited,
 P.O. Box 217,
 GORDON, N.S.W.

Attention Mr. Kingsley Burlinson

Dear Kingsley,

Since your visit to A.C.S. Laboratories late last month I have had a closer look at one of the samples from Batch A2361 - sample No. KR2905.

This sample was originally pulverised to less than 1mm. We took two new large splits (1000g) of this material, pulverised each to -40 mesh before further splitting to samples on which we did Sn analyses. We then took a third split and used this material for a particle size analysis. Each of the fractions was subjected to heavy mineral separation using bromoform, and both the light and heavy fractions were collected and weighed. The heavy fractions were too small to do other than a mineragraphic examination and this is being done by Ian Pontifex. The light fractions were subsampled in duplicate and Sn analyses made on each.

All these experimentally determined values are shown in Table 1.

Quite obviously since most of the contained Sn remains in the light fractions in these laboratory-controlled heavy mineral separation using a heavy liquid it is likely that any more will be recoverable in a sluicing operation. The separated heavy minerals were mainly in the +40 and +80 mesh fractions. Only a very small amount of heavy mineral was collected from the +200 mesh fraction and none at all from the -200 fraction.

I hope this information helps a little; at least the work was all done very carefully by myself and the numbers seem to balance reasonably well.

Yours Sincerely,

J.R. Beevers, B.Sc., Ph.D.

Managing Director.

c.c. M. Rogers, Devonport.

070

166070

KR 2905

Notes Received from Ian Pontifox over the Telephone on
Five Concentrates

- +200 A clean concentrate, composed entirely of single grains of cassiterite with an average size of the order of 200 μ . These were rare composite grains of cassiterite - muscovite but less than 5% of the whole.

- +120 Cassiterite, in single grains was the dominant mineral.

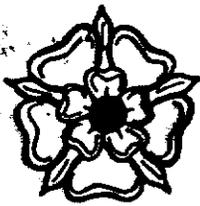
- +80 70% of the sample is composed of cassiterite-muscovite composites. Some muscovite grains (of the order of 500 μ) sometimes carry as many as four grains of cassiterite as inclusions.

30% of the sample are single cassiterite grains.

- +40 Muscovite-cassiterite composites, sometimes containing quartz form 95% of the sample.

5% of the sample are single grains of cassiterite.

- +20 A single grain of quartz-muscovite-cassiterite composite.



071

166071

A.C.S. Laboratories Pty. Ltd.
50 MARY STREET
UNLEY, S.A. 5061
P.O. BOX 8
UNLEY, S.A. 5061
PHONE: 272 5733

ANALYTICAL RESULTS

Samples from: Geopeko Limited

Area:

Samples of:

Preparation:

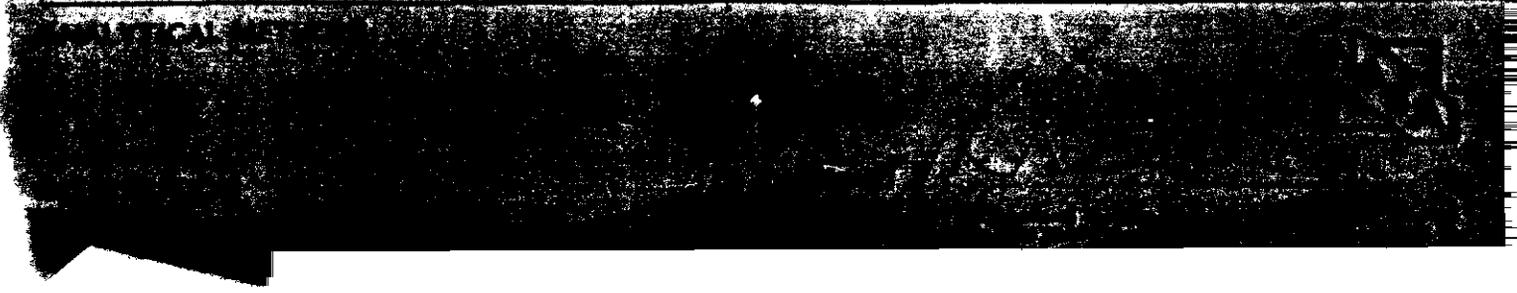
Batch No.: A

Sheet No.:

Date: 17.7.78

SAMPLES WILL BE DISPOSED OF AFTER TWO MONTHS UNLESS WE ARE OTHERWISE ADVISED

Sample Description	Weight g.	Weight of heavies g.	Sn ppm	Composite in Lights, Sn ppm
<u>TABLE 1</u>				
KR2905 1st split			390 (orig)	
KR2905 2nd split			340 (orig)	
+20 fraction	28	1 grain	140 (light)	} 238
+40 fraction (1)	516	0.1006	140 (light)	
+40 fraction (2)			130 (light)	
+80 fraction (1)	404	0.1755	230 (light)	
+80 fraction (2)			230 (light)	
+120 fraction	1.7	trace	170 (light)	
+200 fraction (1)	176	0.0256	500 (light)	
+200 fraction (2)			470 (light)	
-200 fraction	151		350 (light)	
-200 fraction			340 (light)	



072

166072

21st September, 1978.

FLY-BY-NIGHT

R. Lawry.

782819 This sample was stated to have been a pan concentrate obtained from jig tailings at R. Lawry's current operations. The sample was magnetically separated with the following result.

<u>Product</u>	<u>%Mass</u>	<u>Minerals Present.</u>
M/A1	0.6	Magnetite (includes piece of iron scale amounting to 0.2%).
M/A2	0.9	Magnetite.
M/A3	0.2	Spinel, ferro-magnesian.
M/A4	5.0	Spinel, mica, ferro-magnesian.
B	93.3	
	100.0	

The non-magnetics were assayed for tin with the result 76.0% Sn. Assuming no cassiterite in the magnetic fractions, the original sample would have assayed 70.9% Sn.

A sizing analysis was carried out on the non-magnetics with the following result.

<u>Size Fraction</u>	<u>%Mass</u>	<u>%Mass Cum.</u>
+355µm	0.2	0.2
+250µm	0.4	0.6
+180µm	3.4	4.0
+125µm	32.8	36.8
+ 90µm	39.1	75.9
+ 63µm	20.9	96.8
+ 45µm	2.9	99.7
- 45µm	0.3	100.0

782820

This sample was a pan concentrate derived from a sample taken from a high grade reef. The sample weighed 177.0g and assayed 68.3% Sn.

073

782821 This sample was a pan concentrate obtained from tailings from old workings. The sample was magnetically separated with the following result,

<u>Product</u>	<u>Mass</u>	<u>Minerals Present</u>
M/A1	Trace	Magnetite
M/A2	2.3	Spinel
M/A3	18.5	Spinel
M/AA	11.2	Monazite, spinel.
N	68.0	

The non-magnetics weighed 32.3g and assayed 66.0% Sn. The non-magnetics contained 3.36 mg of gold - 4 pieces less than 100um in size and 1 piece less than 1.5mm/

Assuming no cassiterite in the magnetic fractions, the original sample would have assayed 44.9% Sn.

Analyses by *(Signature)*.....
(Signature)

(Signature)
(H. K. Wellington)
Chief Chemist & Metallurgist.



DEPARTMENT OF MINES—TASMANIA

TELEPHONES:

Metallurgical Research ... } 44 2431-2
Laboratory ... } (2 lines)
Mines Inspection ... }
Explosives & Inflammable Liquids }

LAUNCESTON OFFICES
287 WELLINGTON STREET
SOUTH LAUNCESTON 7250

16th November, 1978

Mr R. Lawry,
GLADSTONE Tas. 7254

R773 - Tin Concentration at Fly-By-Night Mine

Dear Sir,

Please find attached report by Mr Rhodes on test work on samples taken during his visit to your operations at the Fly-By-Night. As you will read most tin is too fine to be recovered by jigs and a lot of tin appears to be in composite grain that would require grinding to liberate hence we are unable to recommend an economic recovery method.

Yours faithfully,

(H. K. Wellington)
Chief Chemist & Metallurgist



TELEPHONES:

Metallurgical Research }
 Laboratory } 44 2431-2
 Mines Inspection } (2 lines)
 Explosives & Inflammable Liquids }

LAUNCESTON OFFICES
 287 WELLINGTON STREET
 SOUTH LAUNCESTON 7250

15th November, 1978

R773

TIN CONCENTRATION TESTS ON DECOMPOSED GRANITE FROM THE
FLY - BY - NIGHT MINE, GLADSTONE

Introduction

R. Lawry, the operator of the Fly - By - Night mine, was experiencing difficulties in recovering the cassiterite and appealed for assistance. Accordingly a visit was made to the mine so that an assessment could be made of the operation.

The Operation

Mining of the decomposed granite was done by hydraulic sluicing with a nozzle. Washed material then gravitated via a channel in the ground to a sump, from where it was pumped by gravel pump to a trommel fitted with a 25mm screen. Trommel oversize was dumped. Trommel undersize gravitated to two jigs (each of two compartments) set in parallel. Primary jig concentrate was taken off continuously and gravitated to a cleaning jig with two compartments. Cleaner jig concentrate was also taken off continuously and gravitated to a two compartment recleaner jig. This concentrate was dressed to sale grade in a batch operation using a small sluice box.

A table was installed, but not yet in use, and it was planned to use this table in the final dressing operation.

Generally speaking, the operation was reasonably well set up and the main criticism made at the time to the operator, was that there was too much water in the feed to the primary jigs resulting in too fast a flow across the jigs which left little hope of recovering any fine cassiterite present in the feed.

The problem that R. Lawry had been experiencing was that he was not making sufficient tin concentrate from the jigs for viability.

On the day before the visit a concentrate clean-up was conducted and the over-all production was better than expected, but it is believed that a lot of the cassiterite was recovered from the channel leading to the gravel pump sump, and had not reached the jigs.

Samples

Two samples of feed material were gathered from a number of locations across the working face of the decomposed granite. One sample was called "fine feed" and the second sample was called "coarse feed" because the grain size of one part of the working face appeared to be coarser than the remainder, the two parts being separated by a fault line. The operator was currently working on "coarse feed" because it broke up more readily with the nozzle than the "fine feed".

A third sample of middlings from the dressing of the concentrates was taken for examination.

The samples were registered as follows:-

- 782978 - "Fine feed" fg. GRISE N
- 782979 - "Coarse feed" cg. GRISE N.
- 782980 - Tin Dressing Middlings.

Test Work

Representative samples were taken from each of the above samples and sizing analyses were carried out with tin assays on the size fractions to establish tin distributions.

Concentration tests were done on each of the feed samples in the following manner:- The samples were first wet screened on a 45cm diam. Sweco screen fitted with a 2.41mm screen cloth. The oversize was hand-screened on a 12.70mm screen. The screen undersize (-2.41mm) was pumped to a 76mm Warman cyclone. Cyclone overflow was discarded and the cyclone underflow gravitated to a 15cm x 10cm Denver jig. The jig concentrate was cleaned on a 7.5cm x 5cm Denver jig to produce a final concentrate.

A sample of the tin dressing middlings was passed over the Rapid dry magnetic separator in order to determine what minerals were present.

077

Results

The sizing analysis and tin distribution of the three samples were as follows:-

"Fine feed" Reg. No. 782978

<u>Size Fraction</u>	<u>% Mass</u>	<u>% Mass Cum.</u>	<u>Assay</u>	<u>Sn</u>	<u>Distribution</u>
			<u>% Sn</u>	<u>%</u>	<u>% Cum.</u>
+12.70mm	3.0	3.0	0.02	3.0	3.0
+9.53mm	0.2	3.2	<0.01	1.5	4.5
+4.75mm	3.3	6.5			
+2.36mm	11.4	17.9	0.01	5.4	9.9
+1.18mm	21.9	39.8	<0.01	10.8	20.7
+600µm	14.2	54.0	0.02	13.8	34.5
+300µm	9.2	63.2	0.02	8.9	43.4
+150µm	8.3	71.5	0.05	20.2	63.6
+75µm	6.2	77.7	0.06	18.2	81.8
+38µm	3.6	81.3	0.05	8.9	90.7
-38µm	18.7	100.0	0.01	9.3	100.0

calculated head assay

>0.018 % i.e. >180 g/t

<0.020 % i.e. <200 g/t

"Coarse Feed" Reg. No. 782979

<u>Size Fraction</u>	<u>% Mass</u>	<u>% Mass Cum.</u>	<u>Assay</u>	<u>Sn</u>	<u>Distribution</u>
			<u>% Sn</u>	<u>%</u>	<u>% Cum.</u>
+12.70mm	0.1	0.1	0.05	Trace	Trace
+9.53mm	0.8	0.9	0.02	6.1	6.1
+4.75mm	5.6	6.5			
+2.36mm	16.1	22.6	0.02	15.2	21.3
+1.18mm	17.9	40.5	0.01	8.5	29.8
+600µm	10.4	50.9	0.02	10.0	39.8
+300µm	7.5	58.4	0.03	10.4	50.2
+150µm	7.1	65.5	0.04	13.8	64.0
+75µm	6.1	71.6	0.05	14.2	78.2
+38µm	4.4	76.0	0.05	10.4	88.6
-38µm	24.0	100.0	0.01	11.4	100.0

calculated head assay

0.021 % i.e. 210 g/t

Tin Dressing Middlings Reg. No. 782980

<u>Size Fraction</u>	<u>% Mass</u>	<u>% Mass Cum.</u>	<u>ASSAY</u>	<u>Sn Distribution</u>	
			<u>% Sn</u>	<u>%</u>	<u>% Cum.</u>
+355µm	16.5	16.5	60.6	31.8	31.8
+250µm	24.2	40.7	43.3	33.5	65.3
+180µm	19.1	59.8	29.2	17.8	83.1
+125µm	28.1	87.9	15.9	14.3	97.4
+90µm	10.2	98.1	5.3	1.7	99.1
+63µm	1.7	99.8	15.5	0.9	100.0
+45µm	0.1	99.9			
-45µm	0.1	100.0			

calculated head assay 31.4

The results of the concentration tests were as follows:-

"Fine Feed" Reg. No. 782978

<u>Product</u>	<u>% Mass</u>	<u>Assay</u>	<u>% Distribution</u>
		<u>% Sn</u>	<u>Sn</u>
+12.70mm	3.0	0.02	1.6
+2.41mm	13.7	0.02	7.1
-2.41mm cyclone O/F	23.3	0.03	18.3
-2.41mm cyclone U/F J1T	53.6	0.04	56.0
J2T	6.4	0.05	8.4
J2C	Trace	9.0	8.6
calculated head assay	100.0	0.038 %	100.0
		or 380 g/t	

"Coarse Feed" -Reg. No. 782979

<u>Product</u>	<u>% Mass</u>	<u>Assay</u>	<u>% Distribution</u>
		<u>% Sn</u>	<u>Sn</u>
+12.70mm	0.1	0.05	Trace
+2.41mm	21.4	0.02	11.3
-2.41mm cyclone O/F	25.0	0.03	19.8
-2.41mm cyclone U/F J1T	48.7	0.04	51.3
J2T	4.8	0.13	16.3
J2C	Trace	2.3	1.3
calculated head assay	100.0	0.038 %	100.0
		or 380 g/t	

The results of the magnetic separation test on the tin dressing middlings were as follows:-

<u>Product</u>	<u>% Mass</u>	<u>Minerals Present</u>
M/A1	0.1	iron scale
M/A2	1.5	ilmenite
M/A3	30.0	spinel
M/A4	18.8	spinel, monazite
N	49.6	cassiterite + about 8% other minerals (quartz, topaz, rutile, zircon)

Discussion

The sizing analyses of the "fine feed" and "coarse feed" samples show that the sizings are very similar. The "fine feed" sample does in fact have more +12.70mm material than the "coarse feed" sample. However the "coarse feed" sample has greater quantities of +9.53mm, +4.75mm and +2.36mm material than the "fine feed", but it also has more -38 μ m material than the "fine feed".

The tin distributions of both samples show that about 50% of the tin is finer than 300 μ m and would be difficult to recover by jigging.

In the concentration tests the cyclone made a separation at about 38 μ m with a loss of about 19% of the tin. The primary jig tails (J1T) lost over 50% more of the tin. It therefore seems that some of the cassiterite must occur as small particles attached to larger pieces of quartz as composites.

In the preparation of a cleaner jig concentrate (J2C) in the concentration test on "Coarse Feed", a low grade concentrate was being produced. In an attempt to raise the grade of concentrate, the hutch water addition was increased in comparison with that used in the concentration test on "Fine feed". The effect of this increased hutch water can be seen in the assays of the cleaner jig tails (J2T) - 0.13% Sn with increased water in the case of "Coarse feed" compared with 0.05% Sn with "Fine feed".

The overall results of both concentration tests can only be described as very poor. Recovery in the primary jig in each case was only about 17% and recovery in the cleaner jig was less than 10% in each case.

The sizing analysis of the tin dressing middlings indicates that if this product was screened on 355 μ m and 180 μ m screens, it should be possible to concentrate the size fractions so obtained with greater ease than can be achieved with unsized material.

The calculated assays of the "fine" and "coarse" feed samples are similar. From the sizing analyses the calculated assays were about 200 grams per tonne, and from the concentration tests the calculated assays were about 380 grams per tonne.

Conclusions

Extreme care must be used in this operation to minimise the cross-flow water and to closely control hutch water on all stages of jigging, and even so it is unlikely that a satisfactory tin recovery can be made by jigging.

There is very little difference between "fine feed" and "coarse feed".

Screening the tin dressing middlings on 355µm and 180µm screens should enable a satisfactory grade of tin concentrate to be produced by tabling the screen fractions.

L. J. Rhodes
(L. J. Rhodes)
Senior Metallurgist

H. K. Wellington
(H. K. Wellington)
Chief Chemist & Metallurgist

166081



GEOPEKO

A DIVISION OF PEKO-WALLSEND OPERATIONS LIMITED

MAPS TO ACCOMPANY REPORT

DKSG

ON

THE FLY - BY - NIGHT TIN PROSPECT,

GLADSTONE, N.E. TASMANIA.

OPEN FILE

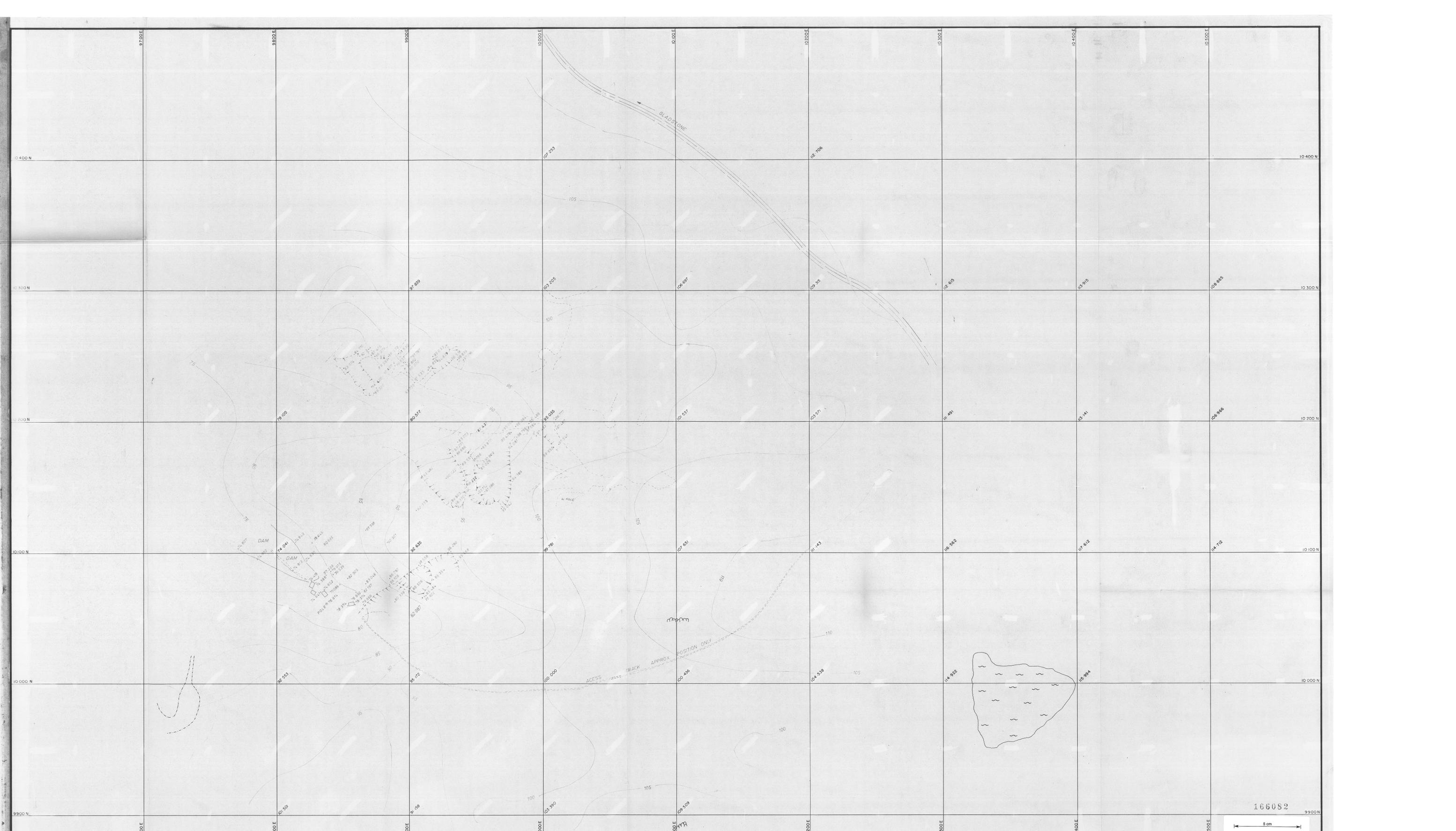
G.L. BUCKLAND

MICROFILMED

DEVONPORT

APRIL, 1979.

A 7/79



166082



- LEGEND:
- grid position, R. L.
 - building
 - approximate position of 90m R.L. contour
 - excavation
 - water hole
 - tailings race
 - mulloch dump

DATE: JAN '79

GEOLOGIST: G.L.B.

DRAWN: J.P.M.

CHECKED:

GEOPEKO
A DIVISION OF PEKO-WALLSEND OPERATIONS LTD

SCALE: 1:1000

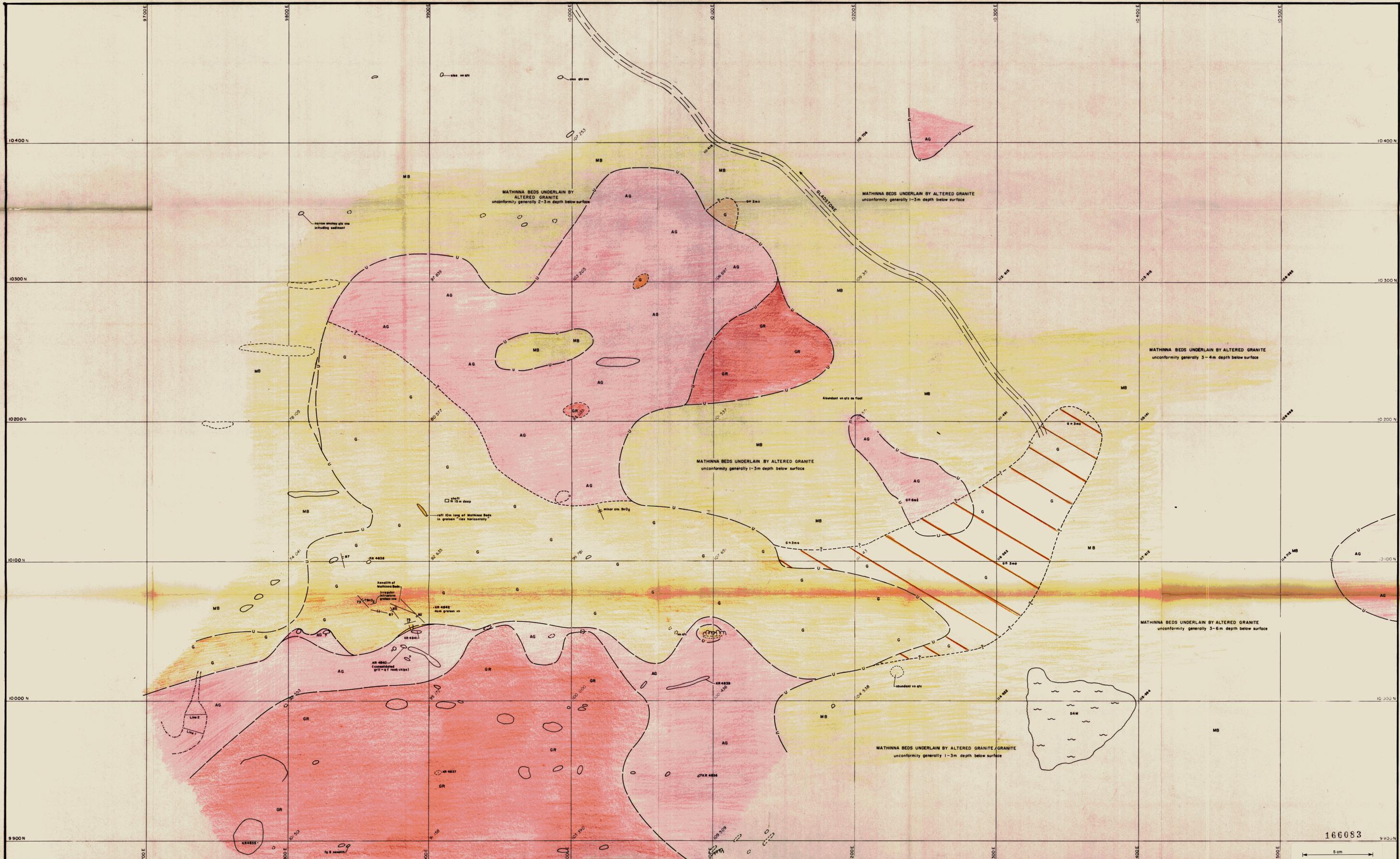
No. KFBN- 2

"FLY BY NIGHT" TIN PROSPECT

TOPOGRAPHIC MAP with SURVEYED GRID
and EXCAVATIONS

166082

6709



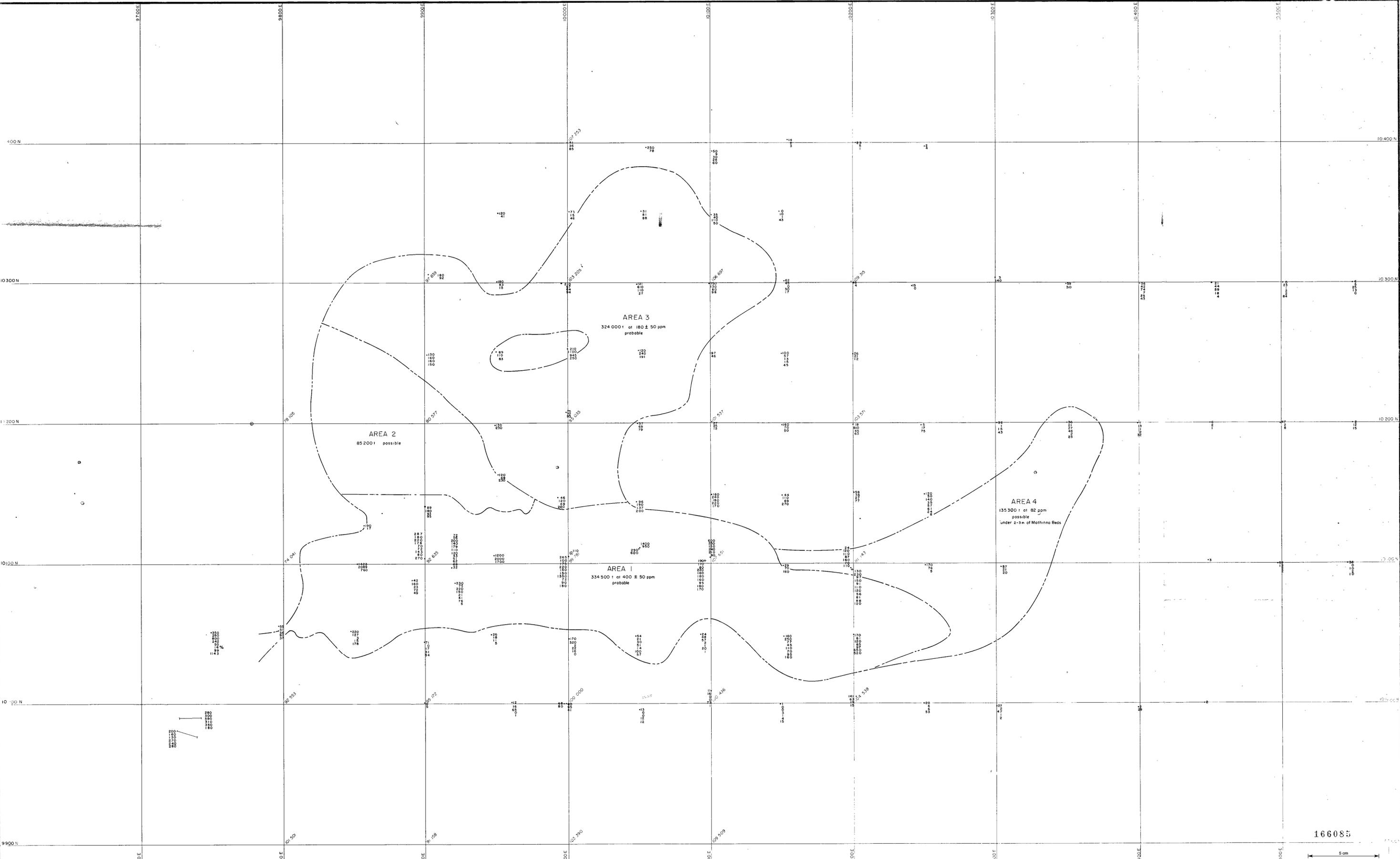
LEGEND:
This geological interpretation map is based upon surface outcrop mapping data and logging of drilling, cuttings and core.

SYMBOLS		STRUCTURAL		GEOLOGICAL INTERPRETATION	
	grid position, R.L.		outcrop limit		Interpreted presence of greisen, immediately beneath Mathinna Beds; G 4 = 3m indicates greisen approx. 3m down hole depth.
	tailings		rubble boundary		GREISEN quartz, muscovite.
	mullock dump		approximate contact		ALTERED GRANITE quartz, kaolinitised feldspars, minor muscovite.
	outcrop sample location and number		unconformity		GRANITE feldspar, quartz, biotite.
			interpreted contact		MATHINNA BEDS quartzites, indurated siltstones.
			strike and dip of quartz and greisen veins		

188M M.N.
11.77

DATE JAN '79
GEOLOGIST G.L.B.
DRAWN J.P.M.
CHECKED

GEOPEKO
A DIVISION OF PEKO-WALLSEND OPERATIONS LTD
No KFBN-3
SCALE 1:1000
"FLY BY NIGHT" TIN PROSPECT
GEOLOGICAL INTERPRETATION MAP
WITH SURFACE GEOLOGY
791354 6710



LEGEND
 • Reverse circulation drill hole
 + Percussion drill hole
 ○ Diamond drill hole
 ⊙ Auger pre-collar hole
 — RESOURCE AREA BOUNDARY
 LIMIT OF DETECTION IS 50ppm RESULTS LESS THAN 50ppm ARE NOT CONSIDERED SIGNIFICANT

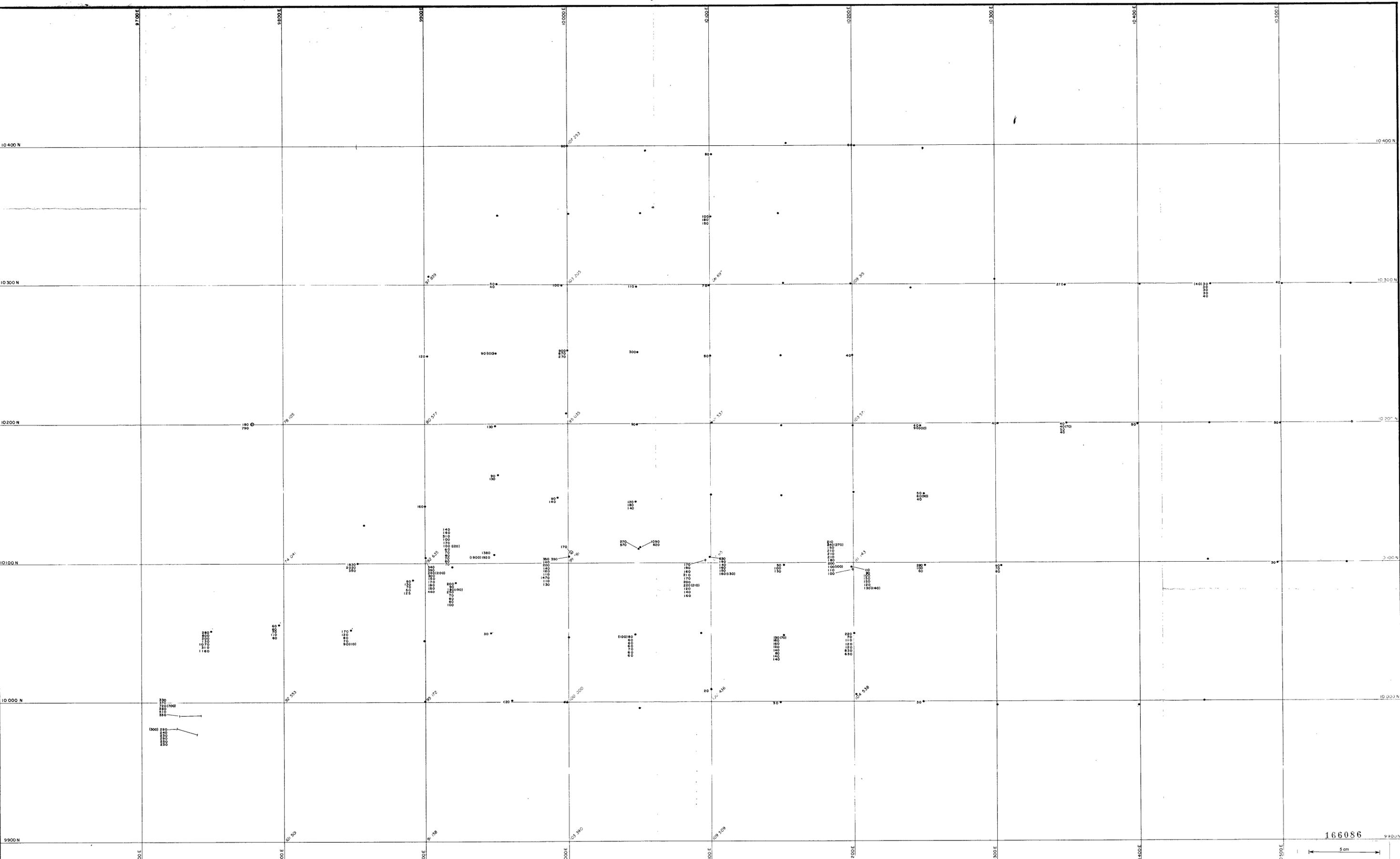
166085

5 cm

GEOPEKO
A DIVISION OF PERI WALLSEND OPERATIONS LTD
SCALE 1:1000
No. KFBN-5

"FLY BY NIGHT" TIN PROSPECT
19-1354

GEOCHEMICAL RESULTS
 Sn ppm GEOPEKO GORDON LABORATORIES
 with
RESOURCE AREAS
 6712



LEGEND
 • Reverse circulation drill hole
 + Percussion drill hole
 ○ Diamond drill hole
 ⊙ Auger pre collar hole


 DATE JAN 79
 GEOLOGIST G.L.B.
 DRAWN J.P.M.
 CHECKED:

166086
 SCALE 1:1000
 GEOPEKO
 A DIVISION OF PEKO-WALLSEND OPERATIONS LTD
 No KFBN-6
 "FLY BY NIGHT" TIN PROSPECT
 GEOCHEMICAL RESULTS
 Sn ppm A.C.S. LABORATORIES
 79-1254 6713