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COMBINED ANNUAL/FINAL REPORT  
FOR THE PERIOD ENDED 24 FEBRUARY 1988

EXPLORATION LICENCE 12/86  
MONTAGU AREA, TASMANIA

C.R. 5518

MARCH 1988

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COMBINED ANNUAL/FINAL REPORT  
FOR THE PERIOD ENDED 24 FEBRUARY 1988

EXPLORATION LICENCE 12/86  
MONTAGU AREA, TASMANIA

BY: W.C. KOSSERIS

MARCH 1988

Distribution: (1) Mines Department  
(1) Manganese Development Committee  
(1) W. Kossieris  
(1) Brisbane Office  
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CONTENTS

	<u>Page</u>
CONCLUSIONS AND RECOMMENDATIONS	1
1. INTRODUCTION	2
2. EXPLORATION PHILOSOPHY	3
3. GEOLOGY	4
3.1 PRECAMBRIAN	4
3.1.1 Orthoquartzite	4
3.1.2 Limestone	5
3.2 CAMBRIAN	6
3.2.1 Igneous Rocks	6
3.2.2 Sedimentary Rocks	7
3.2.3 Structure	8
3.3 TERTIARY	8
3.4 Montagu River Area	10
4. GEOCHEMISTRY	11
4.1 Tertiary Alluvials	11
4.2 Lithological Sampling	15
5. DISCUSSION AND RESERVE POTENTIAL	16
REFERENCES	17

APPENDICES -

- Appendix 1: Petrology - Mineralogical Report No. 5033 from Ian Pontifex & Associates dated 10 July 1987
- Appendix 2: Rock Chip Assays - A.L.S.
- Appendix 3: Mass of Alluvial Samples
- Appendix 4: Part A - Analytical Results  
Part B - Chromite Grade of Individual Samples

FIGURES -

- Figure 1: Location Map (A4-817)
- Figure 2: Composite Vertical Section (D and H) - Walkers Gravel Pit (A4-974)
- Figure 3: Vertical Section E - Walkers Gravel Pit (A4-975)
- Figure 4: Flow Chart of Analytical Procedures
- Figure 5: Vertical Section E Showing Distribution of Chromite (A4-991)
- Figure 6: Known and Potential Areas of Chromite-bearing Tertiary Alluvials (A3-561)

PLATES -

- Plate 1: Factual and Interpretative Geological Map (A1-858)

CONCLUSIONS AND RECOMMENDATIONS

Exploration undertaken by BHP in the Montagu area involved the systematic sampling of chromite-bearing Tertiary alluvials. The conclusion drawn from this exploration programme is that a potential in-situ reserve of 8,000-13,000 tonnes of  $\text{Cr}_2\text{O}_3$  is inferred to exist. This figure range is at least an order of magnitude below the required tonnage needed by BHP for ferro-alloy applications.

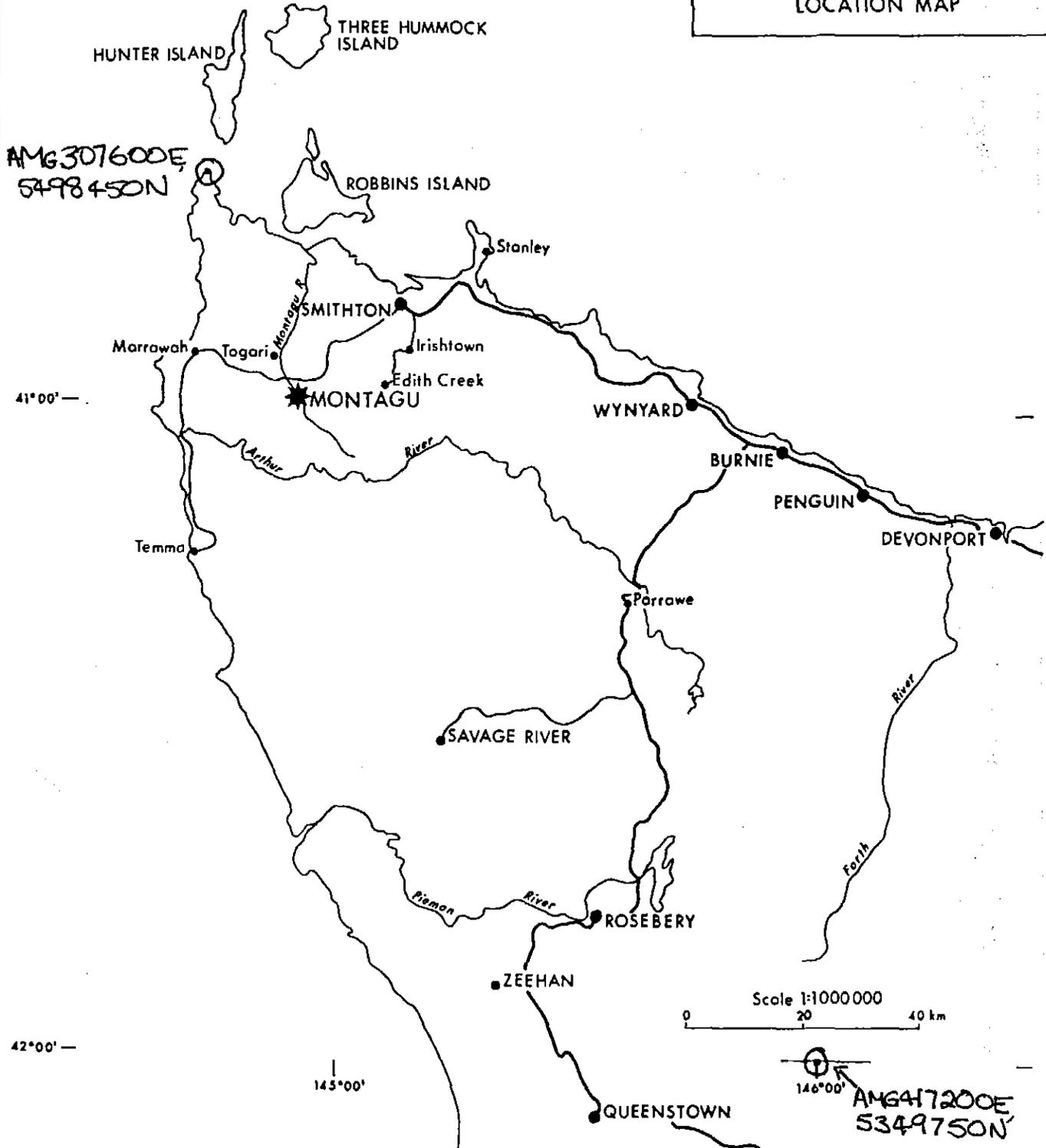
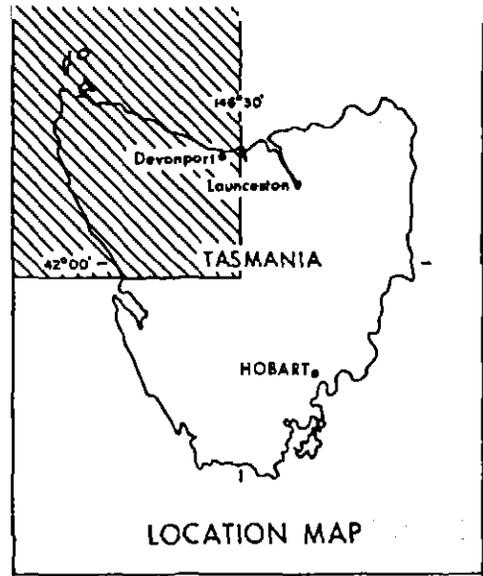
Therefore, no further work is warranted over the Montagu area and it is recommended that Exploration Licence 12/86 be relinquished.

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AMG REFERENCE POINTS ADDED



Prepared: W. Mead

Drawn: W. Mead

Centre: Brisbane

THE BROKEN HILL PROPRIETARY CO. LTD.  
MINERALS EXPLORATION DEPARTMENT

LOCATION MAP, MONTAGU  
CHROMITE OCCURRENCE

Project No.: K02

Drawing No.: A4-817

FIGURE 1

## 1. INTRODUCTION

BHP Minerals Limited was granted Exploration Licence 12/86, referred to herein as Montagu, on 24 February 1987 for a period of one year. The tenement occupies an area of 249 km<sup>2</sup> and is located in the far northwest of Tasmania (see Figure 1). Access is gained via the Bass Highway and well maintained Forestry tracks.

Chromite is the economic mineral of interest in the Montagu area; more specifically, metallurgical grade chromite for FeCr alloy manufacture.

The Montagu area was targeted because:-

- i) Alluvial deposits in the area are known to be chromite-bearing.
- ii) This chromite is of high quality, i.e. Cr:Fe is greater than 2.
- iii) Advantageous exploitation costs associated with alluvial mining.
- iv) Close proximity to TEMCO - BHP's ferro-alloy plant.

## 2. EXPLORATION PHILOSOPHY

The realisation that alluvial deposits in the Montagu area contained chromite was made prior to 1955 and subsequent work by various organisations confirmed the fact that significant chromite grades exist.

Reconnaissance work was undertaken by BHP in 1986. It involved geological traversing and geochemical sampling of alluvials for chromite quality purposes. Micro-probe work revealed that the chromite grade was suitable for metallurgical applications. As a result of this preliminary work, two target types were outlined:

- i) The previously documented visible alluvials of the Salmon River area.
- ii) Potential alluvial development underlying the Montagu River area. This target-type was considered significant because of the very large reserve potential available (i.e. greater than 50 km<sup>2</sup>).

To test the above two target-types, initial exploration work was designed to systematically sample accessible alluvial deposits and assess geologically the Montagu River area.

This work was undertaken in March/April of 1987.

### 3. GEOLOGY

Exploration Licence 12/86 is located over the central-western portion of a regional structural entity known as the Smithton Trough. The Smithton Trough is a triangular-shaped Cambrian basin which developed as a result of contemporaneous tectonism and deposition on Precambrian basement of the Rocky Cape Block.

A factual and interpretative geological map of the Montagu tenement is displayed in Plate 1. The geology can be subdivided into Precambrian orthoquartzites and limestones; Cambrian sediments and basalts; Tertiary alluvial deposits; and Quaternary alluvium.

#### 3.1 PRECAMBRIAN

##### 3.1.1 Orthoquartzite

This unit comprises the basement geology (Rocky Cape Block) of the Montagu area and outcrops to the immediate west of the tenement. Lithologically, it is dominated by orthoquartzite, although slate and to a lesser extent limestone, are found in the sequence. The orthoquartzite is a massive, pale grey to white unit and represents a recrystallised, fine-medium grained, well sorted quartz sandstone. Bedforms are lenticular and display well developed structures such as low-angle, vari-directional trough cross-bedding and small-scale asymmetrical ripples. By contrast, the slate is very well cleaved (pencil texture), grey-brown in colour, and commonly micaceous. An interesting feature is the poor vegetation development in areas containing these slates as bedrock. The limestone of this unit has undergone complete silicification and now occurs as a cryptocrystalline "chert".

008

Relict carbonate textures such as oolites have been described in thin section (see MS/TS/02, Appendix 1), although in hand-specimen, these are difficult to see - most of the rock consists of a granular quartz mosaic with grains smaller than 0.05 mm.

A shallow marine environment is inferred for the deposition of the orthoquartzite unit, with wave action prominent.

### 3.1.2 Limestone

This unit has been assigned a Precambrian age, although doubt exists; it is possible that the limestone is Early Cambrian. It is inferred that the limestone unconformably overlies the orthoquartzite of 3.1.1 (Williams and Turner, 1974). Outcrop is particularly poor as the unit underlies the densely vegetated and flat-lying Montagu River area, although by inference, it occupies the largest areal extent of any unit in the tenement.

In outcrop, the limestone is massive, light brown to buff to grey in colour, and displays the typical weathering texture of carbonates. In hand-specimen, the rock is very siliceous (cryptocrystalline) and often cut by calcareous veins and veinlets. Thin section description (MS/TS/66,68,69) confirms this view as the original limestone has undergone intense silicification and partial dolomitisation, completely changing its texture - although original oolites were observed in MS/TS/69, and intraclasts were seen in MS/TS/68 (see Appendix 1).

### 3.2 CAMBRIAN

A variety of lithologies make up the Cambrian system in the Montagu area - a feature related to the mode of formation, i.e. faulting and rifting, associated igneous activity and sediment accumulation. Such lithologies include basalt, dolerite, limestone/dolomite, shale, siltstone and sandstone. Both an unconformable and faulted contact exists between the Cambrian and Precambrian - the Cambrian rests upon the limestone of 3.1.2 and is in fault contact with both Precambrian units.

#### 3.2.1 Igneous Rocks

Basalt is the dominant igneous rock-type and outcrops in two styles - i) as intercalated lenses within the sediment-dominated Cambrian sequences; and ii) as massive flows in the extreme southeast of the tenement. The basalt has undergone intense weathering, causing the almost total disappearance of primary textures. In hand-specimen, the rock is composed chiefly of red-yellow-brown clays and limonite, with relict textures such as vesicles and ophitic mineral growth sometimes visible. Thin section work reveals the presence of quartz, smectitic clays and limonite, all of which are secondary. Relict original constituents include titaniferous pyroxene, titanomagnetite (both altered to leucoxene), and magnetite (MS/TS/05,40,41 - see Appendix 1). A rock-chip sample of the basalt (MS/RC/41, Appendix 2) revealed an interesting array of results - Ti 5.42%; Zr 715 ppm; Nb 146 ppm; Cr 1700 ppm; and Ni 590 ppm. As well as basaltic flows, a small sill of dolerite was observed outcropping in a road-cutting of the Bass Highway in the northwest of the tenement.

### 3.2.2 Sedimentary Rocks

This unit is dominated by intercalated shale and siltstone with minor sandstone and limestone/dolomite. The argillaceous units occur as finely bedded and laminated planar bedforms, usually between 10mm to 100mm thick. They are commonly deeply weathered to ochreous coloured clays, but where fresh, occur as brittle, well cleaved, pale grey to dark grey lithotopes. Recrystallisation and silicification have effected the argillites producing a resultant increase in induration.

The sandstones occur as interbeds within the sedimentary sequence and form planar bedforms between 20mm and 200mm thick. They are usually very weathered and outcrop as rubbly friable masses. They can be described as fine-grained feldspathic, lithic sandstones due to the large percentage of feldspar and lithic detritus present. In thin section (MS/TS/49,65 - Appendix 1), this lithic detritus is thought to be originally basic volcanic material, now altered to chloritic clays and oxides (magnetite, leucoxene).

Limestone/dolomite outcrop as intercalated lenses and are similar lithologically to those previously described (3.1.1, 3.1.2); that is they consist of crypto to microcrystalline granular mosaics of calcite and dolomite (recrystallised).

It is considered that the initiation of the Smithton Trough, due to faulting and rifting, resulted in the emplacement of significant amounts of basic volcanics. The syndeformational and depositional style of the basin is evidenced by the fact that basic volcanic detritus is incorporated into intra-basinal sediments.

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### 3.2.3 Structure

Geologic structure in the Cambrian generally trends northwest-southeast (between  $330^{\circ}$ - $350^{\circ}$ M). This information is plotted on Plate 1; the major features being several linears delineated from airphoto interpretation and regional aeromagnetics. The western and eastern linears represent large-scale faults associated with the formation of the Smithton Trough. The central linear appears to represent a fault and is a significant entity as it divides the area into two structural regimes - west and east. The western regime is characterised by isoclinal folding (at least two phases), with associated high-angle shearing and thrusting. In contrast, the eastern regime is characterised by a much more open-fold style with fold limbs dipping at less than  $40^{\circ}$ .

### 3.3 TERTIARY

The Tertiary alluvial deposits are the most significant economic unit in the tenement area as they host appreciable amounts of detrital chromite. The deposits occur in the Salmon River area of the tenement where they overlie Cambrian sediments. A detailed look at these alluvial deposits, based on internal sedimentary organisation, indicates that two cycles (ages) of Tertiary alluvial deposition exist:-

#### 1) FIRST CYCLE

This cycle occurs principally along ridges and upper slopes forming high-level perched or remnant deposits. It is characterised by textural immaturity and is composed of gravel and sand-sized material - both of quartzose composition. The gravels are poorly sorted, matrix-supported, and consist of subangular to subrounded clasts of quartzite, quartz, chert with minor silicified argillite and limestone.

Clast size ranges from 10 to 100 mm and averages at between 20 to 40 mm. Internal bedforms and structures are virtually absent, with vague grading the only feature observed. Photograph A illustrates the nature of the gravels - vertical section R. A notable feature associated with these gravels is intense induration caused by secondary silicification. It is presumed that this first alluvial cycle mantled a greater area than at present and was deposited by large-scale braided fluvial systems active following periods of uplift in the Tertiary.

## 2) SECOND CYCLE

This cycle has formed from the reworking of the first, and as a consequence, is a better organised and more mature sediment. As in 1), quartzose clastics dominate - although the base is locally polymict. A general fining-up sequence is developed in these sections - gravel (2-5m thick) units grade into grit and coarse sand-sized units (2-4m thick). Sedimentary features include lenticular bedforms (0.5 to 1.0 m thick), grading, and low-angle and high-angle trough cross-bedding.

Figures 2 and 3, and Photographs B and C show typical vertical profiles developed at Walkers Gravel Pit. As in 1), braided fluvial deposition is considered to be the sedimentation mode.

Heavy mineral accumulation is therefore best developed in the second alluvial cycle due to the increased concentration by sedimentary reworking. The heavy mineral content is generally much higher in the gravel and grit-sized units and occurs as uniform dissemination or as small seams (10mm to 50mm) or bands (Photo D). A sample of the heavy mineral was sent to Pontifex and Associates for mineralogical study (Appendix 1). It contained 80% chromite, 3-5% magnetite, 7-10% leucosene, and 5-10% accessories. The grain size of the material ranged from 0.1 to 0.4 millimetres.

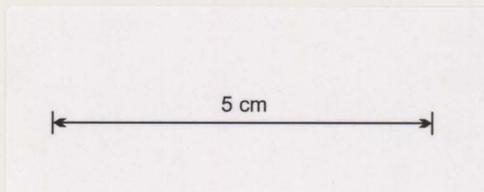
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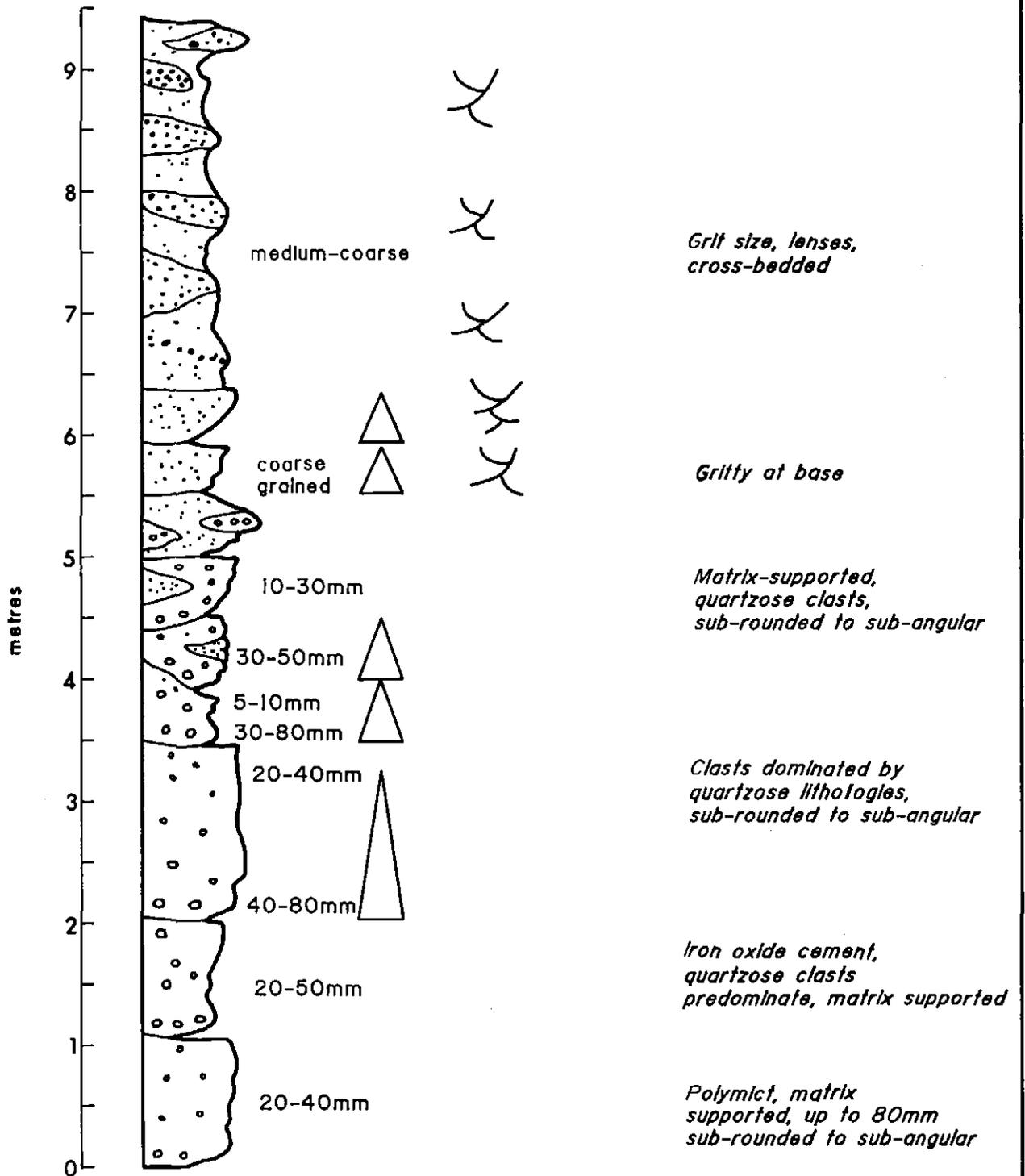
0.5m

PHOTOGRAPH A  
VERTICAL SECTION R



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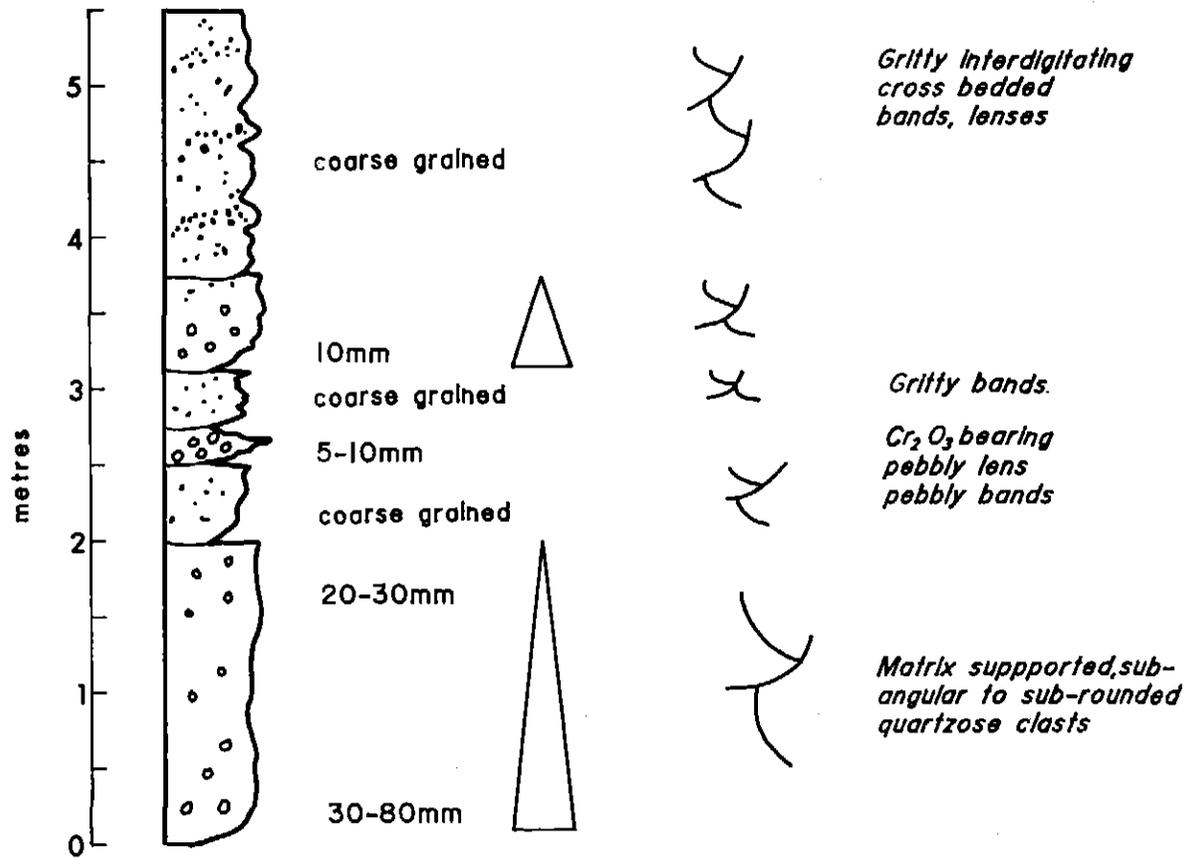


Prepared: W. Kossieris  
 Drawn: L.J. Turner  
 Centre: Brisbane

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 MINERALS EXPLORATION DEPARTMENT

Composite Vertical Section (D and H) - Walkers Gravel Pit  
 EL12/86 - MONTAGU, N.W. TASMANIA

Project No.: K02  
 Drawing No.: A4-974  
 FIGURE 2



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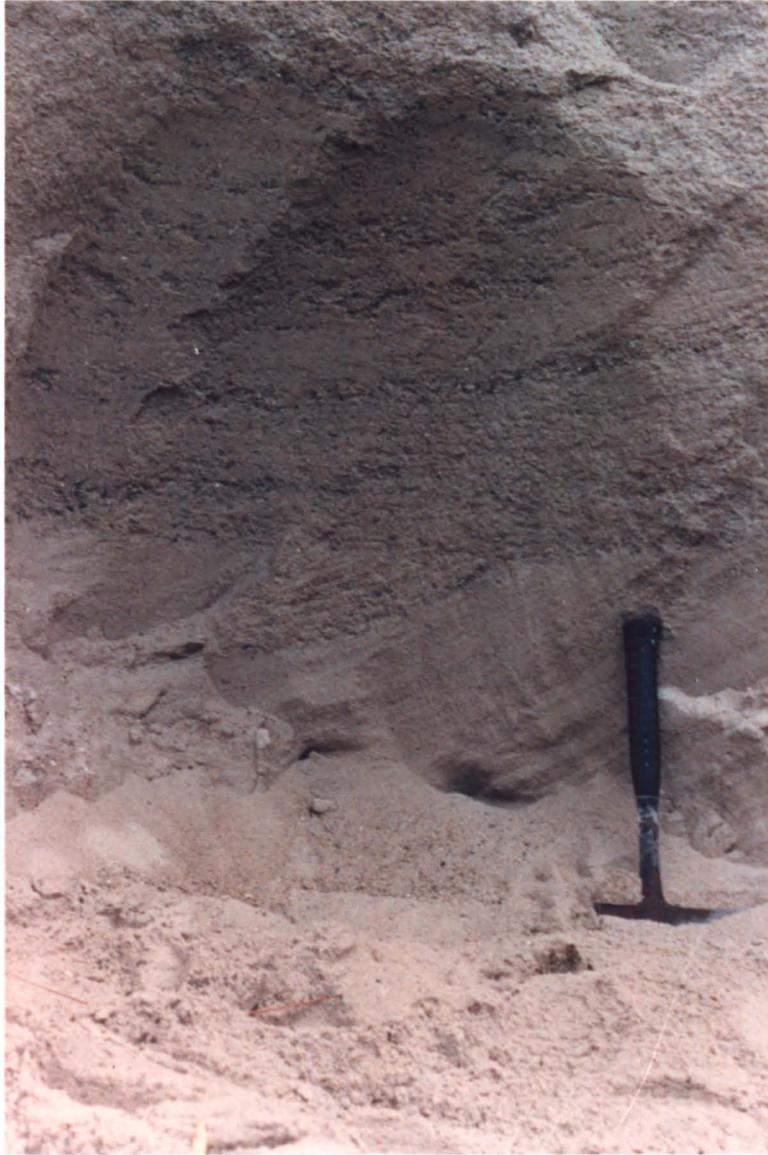
0.5m

PHOTOGRAPH B  
VERTICAL SECTION D

5 cm

017

804018



0.5m

PHOTOGRAPH C  
VERTICAL SECTION D

5 cm



0.1m

PHOTOGRAPH D  
VERTICAL SECTION E

5 cm

### 3.4 MONTAGU RIVER AREA

The broad, low-lying valley of the Montagu River was thought to hold the potential to host very large reserves of chromite-bearing Tertiary sand and gravel. One of the key aims of the exploration programme involved the appraisal of this area. While access was retarded by the dense vegetation and boggy conditions, several localities were able to be visited. Unfortunately, the results of this work severely downgraded the area - at all localities, the basement was found to comprise Precambrian limestone (see Plate 1). Approximately 2-3m of Quaternary alluvium overlies this limestone. This alluvium is dominated by very organic-rich silt and mud with minor lenses or shoestrings of friable quartz sand. A sample of this sand was screened and panned for the detection of heavy minerals, however, only negligible amounts were recorded.

It is considered that the low-lying broad valley of the Montagu River (and that of the other rivers in the area, i.e. Welcome and Duck) had been subjected to several episodes of sea-level fluctuation (drowning) as a response to Pleistocene ice-ages. This action would have resulted in the net erosion of any Tertiary alluvials that were deposited in the valley area.

#### 4. GEOCHEMISTRY

##### 4.1 TERTIARY ALLUVIALS

In order to gain representative results from the geochemical sampling programme, it was decided to collect bulk-scale channel samples in a systematic manner. Eighty-four (84) individual samples were collected from nineteen (19) sections, the locations of which are shown in Plate 1. Access for sampling varied from good (Walkers Gravel Pit) to poor (other sections) - the poorer sections were upgraded with the use of an excavator. A vertical sampling interval of 0.5m was selected for Walkers Gravel Pit sections in contrast to the other sections where 1.0m was chosen due to the lack of internal variation.

Steps involved in the sampling programme were:

a) INITIAL COLLECTION

Alluvial material was wet screened through an aperture size of 1.56mm until the required weight (22-23 kg wet) was attained. Both undersized and oversized material was weighed for a bulk weight to be recorded (varied from 23kg sand to 164.5kg gravel) - see Appendix 3. The samples were then transported to the Tasmanian Department of Mines' laboratory in Launceston for concentration and assay.

## b) ANALYTICAL PROCEDURE

The analytical procedure undertaken is displayed in Figure 4. The key to the product and operation symbols is shown below:

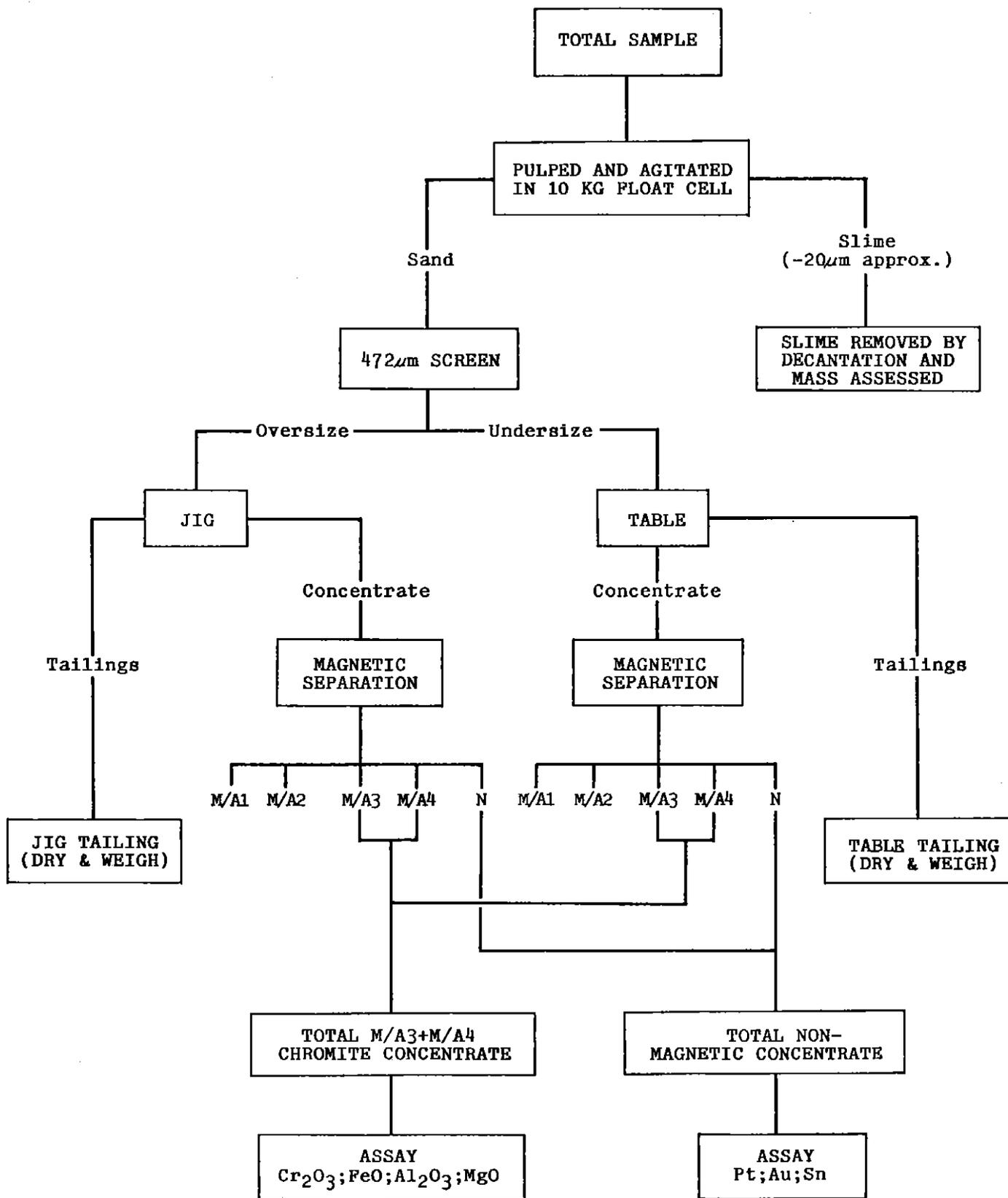
J C - jig concentrate  
T C - table concentrate  
M/S - magnetic separation  
M/A - magnetic product  
N - non-magnetic product

Steps involved in individual sample treatment were:-

1. Violent agitation of the total sample in water followed by removal of the slime fraction, generally about minus 10 microns, by decantation, and assessment of the amount of slime by drying and weighing a 2 litre portion of the measured volume of the slime decant.
2. Wet and dry screening of the deslimed sample on 472 microns using the Sweco screen.
3. Jig concentration of the plus 472 micron fraction.
4. Table concentration of the minus 472 micron fraction.
5. Analysis of jig and table tailings.
6. Magnetic separation (dry high intensity) of the jig and table concentrates to show proportion of plus and minus 472 chromite.

FIGURE 4

MONTAGU SAMPLES - TREATMENT METHOD



(Note: All values calculated to g/t original feed)

7. Combination of M/S M/A 3 + 4 products from jig and table to give a total M/A 3 + 4 product from each sample. This is the total chromite concentrate. M/A's 1 and 2 are more highly magnetic products, possibly magnetite, ilmenite, and are shown separately.
8. Analysis of the total chromite concentrate for  $\text{Cr}_2\text{O}_3$ ,  $\text{FeO}$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{MgO}$ .
9. Analysis of the total non-magnetic product for Au, Pt, Sn.
10. Calculation of composite head values.

c) RESULTS

A complete presentation of the analytical results is shown in Appendix 4. Part A documents the laboratory analyses with a final grade calculated from the concentrated field sample. These results then had to be recalibrated to the collected field bulk sample - Part B.

The average  $\text{Cr}_2\text{O}_3$  values for each section are given below:-

i) Walkers Gravel Pit

- |      |         |  |
|------|---------|--|
| A    | - 0.24% | ) Only the bottom metre sampled as panning                 |
| B    | - 0.09% | ) revealed minimal $\text{Cr}_2\text{O}_3$ in upper zones. |
| C    | - 0.06% | - low value due to recovery problems                       |
| D    | - 0.18% |  |
| D(b) | - 0.24% |  |
| E    | - 0.26% |  |
| F    | - 0.60% |  |
| G    | - 0.37% |  |
| H    | - 0.08% | - below water table  |

ii) I	- 0.68%
J	- 0.26%
K	- 0.14%
L	- 0.11%
M	- 0.02% - Quaternary deposit
N	- 0.06%
O	- 0.08% )
P	- 0.05% )
Q	- 0.54% ) silicified gravel
R	- 0.02% )
S	- 0.04%

The distribution of chromite is well illustrated in Section E (Figure 5). A clear association between chromite abundance and the larger scale gravel channels and lenses exists. This can readily be seen at 2.5-2.75 metres where a small gravel channel contains 0.35%  $\text{Cr}_2\text{O}_3$ .

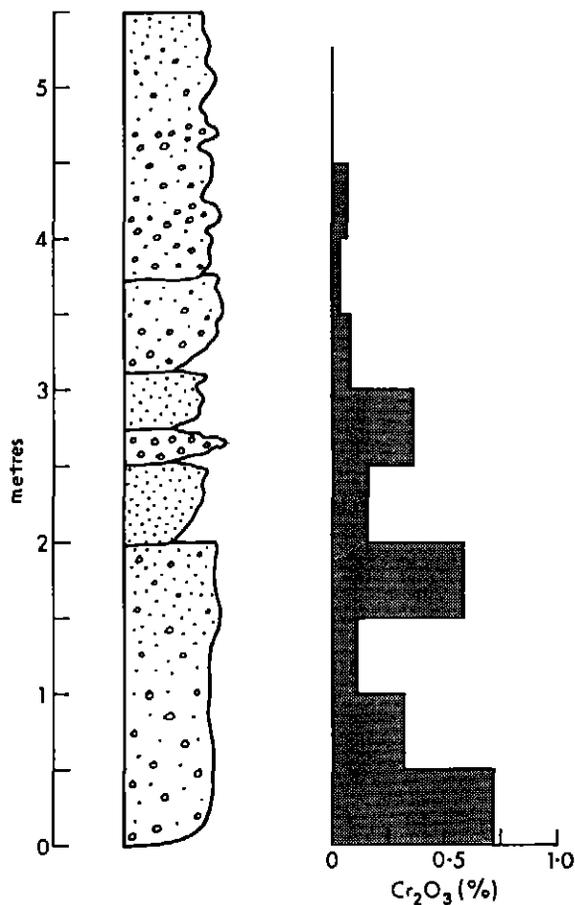
Two sample sets were collected at Section D (D, Db) with the aim of determining  $\text{Cr}_2\text{O}_3$  grade variation. Although the grade distribution between the two sets worked out to be quite similar, sample set Db returned a higher overall grade, i.e. 0.24% to 0.18%, a result which highlights the variability commonly encountered in placer deposits.

The results of the analysis of the magnetic fraction for  $\text{Cr}_2\text{O}_3$ ,  $\text{Fe}_2\text{O}_3$ ,  $\text{Al}_2\text{O}_3$  and  $\text{MgO}$  confirm the earlier work of metallurgical grade suitability. The  $\text{Cr}_2\text{O}_3$  values are generally high (greater than 40%) and the Cr:Fe ratio greater than 2; although the values for  $\text{Al}_2\text{O}_3$  (13-20%) and  $\text{MgO}$  (5-9%) are of the upper tolerance limits.

The results of the analysis of the non-magnetic fraction for Au, Pt and Sn yielded very low-level responses - see Appendix 4, Part A. The only exception to this being samples C/4.5 and D/0.5 which returned Au values of 0.1 g/t and 0.4 g/t, respectively.

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5 cm

Prepared: W. Kossaris

Drawn: RRM

Centre: Brisbane

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MINERALS EXPLORATION DEPARTMENT

**VERTICAL SECTION E**  
**SHOWING DISTRIBUTION OF CHROMITE**  
FI 12/86 MONTAGLI NWTASMANIA

Project No.: K02

Drawing No.: A4-991

**FIGURE 5**

#### 4.2 LITHOLOGICAL SAMPLING

Three rock-chip samples were collected in conjunction with geological mapping. Lithologies sampled included a very oxidised basalt (MS/RC/41), a siliceous (exhalite?) zone within basalt (MS/RC/07), and silicified Tertiary gravel (MS/RC/29). These rocks were submitted to ALS Pty. Ltd. (Brisbane) for multi-elemental assay - results are shown in Appendix 2. Interesting and anomalous values were returned from MS/RC/41 and included:

Ti - 5.42%  
Cr - 1700 ppm  
Zr - 715 ppm  
Ni - 590 ppm  
Nb - 146 ppm

These values highlight the atypical mineralogy and geochemistry of the igneous lithological suite of the Cambrian.

### 5. DISCUSSION AND RESERVE POTENTIAL

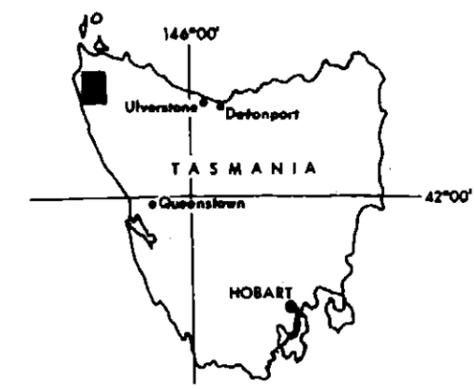
It is considered that the source of the chromite within the Tertiary sediments of the Montagu area is the Cambrian and that subsequent sedimentary reworkings concentrated the mineral. A north to south palaeo flow direction is inferred for the stream systems which originally deposited the chromite. The majority of the present-day streams flow westerly indicating an east-west capture by the Arthur River system.

Figure 6 outlines the known and potential occurrence of the Tertiary within the tenement. Geochemistry indicates a concentration factor of 5 to 10 between the first and second alluvial cycles. Grade and tonnage estimates are shown below:-

Area	Alluvial Tonnage (mt)	Grade % Cr <sub>2</sub> O <sub>3</sub>	Contained In Situ Cr <sub>2</sub> O <sub>3</sub> (t)
Walkers Gravel Pit	0.5	0.25 0.65	1250 3250
Section I	0.2	0.68	1350
Section J (Potential Area)	1.2	0.25	3000
Sections K,L (Potential Area)	2.5	0.10 0.15	2500 3750
Silicified gravel (Sections O,P,Q,R)	2.0	0.025 0.10	500 2000

A summation of the contained in-situ Cr<sub>2</sub>O<sub>3</sub> values indicates a potential reserve of between 8,100 and 11,350 tonnes for the unconsolidated alluvium, and between 500 and 2,000 tonnes for the consolidated silicified gravels.

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LOCATION MAP

70

64

58

5452000mN

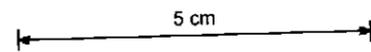
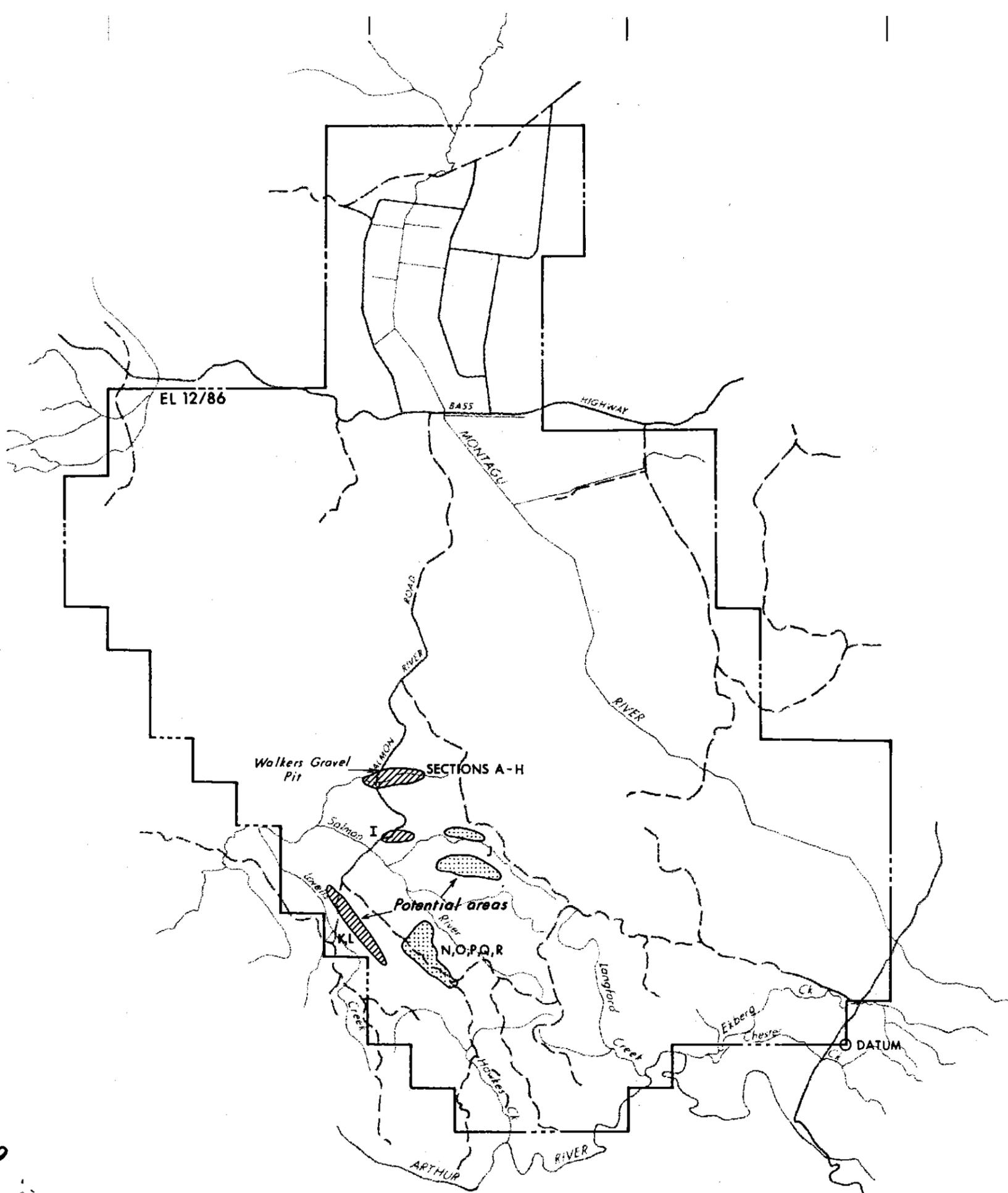
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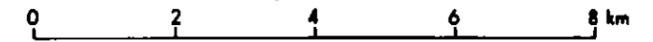


LEGEND

- First-cycle alluvials
- Second-cycle alluvials



SCALE 1:100000



BHP Minerals Exploration

**KNOWN AND POTENTIAL AREAS OF CHROMITE-BEARING TERTIARY ALLUVIALS**  
EL 12/86 - MONTAGU, N.W. TASMANIA

Prepared: W. KOSSERIS	Date: October, 1987
Drawn: L.J. TURNER	Project No.: K02
Centre: Brisbane	Drawing No.: A3-561

FIGURE 6

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C.R. 5518REFERENCES

WILLIAMS, E. and TURNER, N.J., 1974 - Geological Atlas  
1:250,000 Series Sheet SK-55/3. Explan. Rep. Geol.  
Surv. Tas.

APPENDIX 1

PETROLOGY - MINERALOGICAL REPORT FROM  
IAN PONTIFEX & ASSOCIATES

*Pontifex & Associates Pty. Ltd.*

031  
 TEL. 332 6744  
 A.H. 31 3816

26 KENSINGTON ROAD, ROSE PARK  
 SOUTH AUSTRALIA

P.O. BOX 91, NORWOOD  
 SOUTH AUSTRALIA 5067

MINERALOGICAL REPORT NO. 5033

by A.C. Purvis PhD. & I.R. Pontifex MSc.

10th July, 1987

TO: W.C. Kossaris  
 Geologist  
 B.H.P. Minerals Ltd.  
 (Exploration)  
 B.H.P. House  
 152, Warf Street  
 BRISBANE QLD. 4000

YOUR REFERENCE: Your letter dated 5/6/1987

MATERIAL: Rock samples, Smithton Trough,  
 N.W. Tasmania

IDENTIFICATION: MS/TS/02 to 70, various intermediate  
 numbers  
 Also MS/MN/A-0.5

WORK REQUESTED: Petrographic, mineralogical examination  
 and report

SAMPLES & SECTIONS: Returned to you at above address  
 with this report



PONTIFEX & ASSOCIATES PTY. LTD.

032

## VERY BRIEF SUMMARY COMMENTS

This suite contains variably fresh, dolomitised and silicified limestones, locally oolitic; also labile sandstones, and altered basalts originally rich in titanium.

These rocks appear to represent an intracratonic (shallow water) basin, and have experienced low-temperature alteration.

The labile sandstone in MS/TS/49 contains abundant lithic detritus altered to leucoxenitic, chloritic and illitic clays, sericite, extremely fine quartz and limonite; also, about 20 % detrital quartz is present, and 1-2 % opaque oxides. This may be partly volcanoclastic, and may include minor material of basic derivation.

Somewhat more abundant lithic detritus in MS/TS/65 is altered to chloritic clays  $\pm$  leucoxene; there are only about 7 % quartz grains present, but abundant opaque oxides (12 %). The opaque oxides are mostly oxidised titaniferous magnetite.

This sandstone may also be partly volcanoclastic, but basic (to ultrabasic?) rocks appear to make a major contribution.

The unconsolidated black heavy mineral sand is mostly chromite.

033

MS/TS/02

'Chert' with accessory dispersed leucoxene, and relict 'oolitic' texture; probably a completely silicified carbonate facies.

The texture of this rock is defined by diffuse domains of cryptocrystalline cherty, to microcrystalline granular quartz mosaic, with most grains smaller than about 0.05 mm. Rare patches of prismatic quartz to 0.5 mm size are present, and accessory, extremely fine leucoxene is disseminated through the cherty quartz.

The fine granular quartz domains are dominantly circular to elliptical in outline, or with irregular, vein-like domains rarely containing abundant porosity. The origin of the elliptical domains is not clear. They are on average 3x2 mm in size, without internal textures, and would appear to represent original oolites or pellets (or they could be entirely artefacts of silicification).

A granular domain containing cherty fragments to 2 mm size could represent originally micritic carbonate fragments, in a sparry matrix.

034

MS/TS/03

Chert, derived by complete silicification of an irregularly lenticular-layered limestone; in contact with silicified very fine sandstone.

Most of this rock consists of virtually cryptocrystalline silica (chert), with irregularly lenticular domains of slightly coarser granular quartz micromosaic, mostly 1 to 15 mm wide, in contact with a silicified very fine sandstone.

The 'chert' is heterogeneous on a scale of about 0.4 mm, suggesting a former detrital (or veined?) carbonate rock with micrite fragments of that size. It contains scattered rhombohedral voids to 20 microns in size, probably after early diagenetic dolomite. A diffuse clouding by very fine ?limonite occurs in an intricate liesegang pattern, commonly with a symmetrical distribution about fractures and veins.

The veins are composed of fine granular quartz mosaic, locally with dust-decorated deformation lamellae, and are up to 0.5 mm wide, and they lead out of the irregular domains of fine granular quartz.

Much of the granular quartz has deformation lamellae, and contains inclusions of small rhombohedral voids, similar to those in the cherty quartz.

The sandstone has grains of quartz about 0.1 mm in size, and concordant laminae of leucoxene as well as minor irregular porosity. The matrix between the coarser grains consists essentially of supergene cherty quartz.

MS/TS/05

Heterogeneous quartz-clay(?smectite)-limonite rock, with distinctive relict textures indicating that it derived from an oxidised vesicular flow-top basalt.

Irregular, amoeboidal to lenticular patches of fine 'secondary' quartz, yellow clays, probably smectites, and rare albite, to 2 mm long, have a fairly even and vaguely layered distribution to form about 30 % of this rock.

These represent original vesicles and occur in a host of secondary alteration components which completely replace an original basaltic groundmass forming the bulk of the sample. This material is limonite-rich, with minor smectite and some relict textures of former skeletal crystals, and scattered oxidised (rather than leucoxenised) original magnetite crystals, all characteristic of an original basalt.

036

MS/TS/37

Massive, microcrystalline carbonate rock  
(dolomite); with rare stylolites.

At least 75 % of this rock consists of a mass of fine granular to rhombohedral dolomite mosaic, with a grain size of 0.1 to 1 mm. Scattered irregular patches of 1 to 2 mm across, of relatively finer carbonate mosaic, slightly dusty, may replace original 'biogenic' components in an original chemical sediment.

This aggregate incorporates rare patches of calcite, particularly in crystal-lined cavities about 1 mm across, faced by dolomite rhombs. Rare thin stylolites, largely defined by ultrafine inclusions in the carbonate, occur locally.

037

804038

MS/TS/40

Limonite-stained clays (?smectites), with some relict textures and scattered leucoxenised skeletal oxide grains, to indicate an altered, ?flow-oriented basic volcanic; rare dislocated quartz veins.

The bulk of this sample consists of clays, stained by various intensities of limonite. These are probably smectite clays. Elongate light and dark grains are outlined by much of the clay and appear to be defining a foliation, possibly a flow foliation, whereas other patches possibly represent olivine grains and ophitic pyroxene grains. The only really definite pseudomorphs are leucoxenised skeletal oxide grains about 0.2 mm in size.

A crosscutting quartz vein is dislocated, and there are numerous limonite-filled fractures.

The amount of leucoxene is most consistent with this rock having been a basalt.

MS/TS/41

Quartz-clay-leucoxene-altered vesicular  
basalt.

Although this rock is extensively altered, it is not camouflaged by limonite, and relict microcrystalline basaltic textures are well preserved. It contains abundant vesicles from 0.2 to 3 mm in diameter, now filled with fine quartz, sericite and rare limonite-lined, leached carbonate crystals with a euhedral rhombic shape.

The bulk of the basaltic groundmass host rock is rich in leucoxene, replacing

1. small euhedral titanomagnetite grains, and
2. skeletal titaniferous pyroxene crystals.

There have been variations in texture across the rock, but the exact silicate mineralogical manifestation of this are not clear.

039

MS/TS/49

Fine-grained, feldspathic quartz-lithic sandstone; lithic detritus extensively altered, mainly to clays  $\pm$  limonite and leucoxene.

Macroscopically, this is a homogeneous, massive, very fine-grained sandstone, clay-rich and somewhat friable and brownish-yellow due to permeation by limonite.

Petrographically, it is seen to consist of a weakly bedded, homogeneous, rather loose-packed aggregate of subrounded grains, 0.1 to 0.3 mm in size. About 20 % of the grains are quartz, about 10 % are feldspar, and most others consist of lithic detritus, variably altered to clays  $\pm$  limonite, leucoxene and extremely fine quartz.

Minor limonitised detrital micas lie along the bedding, which is defined partly by the overall weak elongation of the grains.

This is a labile, fine-grained, very lithic-rich sandstone; the exact nature of the lithic detritus cannot be identified due to advanced alteration, but it may include a substantial volcanic clastic component (?reworked tuff).

MS/TS/65

Fine-grained, (feldspar-quartz) and strongly lithic sandstone, with abundant basic lithic detritus altered to chloritic clays and abundant opaque oxides, mostly oxidised and partly leached magnetite.

Macroscopically, this is a homogeneous, massive, very fine, clay-rich sandstone, with a fine bedding seen on a fresh cut surface. It is similar to MS/TS/49, but greenish-grey rather than oxidised with yellowish limonite.

In thin section, it is seen as a weakly bedded, quite compact aggregate, with at least 65 % of the grains lithic detritus which is completely altered to chlorite and chloritic clays, including probable smectite, possible vermiculite, with minor very fine, diffuse patchy limonite. Quartz grains form a maximum of 7 %, and altered feldspar grains about 10 %.

Detrital opaque oxide grains are anomalously abundant (approx. 12 % of the rock), more abundant in some laminations than in the whole rock. These are subhedral to subrounded. Their abundance, and possible relation to the heavy mineral concentrate in this suite, dictated examination in polished section, whereby they were identified as mostly magnetite grains, oxidised to martite and/or leucoxene, some leached to partial skeletal forms. Rarer grains of ilmenite, relatively unoxidised titaniferous magnetite, and of 'primary' hematite are also present.

The overall dominant 'basic' composition of the detritus forming this rock indicates derivation largely from a basic and/or possible ultramafic provenance.

MS/TS/66

Massive, cryptocrystalline-micritic limestone cut by extensive random veins of dolomite and calcite, also scattered small rhombs of dolomite.

At least 65 % of this sample consists of extremely fine, essentially cryptocrystalline calcite (limestone).

This is crowded by an extensive chaotic network of veins (25 %) from 0.05 to 2 mm wide, and randomly scattered, individual rhombic crystals of about 0.2 mm size. Some veins and all of the rhombs appear to be dolomite (since they do not stain with alizarin Red-S, compared with calcite which stains pink). Other veins, however, do stain pink and, considered together with their optical properties, are identified as calcite.

MS/TS/68

Texturally heterogeneous chert, probably a completely silicified micritic limestone with original scattered dolomite crystals and ?carbonate intraclasts.

Massive cryptocrystalline chert forms at least 50 % of this sample. This is crowded with randomly disposed, patchy grains (30 %), 0.5 to 1.5 mm size, of single quartz crystals or of quartz micromosaic. Also, there are scattered discrete rhomb-shaped voids.

By analogy with MS/TS/66, the extremely fine chert matrix would appear to represent completely silicified micritic limestone. The rhombic voids are likely to be after scattered single dolomite crystals.

The exact genesis of the abundant patchy grains is uncertain, but may be original intraclasts of carbonate, or clusters of dolomite crystals, also now completely silicified.

MS/TS/69

Apparent oolitic, and possibly partly intra-formationally disrupted micritic limestone; completely pervasively silicified.

About 50 % of this sample consists of clouded, fine granular secondary quartz, as pseudomorphs after a very loose-packed aggregate of oolites, and lenses of oolites. These occur within a matrix of sparry quartz, locally passing into growth-zoned prismatic quartz, or into crystal-lined narrow cavities. The sparry quartz between the oolites, and the zonal, virtually colloform quartz lining the cavities, tend to be parallel, and are apparently discontinuous along a bedding (which may be dislocated prior to diagenesis).

The quartz replacing the oolites is clouded by ultrafine residual carbonate grains, and irregular to rhombic small cavities. It is mostly granular and only rarely shows a radial texture. The cores of some of the oolites have been replaced by microsparry quartz, however.

MS/TS/70

Crudely bedded, silicified limestone, with whole and fragmented oolites; matrix appears to be partly silicified micrite, but includes fine detrital quartz and impure clays.

Numerous silicified oolites, up to 1.5 mm in diameter, with both radial and concentric structures are randomly disposed to form about 40 % of the rock. The radial structures consist of radiating quartz crystals, and the concentric structures are zones of inclusions. At least one third of these oolites are fractured.

The host rock carrying the oolites consists of turbid, extremely fine quartz mosaic, which conceivably represents silicified micrite, but includes fairly abundant, relatively discrete apparent detrital grains of silt and very fine sand, with rare coarse sand grains.

The cloudiness appears to be due to ultrafine carbonate, an irregular fine porosity, fluid inclusions, clays and leucoxenitic dust, more abundant in some poorly defined beds than in others.

045

MS/MN/A 0.5

This unconsolidated heavy mineral (black) sand consists of subrounded to relict euhedral single crystal grains ranging in size from 0.1 mm to 0.4 mm maximum dimension. These were mounted in epoxy and prepared as polished thin section to identify the opaque and translucent grains.

These are as follows, showing visual estimate of abundance:

	Estimated visual abundance %
	<hr/>
Chromite, opaque, with distinctive irregular microfissures	25
Chromite, weakly translucent, 'smoother' and with less microfissures	45
Chromite or 'chrome-magnetite', opaque, 'smooth' and without microfissures	10
Partly oxidised magnetite	3-5
Turbid, pale 'leucoxene'	7-10
Zircon	2
Rutile	2
Tourmaline	< 1
Quartz-feldspar (contamination)	3-5

046

804047

APPENDIX 2

ROCK CHIP ASSAYS - A.L.S.

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**Townsville Laboratory**  
 21 Bombala Street, Garbutt, Q. 4814  
 Phone: (077) 79 9155. Fax: (077) 79 9729

CONSULTING ANALYTICAL CHEMISTS

## LABORATORY REPORT

Incorporated  
in Queensland



Client: **GHP COMPANY LIMITED,**  
 Address: **P.O. BOX 425,**  
**SPRING HILL, QLD. 4000**

Page 1 of 2

Batch Number: **F079**

Contact: **MR. V. KOSSERIS**

No. of Samples: **3**  
 Date Received: **09/06/87**  
 Date Completed: **12/07/87**

Order No. **14805**

Sample Type: **ROCK**

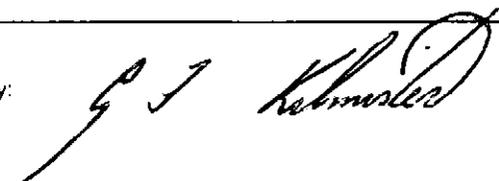
SAMPLE NUMBER	Element Unit Method	SiO2	Al2O3	Fe2O3	CaO	MgO
		%	%	%	%	%
		10584	10584	10584	10584	10584
MS/RC/07		87.2	0.35	7.20	0.05	0.05
MS/RC/41		41.2	17.8	16.7	1.19	7.45
MS/RC/28		93.2	0.16	2.74	0.36	0.01
Detection Limit:						

Comments:

UNLESS NOTIFIED PULPS WILL BE DUMPED ON 09/12/87 AND SPLITS (IF ANY) ON 30/09/87

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**Townsville Laboratory**  
21 Bombala Street, Garbutt, Q. 4814  
Phone: (077) 79 9155. Fax: (077) 79 9729

Client: BHP COMPANY LIMITED,  
Address: P.O. BOX 425,  
SPRING HILL. QLD. 4000

Page 2 of 2

Batch Number: F879

Contact: MR. W. KOSSERIS

No. of Samples: 3

Order No. 14005

Sample Type: ROCK

Date Received: 09/06/87

Date Completed: 16/07/87

SAMPLE NUMBER	Element Unit Method	TiO2	Na2O	K2O	P2O5	MnO
		% IC584	% IC584	% IC584	% IC584	% IC584
MS/RC/07		0.03	0.01	0.08	<0.01	0.01
MS/RC/41		9.04	0.02	4.21	1.42	0.02
MS/RC/29		0.19	<0.01	0.03	<0.01	<0.01
Detection Limit:						

Comments:

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050

804051

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Client: BHP COMPANY LIMITED,  
 Address: P.O. BOX 425,  
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Page 2 of 2

Batch Number: F079-1

Contact: MR. W. KOSSERIS

No. of Samples: 3  
 Date Received: 09/06/87  
 Date Completed: 16/07/87

Order No. 14005

Sample Type: ROCK

SAMPLE NUMBER	Element Unit Method	Cu ppm IC584	Li ppm IC584	Mo ppm IC584
MS/RC/07		5	<10	5
MS/RC/41		125	30	<5
MS/RC/29		15	<10	<5
Detection Limit:				

Comments:



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Registered Laboratory No. 825



052

804053

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Client: BHP COMPANY LIMITED,  
Address: P.O. BOX 425,  
SPRING HILL, QLD, 4000

Page 2 of 2

Batch Number: F079-2

Contact: M. KOSSERIS

No. of Samples: 3  
Date Received: 09/06/87  
Date Completed: 16/07/87

Order No. 14005 Sample Type: ROCK

SAMPLE NUMBER	Element Unit Method	V ppm ICS84	Zn ppm ICS84	As ppm XRF1
MS/RC/07		20	<5	5
MS/RC/41		290	85	<5
MS/RC/29		<10	10	<5
Detection Limit:				
				5

Comments:



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Phone: (077) 79 9155, Fax: (077) 79 9729



Client: BHP COMPANY LIMITED,  
Address: P.O. BOX 425,  
SPRING HILL, QLD, 4000

Page 1 of 2

Batch Number: F079-3

Contact: MR. W. KOSSERIS

No. of Samples: 3  
Date Received: 09/06/87  
Date Completed: 15/07/87

Order No. 14005

Sample Type: ROCK

SAMPLE NUMBER	Element Unit Method	Cr ppm XRF1	Fe % XRF1	Sn ppm XRF1	Nb ppm XRF1	Ti % XRF1
MS/RC/07		190	4.82	<5	<2	0.02
MS/RC/41		1700	11.2	<5	146	5.42
MS/RC/29		230	1.83	<5	2	0.11
Detection Limit:		10	0.01	5	2	0.01

Comments:

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Client: BHP COMPANY LIMITED,  
 Address: P.O. BOX 425,  
 SPRING HILL, QLD. 4000

Page 2 of 2

Batch Number: F079-3

Contact: MR. W. KOSSERIS

No. of Samples: 3  
 Date Received: 09/06/87  
 Date Completed: 16/07/87

Order No. 14005 Sample Type: ROCK

SAMPLE NUMBER	Element Unit Method	Zr ppm XRF1	Ta ppm XRF1	Pt ppb PM217	Pd ppb PM217
MS/RC/07		10	<10	<10	<10
MS/RC/41		715	10	<10	<10
MS/RC/29		45	<10	<10	<10
Detection Limit:		4	10	10	10

Comments:



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APPENDIX 3

MASS OF ALLUVIAL SAMPLES

057

APPENDIX 3

MASS (KG) OF ALLUVIAL SAMPLES  
COLLECTED IN THE FIELD

A/0.5 = 61.50	E/0.5 = 85.00	H/1.0 = 164.50	N/1 = 47.50
1.0 = 47.00	1.0 = 112.00	2.0 = 118.50	2 = 52.50
	1.5 = 82.00	3.5 = 93.00	
B/0.5 = 71.00	2.0 = 68.00		
1.0 = 57.50	2.5 = 38.00		O/1 = 58.50
	3.0 = 37.50	I/1 = 56.25	
	3.5 = 40.00	2 = 45.75	
C/0.5 = 74.00	4.0 = 36.00	3 = 44.50	P/1 = 67.00
1.0 = 44.25	4.5 = 35.00		
1.5 = 35.00	5.0 = 32.00	J/1 = 51.50	
2.0 = 34.50		2 = 44.50	Q/1 = 64.00
2.5 = 33.00			
3.0 = 32.50	F/0.5 = 56.75		
3.5 = 32.00	1.0 = 65.50	K/1 = 61.00	R/1 = 87.50
4.0 = 33.50	1.5 = 73.25	2 = 56.00	2 = 83.00
4.5 = 32.00	2.0 = 34.50	3 = 52.50	
	2.5 = 20.00	4 = 51.50	
	3.0 = 24.00	5 = 52.50	S/1 = 51.00
D/0.5 = 93.75	3.5 = 20.00	6 = 51.50	
1.0 = 61.00			
1.5 = 27.00			
2.0 = 23.00		L/1 = 42.50	
2.5 = 23.00	G/0.5 = 67.00	2 = 47.00	
3.0 = 19.50	1.0 = 50.50		
3.5 = 22.00	1.5 = 28.50		
4.0 = 31.00	2.5 = 21.50	M/1 = 35.50	
4.5 = 38.50	3.0 = 22.50	2 = 54.50	
5.0 = 38.50	3.5 = 19.00	3 = 57.00	

APPENDIX 4  
PART A

ANALYTICAL RESULTS

B.H.P.

059

Reg. No	Description	Percent Mass + 472 $\mu$ m								Percent Mass - 472 $\mu$ m								Percent Mass
		M/S M/A1	M/S M/A2	M/S M/A3	M/S M/A4	M/S N	J1C	J1T	$\Sigma$	M/S M/A1	M/S M/A2	M/S M/A3	M/S M/A4	M/S N	T1C	T1T	$\Sigma$	Slime
872257	A 0.5	Tr.	Tr.	Nil	Tr.	0.07	0.07	27.38	27.45	0.02	0.01	Tr.	2.00	5.10	7.13	61.81	68.94	3.61
258	A 1.0	Tr.	Tr.	Tr.	Tr.	0.02	0.02	19.33	19.35	0.03	0.04	Tr.	0.94	4.00	5.01	71.29	76.30	4.35
259	B 0.5	Tr.	Tr.	Tr.	0.01	0.08	0.09	44.09	44.18	Tr.	Tr.	Tr.	0.52	5.55	6.07	43.71	49.78	6.04
260	B 1.0	Tr.	Tr.	Tr.	0.02	0.06	0.08	42.94	43.02	0.01	0.01	Tr.	0.51	5.18	5.71	46.21	51.92	5.06
261	C 0.5	Tr.	Tr.	Tr.	0.04	0.12	0.16	48.29	48.45	0.01	Tr.	Tr.	1.31	5.12	6.44	41.37	47.81	3.74
262	C 1.0	Tr.	Tr.	Tr.	Tr.	0.13	0.13	56.56	56.69	Tr.	Tr.	Tr.	0.03	4.92	4.95	33.14	38.09	5.22
263	C 1.5	Tr.	Tr.	Nil	Tr.	0.28	0.28	50.17	50.45	Tr.	Tr.	Tr.	0.06	6.80	6.86	37.55	44.41	5.14
264	C 2.0	Tr.	Tr.	Tr.	Tr.	0.07	0.07	37.42	37.49	Tr.	Tr.	Tr.	0.02	6.01	6.03	52.03	58.06	4.45
265	C 2.5	Tr.	Tr.	Tr.	Tr.	0.15	0.15	13.18	13.33	Tr.	Tr.	Tr.	0.04	3.95	3.99	79.34	83.33	3.34
266	C 3.0	Tr.	Tr.	Tr.	Tr.	0.12	0.12	41.67	41.79	Tr.	Tr.	0.01	0.02	5.82	5.85	45.44	51.29	6.92
267	C 3.5	Tr.	Tr.	Tr.	Tr.	0.08	0.08	27.27	27.35	Tr.	Tr.	Tr.	0.06	6.16	6.22	59.37	65.59	7.06
268	C 4.0	Tr.	Tr.	Tr.	0.01	0.07	0.08	21.76	21.84	0.01	Tr.	0.01	0.44	5.12	5.58	63.86	69.44	8.72
269	C 4.5	Tr.	Tr.	Tr.	0.02	0.03	0.05	8.91	8.96	Tr.	Tr.	0.03	0.36	5.36	5.75	78.12	83.87	7.17
270	D 0.5	Tr.	Tr.	0.01	0.17	0.36	0.54	49.70	50.24	0.01	Tr.	0.19	3.92	7.98	12.10	32.96	45.06	4.70
271	D 1.0	Tr.	Tr.	Tr.	0.01	0.03	0.04	27.94	27.98	0.01	Tr.	Tr.	3.31	9.01	12.33	49.83	62.16	9.86
272	D 1.5	Tr.	Tr.	Tr.	Tr.	0.16	0.16	21.19	21.35	Tr.	Tr.	Tr.	0.49	5.19	5.68	59.90	65.58	13.07
273	D 2.0	Tr.	Tr.	Tr.	Tr.	0.10	0.10	32.26	32.36	Tr.	Tr.	Tr.	0.27	3.81	4.08	49.96	54.04	13.60
274	D 2.5	Tr.	Tr.	Tr.	Tr.	0.08	0.08	30.91	30.99	Tr.	Tr.	Tr.	0.10	4.77	4.87	54.09	58.96	10.05
275	D 3.0	Tr.	Tr.	Tr.	Tr.	0.05	0.05	21.35	21.40	Tr.	Tr.	Tr.	0.07	1.93	2.00	65.52	67.52	11.08
276	D 3.5	Tr.	Tr.	Tr.	Tr.	0.14	0.14	29.13	29.27	Tr.	Tr.	Tr.	0.08	1.71	1.79	58.03	59.82	10.91
277	D 4.0	Tr.	Tr.	Tr.	Tr.	0.13	0.13	25.04	25.17	Tr.	Tr.	Tr.	0.35	2.43	2.79	65.92	68.71	6.12
278	D 4.5	Tr.	Tr.	Tr.	Tr.	0.06	0.06	27.98	28.04	Tr.	Tr.	0.01	0.18	2.26	2.45	62.84	65.29	6.67
279	D 5.0	Tr.	Nil	Tr.	Tr.	0.04	0.04	17.14	17.18	0.01	Tr.	0.01	1.26	5.96	7.24	70.46	77.70	5.12
280	D 0.5B	Tr.	Tr.	Tr.	0.48	0.52	1.00	42.73	43.73	0.01	Tr.	0.02	6.50	8.45	14.98	33.49	48.47	7.80
281	D 1.0B	Tr.	Tr.	Tr.	0.05	0.52	0.57	31.29	31.86	0.01	Tr.	0.01	3.38	6.65	10.05	55.20	65.25	2.89

804060

## B.H.P.

Reg. No	Percent Mass		Analysis M/S M/A 3+4 Percent				Analysis M/S. N g/t			Calculated Recd. Head Value g/t				Tailings (Bulk) Cr <sub>2</sub> O <sub>3</sub> g/t	
	Σ M/S M/A 3+4	Σ M/S N	Cr <sub>2</sub> O <sub>3</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	MgO	Pt	Au	Sn	Cr <sub>2</sub> O <sub>3</sub>	Pt	Au	Sn	T1T	J1T
872257	2.00	5.17	43.1	22.4	13.6	9.1	<0.01	0.03	280	8620	<0.0005	Tr.	14	970	770
258	0.94	4.02	39.2	21.5	12.7	8.6	<0.01	<0.01	260	3730	<0.0004	Nil	10	690	590
259	0.53	5.63	49.7	20.3	14.4	10.0	<0.01	<0.01	180	2610	<0.0006	Nil	10	630	600
260	0.53	5.24	49.2	19.9	13.5	9.9	<0.01	0.07	195	2590	<0.0005	Tr.	10	660	580
261	1.35	5.24	49.4	19.7	13.6	9.9	<0.01	0.04	520	6640	<0.0005	Tr.	27	640	610
262	0.03	5.05	30.1	18.1	10.1	6.8	<0.01	1.0	31	100	<0.0005	0.05	1.6	560	500
263	0.06	7.08	35.0	18.1	11.7	7.7	<0.01	0.1	15	230	<0.0007	Tr.	1.1	630	530
264	0.02	6.08	29.0	17.9	12.1	6.3	<0.01	2.6	17	72	<0.0006	0.16	1.0	540	450
265	0.04	4.10	33.4	19.8	14.6	8.0	<0.01	0.1	26	130	<0.0004	Tr.	1.1	640	490
266	0.03	5.94	21.3	17.8	10.3	5.1	<0.01	0.5	18	62	<0.0006	0.03	1.1	510	460
267	0.06	6.30	27.0	18.0	11.8	6.0	<0.01	<0.02	11	153	<0.0006	Tr.	0.7	490	460
268	0.46	5.65	41.6	19.5	15.8	8.7	<0.01	0.11	47	1880	<0.0006	0.01	2.4	560	
269	0.41	5.39	44.4	19.4	15.2	8.9	<0.01	10.5	52	1770	<0.0005	0.57	2.8	610	
270	4.29	8.34	45.6	15.1	12.4	8.4	<0.01	20.5	600	19600	<0.0008	1.71	50	700	
271	3.32	9.04	46.2	16.9	14.1	8.2	<0.01	0.53	580	15400	<0.0009	0.05	53	640	
272	0.49	5.35	46.5	17.7	15.0	9.3	<0.01	0.04	280	2270	<0.0005	Tr.	15	1010	
273	0.27	3.91	46.2	17.7	15.4	9.8	<0.01	0.41	125	1240	<0.0004	0.02	4.9		
274	0.10	4.85	28.2	17.6	12.6	7.9	<0.01	0.05	26	275	<0.0005	Tr.	1.3		
275	0.07	1.98	27.5	17.7	10.4	6.0	<0.01	0.13	125	197	<0.0002	Tr.	2.5		
276	0.08	1.85	20.0	18.3	8.7	4.8	<0.01	5.8	86	151	<0.0003	0.11	1.6		
277	0.36	2.56	40.4	18.7	15.2	8.6	<0.01	0.57	87	1470	<0.0002	0.01	2.2		
278	0.19	2.32	34.2	18.3	14.2	8.4	<0.01	0.08	41	638	<0.0002	Tr.	1.0		
279	1.27	6.00	39.6	19.1	15.4	5.5	<0.01	0.20	44	5060	<0.0006	0.01	2.6		
280	7.00	8.97	43.7	13.7	11.8	7.3	<0.01	0.29	730	30500	<0.0009	0.03	65		
281	3.44	7.17	43.8	16.6	12.9	8.6	<0.01	2.4	820	15100	<0.0007	0.17	59		

804061

B.H.P.

061

g. No	Description	+ 472 $\mu$ m								- 472 $\mu$ m							Percent Mass Slime	
		Percent Mass								Percent Mass								
MS/CH	M/S M/A1	M/S M/A2	M/S M/A3	M/S M/A4	M/S N	J1C	J1T	$\Sigma$	M/S M/A1	M/S M/A2	M/S M/A3	M/S M/A4	M/S N	T1C	T1T	$\Sigma$		
282	D 1.5B	Tr.	Tr.	Tr.	0.01	0.35	0.36	28.26	28.62	Tr.	Tr.	Tr.	0.91	5.78	6.69	55.30	61.99	9.30
283	D 2.0B	Tr.	Tr.	Tr.	0.02	0.30	0.32	48.40	48.08	Tr.	Tr.	Tr.	0.32	3.49	3.81	38.76	42.57	9.03
284	D 2.5B	Tr.	Tr.	Tr.	0.01	0.56	0.57	33.36	33.93	Tr.	Tr.	Tr.	0.08	2.70	2.78	56.73	59.51	6.56
285	D 3.0B	Tr.	Tr.	Nil	Tr.	0.14	0.14	19.30	19.44	Tr.	Tr.	Tr.	0.05	1.78	1.83	71.30	73.13	7.43
286	D 3.5B	Tr.	Tr.	Tr.	Tr.	0.05	0.05	26.75	26.80	Tr.	Tr.	Tr.	0.05	1.03	1.08	62.33	63.41	9.79
287	D 4.0B	Tr.	Tr.	Tr.	0.01	0.25	0.26	17.28	17.54	0.01	Tr.	Tr.	0.48	2.14	2.63	73.62	76.25	6.21
288	D 4.5B	Tr.	Tr.	Tr.	0.02	0.35	0.37	18.77	19.14	0.01	Tr.	0.01	0.61	2.92	3.55	71.36	74.91	5.95
289	D 5.0B	Tr.	Tr.	Tr.	0.01	0.34	0.35	11.55	11.90	Tr.	Tr.	Tr.	1.11	9.81	10.92	69.74	80.66	7.44
290	E 0.5	0.01	Tr.	Tr.	1.29	1.08	2.38	29.59	31.97	0.01	Tr.	Tr.	5.38	10.55	15.94	43.99	59.93	8.10
291	E 1.0	Tr.	Tr.	Tr.	0.15	0.63	0.78	29.60	30.38	0.01	Tr.	Tr.	2.87	5.71	8.59	51.28	59.87	9.75
292	E 1.5	Tr.	Tr.	Tr.	0.02	0.50	0.52	26.02	26.54	Tr.	Tr.	Tr.	0.80	4.43	5.23	60.67	65.90	7.56
293	E 2.0	Tr.	Tr.	Tr.	0.05	0.37	0.42	25.02	25.44	Tr.	0.01	Tr.	3.68	10.38	14.07	51.41	65.48	9.08

Metallurgist *K. Austen*

  
(P.L. James)

Acting Chief Chemist & Metallurgist

804062

B.H.P.

062

Reg. No	Percent Mass		Analysis M/S M/A 3 + 4				Analyses M/S N			Calculated Recovered Head Value g/t			
	$\Sigma$ M/S	$\Sigma$ M/S	Percent				g/t			Value g/t			
	M/A 3+4	N	Cr <sub>2</sub> O <sub>3</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	MgO	Pt	Au	Sn	Cr <sub>2</sub> O <sub>3</sub>	Pt	Au	Sn
872282	0.92	6.13	48.8	19.2	15.1	8.4	<0.01	1.1	340	4490	<0.0006	0.07	21
283	0.34	3.79	45.1	19.4	16.2	8.8	<0.01	1.4	140	1570	<0.0004	0.05	5.3
284	0.09	3.26	31.7	18.8	13.1	6.7	<0.01	0.04	24	257	<0.0003	Tr.	0.8
285	0.05	1.92	23.1	19.5	8.8	5.5	<0.01	0.28	45	116	<0.0002	0.01	0.9
286	0.05	1.08	21.9	20.9	8.3	5.0	<0.01	1.3	50	104	<0.0001	0.01	0.5
287	0.50	2.39	39.7	19.9	12.8	8.2	<0.01	1.0	77	1950	<0.0002	0.02	1.8
288	0.64	3.27	42.3	20.1	14.5	8.3	<0.01	0.83	120	2700	<0.0003	0.03	3.9
289	1.12	10.15	41.4	19.2	15.2	7.6	<0.01	0.10	39	4660	<0.0010	0.01	4.0
290	6.67	11.63	40.4	15.9	11.9	8.0	<0.01	<0.02	470	27000	<0.0012	<0.002	55
291	3.02	6.34	52.1	16.2	11.1	7.8	<0.01	0.37	430	15700	<0.0006	0.02	27
292	0.82	4.93	45.4	18.9	12.9	7.8	<0.01	0.03	210	3740	<0.0005	Tr.	10
293	3.73	10.75	46.5	16.2	11.5	6.4	<0.01	0.07	230	17400	<0.0011	0.01	25

Metallurgist.

*K. Austing*

(P.L. James)

Acting Chief Chemist & Metallurgist

804063

B.H.P.

063

Reg. No	Description	+ 472 $\mu$ m								Percent Mass - 472 $\mu$ m								Percent Mass Slime
		M/S M/A1	M/S M/A2	M/S M/A3	M/S M/A4	M/S N	J1C	J1T	$\Sigma$	M/S M/A1	M/S M/A2	M/S M/A3	M/S M/A4	M/S N	T1C	T1T	$\Sigma$	
872294	E 2.5	Trace	Trace	Trace	0.01	0.39	0.40	34.00	34.40	Trace	Trace	Trace	0.56	8.26	8.82	43.50	52.32	13.28
295	E 3.0	Trace	Trace	Trace	0.01	0.13	0.14	33.85	33.99	0.01	0.01	Trace	1.25	12.12	13.39	44.29	57.68	8.33
296	E 3.5	Trace	Trace	Trace	Trace	0.24	0.24	25.85	26.09	Trace	Trace	Trace	0.26	8.35	8.61	57.87	66.48	7.43
297	E 4.0	Trace	Trace	Trace	Trace	0.21	0.21	23.35	23.56	Trace	Trace	Trace	0.07	3.99	4.06	64.01	68.07	8.37
298	E 4.5	Trace	Trace	Trace	Trace	0.20	0.20	25.37	25.52	Trace	Trace	Trace	0.18	5.44	5.62	61.71	67.33	7.10
299	E 5.0	Trace	Trace	Trace	0.01	0.12	0.13	19.46	19.59	Trace	Trace	Trace	0.22	4.89	5.11	68.82	73.93	6.48
300	F 0.5	Trace	Trace	Trace	0.21	0.36	0.57	39.17	39.74	0.01	Trace	Trace	5.30	5.40	10.71	42.28	52.99	7.27
301	F 1.0	Trace	Trace	Trace	0.11	0.28	0.39	45.57	45.96	0.03	Trace	0.02	10.45	4.87	15.37	32.78	48.15	5.89
302	F 1.5	Trace	Trace	Trace	0.32	0.71	1.03	47.64	48.67	Trace	Trace	Trace	3.38	3.28	6.66	36.06	42.72	8.61
303	F 2.0	Trace	Trace	Trace	0.07	0.36	0.43	24.26	24.69	Trace	Trace	Trace	2.08	5.14	7.22	57.42	64.64	10.67
304	F 2.5	Trace	Trace	Trace	Trace	0.13	0.13	22.52	22.65	Trace	Trace	Trace	0.33	3.72	4.05	61.88	65.93	11.42
305	F 3.0	Trace	Trace	Trace	Trace	0.13	0.13	20.53	20.66	Trace	Trace	Trace	0.29	3.12	3.41	58.65	62.06	17.28
306	F 3.5	Trace	Trace	Trace	Trace	0.04	0.04	1.53	1.57	Trace	Trace	Trace	0.06	1.87	1.93	82.65	84.58	13.85
307	G 0.5	Trace	Trace	Trace	0.09	0.55	0.64	32.05	32.69	0.01	Trace	Trace	3.44	8.36	11.81	44.80	56.61	10.70
308	G 1.0	Trace	Trace	Trace	0.27	0.52	0.79	27.96	28.75	0.03	0.01	0.02	6.87	5.30	12.23	48.23	60.46	10.79
309	G 1.5	Trace	Trace	Trace	0.01	0.72	0.73	7.55	8.28	Trace	Trace	Trace	0.18	4.65	4.83	77.85	82.68	9.04
310	G 2.0	Trace	Trace	Trace	0.01	0.60	0.61	4.66	5.27	Trace	Trace	Trace	0.13	6.35	6.48	78.60	85.08	9.65
311	G 2.5	Trace	Trace	Trace	Trace	0.15	0.15	1.63	1.78	Trace	Trace	Trace	0.31	7.06	7.37	80.84	88.21	10.01
312	G 3.0	Trace	Trace	Trace	0.01	0.18	0.19	3.16	3.35	Trace	Trace	Trace	0.28	4.02	4.30	81.33	85.63	11.02
313	G 3.5	Trace	Trace	Trace	0.02	0.64	0.66	12.88	13.54	Trace	Trace	Trace	0.11	6.04	6.15	71.48	77.63	8.83
872479	H 1.0	Trace	Trace	Trace	0.36	0.43	0.79	17.25	18.04	Trace	Trace	0.01	0.44	5.54	5.98	64.48	70.46	11.50
480	H 2.0	Trace	Trace	Trace	0.04	0.35	0.39	16.60	16.99	Trace	Trace	0.01	0.62	6.24	6.87	67.32	74.19	8.82
481	H 3.5	Trace	Trace	Trace	0.17	0.10	0.27	22.03	22.30	0.01	Trace	Trace	1.16	10.30	11.47	61.39	72.86	4.84

Metallurgist.....*K. Austin*

(P.L. James)  
*[Signature]*  
 Acting Chief Chemist & Metallurgist

804064

B.H.F.

064

Reg. No	Percent Mass		Analysis $\leq$ M/S N/A 3 + 4				Analyses $\leq$ M/S N g/t			Calculated Recovered Head Value g/t			
	$\Sigma$ M/S	$\Sigma$ M/S	Cr <sub>2</sub> O <sub>3</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	MgO	Pt	Au	Sn	Cr <sub>2</sub> O <sub>3</sub>	Pt	Au	Sn
	M/A 3+4	N											
872294	0.57	8.65	45.6	17.2	14.9	8.7	<0.01	0.01	60	2600	<0.0009	Trace	5.2
295	1.26	12.25	46.5	19.0	15.9	9.2	<0.01	0.20	41	5850	<0.0012	0.02	5.0
296	0.26	8.59	40.6	18.1	15.8	8.6	<0.01	0.01	23	1090	<0.0009	Trace	2.0
297	0.07	4.20	38.0	17.4	18.0	7.9	<0.01	0.02	72	279	<0.0004	Trace	3.0
298	0.18	5.64	41.6	17.3	20.1	8.6	<0.01	0.01	44	748	<0.0006	Trace	2.5
299	0.23	5.01	38.8	18.5	19.1	8.8	<0.01	0.09	50	908	<0.0005	Trace	2.5
300	5.51	5.76	50.9	15.1	19.0	8.4	<0.01	0.01	850	28000	<0.0006	Trace	49
301	10.58	5.15	53.4	14.8	16.9	8.2	<0.01	0.15	2600	56500	<0.0005	0.01	134
302	3.70	3.99	53.6	14.1	14.9	7.5	<0.01	0.16	2500	19800	<0.0004	0.01	100
303	2.15	5.50	50.7	16.9	13.8	8.9	<0.01	<0.03	350	10900	<0.0005	<0.002	19
304	0.33	3.85	40.6	18.7	15.2	8.3	<0.01	0.09	90	1340	<0.0004	Trace	3.5
305	0.29	3.25	46.6	18.4	16.1	8.7	<0.01	0.08	105	1350	<0.0003	Trace	3.4
306	0.06	1.91	27.8	18.1	13.6	5.9	<0.01	<0.03	82	184	<0.0002	<0.001	1.6
307	3.53	8.91	49.0	15.6	14.3	7.9	<0.01	<0.03	1050	17300	<0.0009	<0.003	94
308	7.16	5.82	52.0	15.8	15.8	8.1	<0.01	0.53	2800	37200	<0.0006	0.03	163
309	0.19	5.37	32.0	17.6	12.2	5.7	<0.01	0.31	236	583	<0.0005	0.02	13
310	0.14	6.95	34.0	16.4	13.4	6.4	0.006	<0.03	33	461	0.0004	<0.002	2.3
311	0.31	7.21	39.1	18.0	15.3	7.2	<0.01	<0.03	105	1210	<0.0007	<0.002	7.6
312	0.29	4.20	36.8	18.1	14.9	7.1	<0.01	0.66	74	1080	<0.0004	0.03	3.1
313	0.13	6.68	34.7	16.8	14.3	7.0	<0.01	<0.03	23	465	<0.0007	<0.002	1.5
872479	0.81	5.97	47.0	17.7	11.1	8.4	<0.01	0.14	55	3790	<0.0006	0.01	3.3
480	0.67	6.59	39.4	17.6	14.5	7.9	<0.01	<0.03	94	2620	<0.0007	<0.002	6.2
481	1.33	10.40	47.7	17.1	14.8	9.0	<0.01	<0.03	134	6360	<0.001	<0.003	14

Metallurgist *K. Austin*

(P.L. James) *[Signature]*  
 Acting Chief Chemist & Metallurgist

804065

Ref. No	Description MS/CH	+ 472 $\mu$ m								Percent Mass - 472 $\mu$ m								Percent Mass Slime
		M/S M/A1	M/S M/A2	M/S M/A3	M/S M/A4	M/S N	T1C	T1T	$\Sigma$	M/S M/A1	M/S M/A2	M/S M/A3	M/S M/A4	M/S N	T1C	T1T	$\Sigma$	
872482	I 1	Trace	Trace	Trace	0.05	0.05	0.10	17.32	17.42	0.01	Trace	Trace	3.27	5.83	9.10	63.60	72.70	9.88
483	I 2	Trace	Trace	Trace	0.01	0.02	0.03	21.75	21.78	Trace	Trace	Trace	1.15	7.42	8.57	58.45	67.02	11.20
484	I 3	Trace	Trace	Trace	0.02	0.05	0.07	17.61	17.68	Trace	Trace	Trace	4.09	6.78	10.87	61.77	72.64	9.68
485	J 1	Trace	Trace	Trace	0.10	0.14	0.24	17.50	17.74	Trace	Trace	Trace	0.94	5.36	6.30	65.08	71.38	10.88
486	J 2	Trace	Trace	Trace	0.50	0.10	0.60	14.55	15.15	Trace	Trace	Trace	0.49	6.86	7.35	68.63	75.98	8.87
487	K 1	Trace	Trace	Trace	0.01	0.08	0.09	28.07	28.16	Trace	Trace	Trace	0.51	6.51	7.02	56.40	63.42	8.42
488	K 2	Trace	Trace	Trace	0.01	0.05	0.06	16.77	16.83	Trace	Trace	Trace	0.73	4.83	5.56	71.20	76.76	6.41
489	K 3	Trace	Trace	Trace	0.01	0.01	0.02	19.04	19.06	0.01	Trace	Trace	0.81	5.33	6.14	66.80	72.94	8.00
490	K 4	Trace	Trace	Trace	Trace	Trace	Trace	18.87	18.87	Trace	Trace	Trace	0.58	5.15	5.73	66.19	71.92	9.21
491	K 5	Trace	Trace	Trace	Trace	Trace	Trace	23.49	23.49	0.01	Trace	Trace	0.69	6.61	7.31	60.28	67.59	8.92
492	K 6	Trace	Trace	Trace	Trace	0.01	0.01	17.51	17.52	0.01	Trace	Trace	0.88	6.03	6.92	69.52	76.44	6.04
493	L 1	Trace	Trace	Trace	Trace	0.03	0.03	18.67	18.70	Trace	Trace	Trace	0.61	2.86	3.48	57.21	60.69	20.61
494	L 2	Trace	Trace	Nil	Trace	0.06	0.06	18.79	18.85	0.01	Trace	Trace	0.55	3.59	4.15	70.52	74.67	6.48
495	M 1	Trace	Nil	Nil	Trace	0.10	0.10	8.32	8.42	Trace	Trace	Trace	0.11	6.21	6.32	82.35	88.67	2.91
496	M 2	Trace	Trace	Trace	Trace	0.16	0.16	14.59	14.75	Trace	Trace	Trace	0.08	3.85	3.93	79.38	83.31	1.94
497	M 3	Nil	Nil	Nil	Trace	0.02	0.02	17.61	17.63	Trace	Trace	Trace	0.03	2.25	2.28	76.94	79.22	3.15
498	N 1	Trace	Trace	Trace	0.01	0.03	0.04	27.47	27.51	Trace	Trace	Trace	0.31	4.33	4.64	57.55	62.19	10.30
499	N 2	Trace	Trace	Trace	0.01	0.02	0.03	28.80	28.83	Trace	Trace	Trace	0.33	4.99	5.32	55.70	61.02	10.15
500	O 1	Trace	Trace	Trace	0.04	0.03	0.07	30.64	30.71	Trace	Trace	Trace	0.45	3.77	4.22	54.89	59.11	10.18
501	P 1	Trace	Trace	Nil	0.01	0.01	0.02	14.91	14.93	Trace	Trace	Trace	0.30	4.33	4.63	67.02	71.65	13.42
502	Q 1	0.01	Trace	Trace	0.92	0.15	1.08	38.93	40.01	Trace	Trace	Trace	2.35	6.40	8.75	40.55	49.30	10.69
503	R 1	Trace	Trace	Nil	0.02	0.04	0.06	15.35	15.41	Trace	Trace	Trace	0.29	5.33	5.62	58.36	63.98	20.61
504	R 2	Trace	Trace	Nil	Trace	0.12	0.12	35.59	35.71	Trace	Trace	Trace	0.12	3.14	3.26	46.28	49.54	14.75
505	S 1	Trace	Trace	Trace	0.02	0.13	0.15	33.49	33.64	0.01	Trace	Trace	0.23	4.88	5.12	54.97	60.09	6.27

Metallurgist. *K. Austin*

(P.L. James)

Acting Chief Chemist & Metallurgist *[Signature]*

066

Reg. No	Percent Mass		Analysis $\Sigma$ M/S M/A 3 + 4 Percent				Analyses $\Sigma$ M/S N g/t			Calculated Recovered Head Value g/t			
	$\Sigma$ M/S	$\Sigma$ M/S	Cr <sub>2</sub> O <sub>3</sub>	FeO	Al <sub>2</sub> O <sub>3</sub>	MgO	Pt	Au	Sn	Cr <sub>2</sub> O <sub>3</sub>	Pt	Au	Sn
	N/A 3+4	N											
872482	3.32	5.88	51.7	20.8	13.2	9.8	<0.01	<0.03	690	17200	<0.0006	<0.002	41
483	1.16	7.44	49.7	18.8	17.4	9.8	<0.01	0.27	210	5750	<0.0007	0.02	16
484	4.11	6.83	52.6	18.4	15.4	9.2	<0.01	<0.03	1250	21600	<0.0007	<0.002	85
485	1.04	5.50	53.2	17.4	14.9	9.9	<0.01	<0.03	730	5560	<0.0006	<0.002	40
486	0.99	6.96	57.9	16.9	11.9	10.2	<0.01	<0.03	180	5730	<0.0007	<0.002	13
487	0.52	6.59	44.2	20.8	16.0	9.9	<0.01	<0.03	110	2310	<0.0007	<0.002	7.2
488	0.74	4.88	46.5	19.9	17.8	10.3	<0.01	<0.03	185	3440	<0.0005	<0.001	9.0
489	0.82	5.34	47.1	19.3	18.3	9.7	<0.01	<0.03	160	3840	<0.0005	<0.002	8.5
490	0.58	5.15	46.4	19.4	17.9	9.5	<0.01	<0.03	120	2700	<0.0005	<0.002	6.2
491	0.69	6.61	45.9	19.2	18.3	9.4	<0.01	0.04	92	3190	<0.0007	Trace	6.1
492	0.88	6.04	46.2	19.1	19.3	9.1	<0.01	<0.03	170	4090	<0.0006	<0.002	10
493	0.61	2.89	32.9	19.7	12.6	6.2	<0.01	0.60	250	2020	<0.0003	0.02	7.2
494	0.55	3.65	40.6	21.7	16.1	9.0	<0.01	<0.03	260	2260	<0.0004	<0.001	9.5
495	0.11	6.31	43.4	18.0	16.7	9.3	<0.01	<0.03	15	459	<0.0006	<0.002	0.9
496	0.08	4.01	44.5	16.6	18.9	10.1	<0.01	<0.03	18	363	<0.0004	<0.001	0.7
497	0.03	2.27	45.4	15.8	18.7	9.6	<0.01	<0.03	46	131	<0.0002	<0.001	1.0
498	0.32	4.36	47.1	18.3	18.8	10.8	<0.01	<0.03	104	1500	<0.0004	<0.001	4.5
499	0.34	5.01	48.1	18.5	16.7	8.8	<0.01	0.67	122	1640	<0.0005	0.03	6.1
500	0.49	3.80	48.1	18.0	17.4	9.5	<0.01	<0.03	155	2310	<0.0004	<0.001	5.9
501	0.31	4.34	50.8	17.6	15.6	10.1	<0.01	<0.03	233	1530	<0.0004	<0.001	10
502	3.27	6.55	53.0	16.8	16.9	11.1	<0.01	<0.03	337	17400	<0.0007	<0.002	22
503	0.31	5.37	47.4	17.3	16.2	10.2	<0.01	<0.03	117	1440	<0.0005	<0.002	6.3
504	0.12	3.26	45.5	18.4	17.9	9.8	<0.01	<0.03	64	571	<0.0003	<0.001	2.1
505	0.25	5.01	43.4	17.3	20.5	11.2	<0.01	0.05	51	1110	<0.0005	Trace	2.6

Metallurgist *K. Austin*

(P.L. James) *[Signature]*  
Acting Chief Chemist & Metallurgist

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APPENDIX 4  
PART B

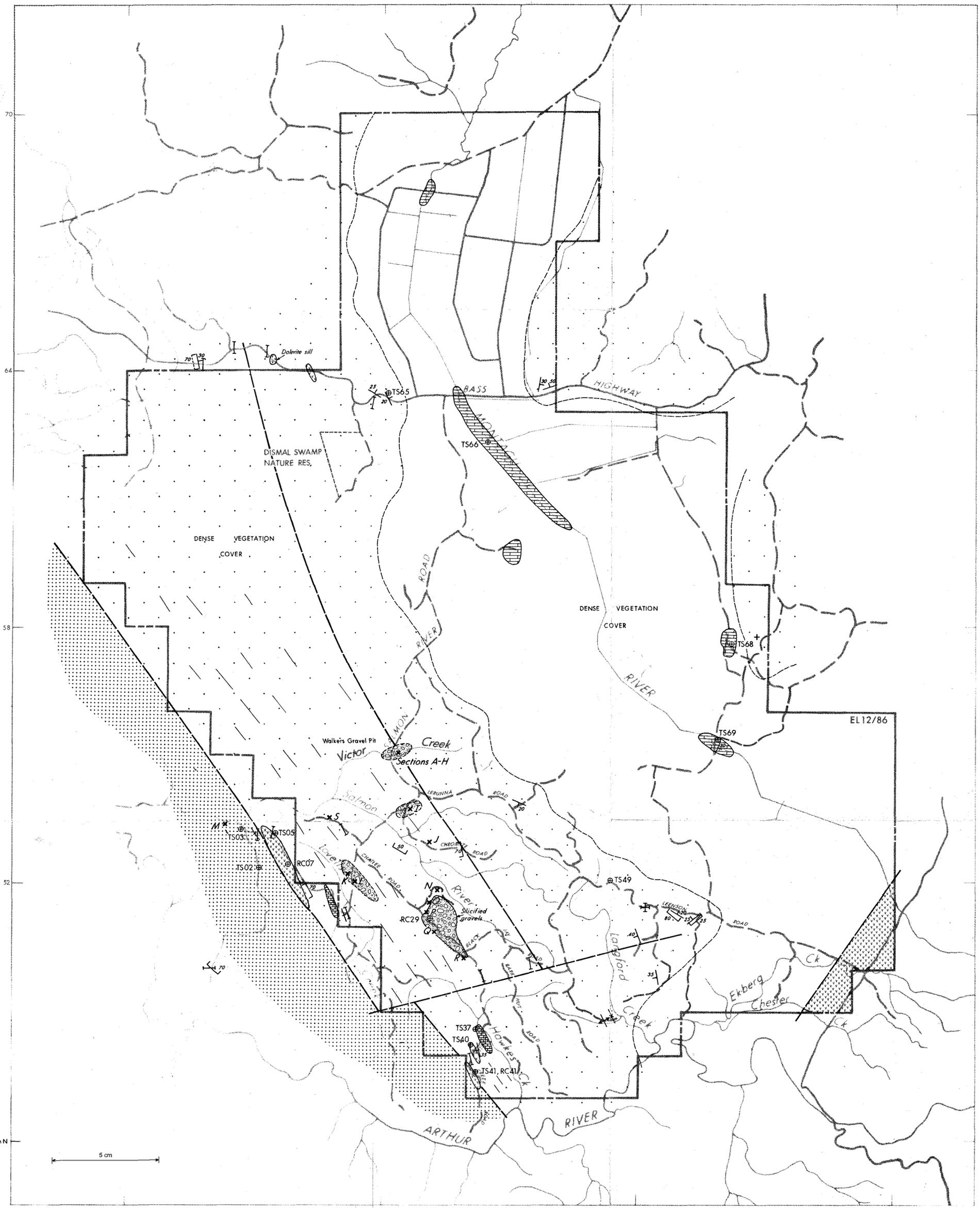
CR<sub>2</sub>O<sub>3</sub> GRADE OF INDIVIDUAL SAMPLES

## APPENDIX 4

## PART B

CR<sub>2</sub>O<sub>3</sub> GRADE OF INDIVIDUAL SAMPLES (G/T)

A	0.5 = 3115	DB	0.5 = 7230	G	0.5 = 5738	M	1 = 259
	1.0 = 1764		1.0 = 5501		1.0 = 16370		2 = 133
			1.5 = 3695		1.5 = 455		3 = 46
B	0.5 = 817		2.0 = 1517		2.0 = 455		
	1.0 = 1001		2.5 = 248		2.5 = 1210	N	1 = 632
			3.0 = 116		3.0 = 1067		2 = 625
C	0.5 = 1994		3.5 = 104		3.5 = 465		
	1.0 = 50		4.0 = 1398			O	1 = 790
	1.5 = 127		4.5 = 1558	H	1 = 512		
	2.0 = 46		5.0 = 2690		2 = 491	P	1 = 457
	2.5 = 87				3 = 1520		
	3.0 = 42	E	0.5 = 7059			Q	1 = 5438
	3.5 = 106		1.0 = 3115	I	1 = 6795		
	4.0 = 1247		1.5 = 1014		2 = 2793	R	1 = 329
	4.5 = 1229		2.0 = 5686		3 = 10787		2 = 138
			2.5 = 1520				
D	0.5 = 4646		3.0 = 3467	J	1 = 2399	S	1 = 435
	1.0 = 5610		3.5 = 606		2 = 2861		
	1.5 = 1868		4.0 = 172				
	2.0 = 1198		4.5 = 475	K	1 = 842		
	2.5 = 265				2 = 1365		
	3.0 = 197	F	0.5 = 11183		3 = 1625		
	3.5 = 151		1.0 = 19170		4 = 1165		
	4.0 = 1054		1.5 = 6007		5 = 1350		
	4.5 = 368		2.0 = 7021		6 = 1765		
	5.0 = 2921		2.5 = 1340				
			3.0 = 1250	L	1 = 1056		
			3.5 = 184		2 = 1069		

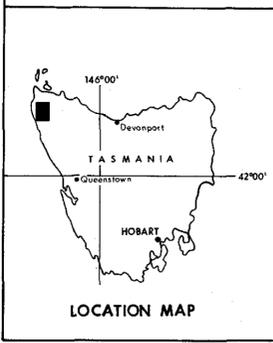


314 000 mE

25

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32

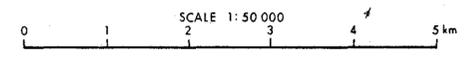


<b>TERTIARY</b>		Sand, gravel
<b>CAMBRIAN</b>		Shale, siltstone, sandstone
		Limestone, dolomite
		Basalt, dolerite
<b>PRECAMBRIAN</b>		Limestone, silicified, dolomitised
		Orthoquartzite, slate, limestone

	Lineament; air-photo/aeromagnetic interpretation
	Anticline, syncline
	Strike and dip of bedding, vertical bedding, horizontal bedding
	Strike and dip of cleavage, vertical cleavage, horizontal cleavage
	Trend lines
TS49 ⊕	Thin section sample site
RC29 ⊕	Rock chip sample site

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NX Location of channel sample and location



88-2786

<b>FACTUAL AND INTERPRETATIVE GEOLOGICAL MAP</b>	
EL 12/86 MONTAGU, N.W. TASMANIA	
Prepared: W. Koseris	Date: Sept, 1987
Drawn: D.J.R./L.J.T.	Project No.: K02
Centre: Brisbane	Drawing No.: AI-858
<b>PLATE 1</b>	