GEOLGY AND DRILLING RESULTS:

FRITCHARD'S LODE - MT. BUNDEY AREA, N.T.

Peter G. Dunn

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NEVSAM MINING CO.PTY. LIMITED - Iron Ore Export - Northern Territory

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- Proposed Iron Ore Shiploading Facilities at Darwin  
  5
NEVSAM MINING CO. PTY. LIMITED.

Iron Ore Export - Northern Territory

1) Commencing Program - The company will commence operations from deposits at Mt. Sunday, from reserves of direct shipping grade ore averaging 64/65% Fe, consisting of about 1.5 million tons in the main lode to depths of 50', and a minimum of 400,000 tons of ore in adjacent rubble areas. The following information on this deposit is attached:

a) Proving results and assays by the Department of Mines. (Attachment No. 1)

b) Assays in Japan of independent samples taken by Japanese geological and mining experts. (Attachment No. 2)

c) Preliminary estimates of surrounding rubble areas. (Attachment No. 3)

d) Assays of representative samples of iron ore from rubble areas. (Attachment No. 4)

Complete tonnages of ore from ore will be established by bulldozing coarse ore with commencing mining operations, also as suitable grade ore exists in some sections of the lode to depths of 130/140', reserves should be increased in later years.

Ore in the sulphide zone is suitable for up-grading by magnetic separation, and recovery will be dependent on market conditions and economics in later years.

The ore-body is situated about 56 miles south-east of Darwin.

Fines - An allowance of 10% under 10 m.m. is included in contracts, and as rubble ore would be all above this size, it is anticipated that the average fines will be little above this figure, and the surplus, if any, can be shipped at discounts stipulated, without loss.

2) Mining - The company will sub-contract mining to Messrs. Voglottti & Lapira Pty. Ltd., who have quoted from 17/6 to 14/- per ton for mining, crushing, screening and delivery to
trucks for lode ore in quantities from 100,000 to 250,000 tons per year, and 9/- to 6/6 per ton for rubble ore in similar quantities. (Attachments Nos. 5, 6 & 7).

This company can commence operations with 5/6 months notice, and their capacity is around 500,000 tons per year.

Suitable Japanese expert/s will be established in the Territory to advise and assist in commencing operations.

3) **Transport to Rail** - Transport to the rail siding at McMinns Lagoon, about 22 miles from Darwin, will be carried out by Navsam utilising Mack 80-ton truck-trailer units. This involves a carrying distance of about 46 miles over reasonably flat terrain, operating 20 hours per day in two 10-hour shifts, over the dry season of 8/9 months. With an average speed of 25 m.p.h. when loaded, and 30 m.p.h. empty, 4 trips per day for 6 days per week can be made giving a capacity of 76,800 tons per vehicle over 40 weeks. Two vehicles will have a capacity of 150,000 tons in 40 weeks, and it is proposed to add a further two vehicles in the second year of operations. Bin loading and discharge is proposed.

Initially stockpiles will be created both at the rail siding and wharf prior to commencement of shipments, also if it proved necessary at any time to compensate for delays, this could be achieved by carting initially to a stockpile at the Humpty-Doo road, from which point trucks could be used for most of the year.

Operating costs of a similar type vehicle over a gravel road and similar distances in Western Australia have averaged 2.19 pence per ton-mile, and we estimate costs of around 3d. per ton-mile for this transport.

Six months notice is required for production and delivery of these vehicles. (Refer Attachment No. 8)

4) **Rail Transport** - A quotation of 3d. per ton-mile for transport from McMinns Lagoon siding to the wharf at Darwin has been given by the Commissioner for Commonwealth Railways, (Attachment No. 9)

Plenty of vacant ground exists adjacent to this siding, where ore can be stockpiled as required.

5) **Government Facilities Required** - The form of gravel road and low-level bridge referred to in the attached letter from the Administrator would be suitable, and transport will be limited to the dry season. The capital cost is estimated at £180,000, and the company would be responsible for maintenance etc., estimated at about £10,000 per year, i.e. 2/- per ton based on an annual turnover of 100,000 tons. (Attachment No. 10).
Wharf - The question of additional equipment necessary at the wharf to handle stockpiling and loading of iron ore by Nevsam has been discussed with McDonald Constructions Pty. Ltd., who have estimated an additional cost of £150,000 beyond estimates of plant required to handle ore for N.I.M.C.O. They prefer consideration of their proposals as a separate proposition, which has a certain amount of merit, as the additional equipment could be treated as a separate proposal and added at a later date, if this is found necessary.

An amended blue-print and copy of a letter dated the 17th April from McDonald Constructions Pty. Ltd. is enclosed (Attachment No. 14). The stockpile area, loading rate and design would be quite suitable for our requirements, and in fact a lower loading rate than 1,000 t.p.h. would suffice.

6) Repayment of Government Costs - The company proposes that payments for the use of stockpile and loading facilities at Darwin be made at the following rates:

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<th>Tonnage</th>
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<td>100,000 tons per year</td>
<td>7/-</td>
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<tr>
<td>150,000 tons up to 200,000 tons</td>
<td>5/6</td>
</tr>
<tr>
<td>200,000 tons up to 300,000 tons</td>
<td>5/-</td>
</tr>
<tr>
<td>300,000 tons per year and above</td>
<td>Similar rates to those fixed for N.I.M.C.O. if lower than 5/- per ton.</td>
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Payment will be made in any desired form, and as no firm weights will be obtainable until ships are loaded we suggest a letter of credit be established negotiable against ship's draft survey certificates, at the rate of 7/- per ton, with annual refunds to be made according to tonnages shipped.

The above would provide annual gross income from £35,000 to £48,000 on tonnages covered by the present letter of intent, and estimated additional costs beyond submissions by N.I.M.C.O. would be -

- Depreciation - £150,000 x 10 years = £1500 per year
- Maintenance - £11,700 x 150,000 = £17500 per year
- Running Exs. - £11,700 x 350,000
  (for 200,000 tons) 300,000 = £7800 per year
  £27900

Say £30,000.

Should the above proposals be considered uneconomic for any reason, it is requested that a workable rate be indicated.
7) **Initial Overseas Contract** – A copy of the initial agreement and letter from the overseas buyers, dated the 13th April, is enclosed. (Attachment No. 11). Broadly this covers a minimum of 100,000 tons per year, and maximum of 160,000 tons per year, at Buyer's option, for a period of 7 years, at 20 U.S. cents per unit of iron content C and F, with normal discounts for quality and shipment quantity variations, for ore averaging 64% Fe, with a cancellation point of 62% Fe.

Under the above-mentioned contract buyers have the right, for declaration by September 1964, to purchase at $8.50 per ton FOB, and provide necessary shipping. Shipments commencing October 1965/April 1966 are planned.

8) **Operating Costs** – FOB costs are estimated at between 55/3 and 50/3 per ton for annual quantities ranging from 100,000 to 200,000 tons. (Refer Attachment No. 12). Gross margins between 21/3 and 26/3 per ton are expected.

Items which are not included as contingencies would include –

a) Occasional hire of bulldozers or front-end loaders at the wharf.

b) Weight and quality variations.

c) Wharf charges above 5/- per ton.

It can reasonably be expected that 1/-/3/- per ton would be ample to cover such items. Additional profit on rubble ore can be expected to offset such items.

9) **Shipping** – A minimum water depth of 32 feet at all times is required, it being proposed to utilise 20,000 ton vessels in the initial stages, then utilise vessels in the 22,000/29,000 ton range as the production program is expanded.

10) **Capital Investment** – The company has expended approximately £50,000 up to the present time in prospecting, testing of various types of iron ore deposits in areas held, lease expenses, several inspections by Japanese experts etc., and further finance to the extent of £150,000 will be necessary up to the time of commencing shipments, then from initial returns an amount of £80,000 reserved for the purchase of two additional Mack ore truck-trailer units plus spares.

The attached schedule (No. 13) sets out finance requirements from the 1st May, 1964, in detail.

Apart from iron ore from Mt. Bundey, prospects with other ores close to rail facilities are under the course of examination, and a joint study is being made as to the suitability of medium grade and goethitic ores for the possible use in sponge iron manufacture.
This is being carried out in conjunction with one of the largest
American mining groups, the quantities being in the 300,000/
500,000 ton per annum range, but it will be some little time
before the suitability of ores and economics can be firmly
established.

Through the Chairman of Nevseam, Mr. H.F. Walsh, discussions
and negotiations with Peabody & Co. and the Chase Manhattan
Bank of U.S.A. have been progressed both in America and locally
for these groups to form a merger with Nevseam on an equal
Australian/American basis.

Field surveys by their representatives have recently been
satisfactorily concluded in the Northern Territory, and it is
anticipated that satisfactory agreements will be concluded which
will incorporate required finance being introduced, subject to
agreement to establishment of facilities being granted, as will
control establishment of the export industry with iron ore.

The attached copy of a cable recently received by Mr. Walsh
refers to this subject. (Attachment No. 15).

The objective of this merger is to carry out a detailed
survey of other possible economic mineral deposits in conjunction
with a mining program, also incorporate pastoral and agricultural
pursuits. In this regard negotiations are in progress for the
possible purchase of the Mt. Bundey station property and its
subsidiaries, which will involve approximately £150,000 further
capital, to be provided by joint American interests.

Proposals are being studied on a joint mining and agricultural
basis, as it is the opinion that the former will provide
facilities, equipment, transport, shipping connections and markets
which will ensure economic operation in agricultural and pastoral
pursuits, and so assist in the development of the full potential
of the Mt. Bundey area, when opened up by roads.

It is felt that the financial and technical assistance avail-
able from such leading and experienced sources will be of
particular benefit to the Northern Territory, both with the
projects in hand and future developmental projects, including other
minerals such as copper if economically workable deposits are
located.

General - It is necessary for some suitable form of assurance
regarding facilities to be provided which will permit finalisation
of formal overseas contracts for iron ore, and we respectfully
request consideration of these assurances being provided with the
following basic conditions -

a) Subject to a firm program being established by the
   Government with N.I.M.C.O.
b) Subject to charges as set out in paragraph No. 6 being applicable to iron ore being shipped by Nevsam.

c) Subject to firm formal overseas contracts for quantities stipulated in the letter of intent being provided within a reasonable period, say 3 months.

Alternatively

d) Provision of formal overseas contracts by N.I.M.C.O. and Nevsam, either singly or jointly, with economic proposals which will provide the Government with a minimum gross income of £65,000 per annum, over a minimum initial period of 7 years, from use of wharf facilities.

This alternative is based on a minimum outlay of around £400,000 being required, and costs based as follows -

- Depreciation - over 10 years - £40,000 per year
- Maintenance - 11,700 per year
- Running Expenses - for 300,000 tons - 11,700 per year

Total Cost £63,400 per year

In conclusion it is desired to express our appreciation for the great amount of practical co-operation extended in the past by both the Administration and Government in this project, and it is sincerely hoped that it is now possible to form a basis which will permit establishment of an export industry with iron ore from the Northern Territory to Japan.

(A.N. Sampson).
MANAGING DIRECTOR.
Preliminary and Unedited

GEOLOGY AND DRILLING RESULTS:
PRITCHARD'S LODE - MT. BUNDEY AREA, N.T.

Peter G. Dunn

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(Government Battery, Tennant Creek).

Assay Results, Drill Holes 2, 3a, 3b, 4a, 5a, 6, 8, 9, 10, 11 and 12 for Total Iron and Sulphur, Phosphorus and Copper (Australian Mineral Development Laboratories, Adelaide).

Assay Results, surface samples near drill holes 3, 4, 5, 8, 9, 10, 11 and 12 for total iron, Silica, Sulphur, Phosphorus and Copper (Nissho Mining Company, Tokyo).

ILLUSTRATIONS

Plate - 1 - Geology of Pritchard's Lode,
Mt. Bundey. Scale 1" = 100'.

Plate - 2 - 7 - Vertical Sections, Pritchard's Lode. Scale 1" = 40'.
GEOLoGY AND DRILLING RESULTS

PRITCHARD'S LODE - MT. BUNDEY AREA, N.T.

ABSTRACT:

Pritchard's Lode is about 56 miles south-east of Darwin. It is accessible by vehicle only during the dry season either from the 47 mile peg on the Stuart Highway or from Adelaide River township. It is covered by Mineral Leases 285B and 286B, held by Nevsam Mining Company.

Pritchard's Lode consists of one main and several subsidiary martite lodes within the Mt. Goyder Syenite. The main lode forms a prominent outcrop on a low rounded syenite hill, which is completely covered with martite rubble. The main lode is about 2,200 feet long and is up to 100 feet wide. The martite shows a strong jointing and some boxworks with rare pyrite crystals. The lode as a whole is strongly magnetic. The presence of hornfels bands within the martite body suggests that the lode is the replacement of a roof pendant.

Sixteen diamond drill holes totalling 2,042 feet were put down in the dry season of 1962 by the Mines Branch, Northern Territory Administration, to test the extent and configuration of the lode, and the nature of the lode material at depth. The total proved, probable, and possible ore reserves are calculated to be 1,504,000 tons. These figures refer both to solid lode material and rubble ore. This material has an average iron content of about 64% and an average sulfur content of about 0.07%. Phosphorus averages about 0.052% and copper 0.044%. The logs of all drill holes and all assays are appended.

Further work in the area should include costeaining to prove the amount of recoverable rubble ore and an aeromagnetic survey of the whole Mount Goyder igneous mass to test for other similar occurrences of martite.

INTRODUCTION:

Pritchard's Lode, 56 miles south-east of Darwin, can be reached by following 51 miles of bush track, either from the 47-mile peg on the Stuart Highway past Marrakai Homestead or
from Adelaide River township. Neither track is passable during the wet season.

The lode was first discovered in 1956 by a field party of the Bureau of Mineral Resources which was engaged in regional mapping in the area (Dow and Pritchard, 1958).

In 1958, the Bureau of Mineral Resources put down a diamond drill hole to test for the presence of sulphides at depth. The hole, however, had not intersected the lode after 500 feet of drilling, and no further work was done.

In 1962, K.H. Dudson took two mineral leases, 285B and 286B over the area, and these were later transferred to the Newsam Mining Company. Between July and December, 1962, the Mines Branch, Northern Territory Administration, did 2,042 feet of diamond drilling on the lode under agreement with Newsam Mining Company.

In July and August, 1962, the immediate area of the lode was surveyed by plane table and alidade. During July, officers of the Bureau of Mineral Resources made a geophysical survey of the same area and prepared a separate geophysical report (Ashley, 1962). The co-ordinates shown on Plate 1 coincide with the geophysical grid.

All the drill holes were logged, and all lode material was quartered and sent to Australian Mineral Development Laboratories to be assayed for total iron, sulphur, copper and phosphorus. Portions of the lode material from drill holes 2 and 3a were sent to Tennant Creek to be assayed for gold and silver. All these assay results are appended. Surface samples, taken across the lode approximately in line with all the drill holes, were sent to Japan for analysis.

**GENERAL GEOLOGY:**

Pritchard's lode is a prominent massive martite outcrop that forms the crest of a low rounded hill. This hill consists predominantly of syenite - the Mt. Goyder Syenite - although there are no outcrops of this on the hill. Several smaller lenses of martite crop out around the main lode.
The main lode is approximately 2,200 feet long, including a gap of about 50 feet at the north-east end where there is no outcrop. It is irregularly shaped, varying in width from a few feet at both ends to more than 100 feet at a point about 300 feet from the south-west end. It is approximately 40 feet wide for most of its length. One of the subsidiary lenses, approximately 15 feet wide, runs parallel to the main lode for about 400 feet on the south-east. The two lodes are approximately 25 feet apart; drilling has shown that they are separated by fine-grained syenite, although on the surface this area is entirely covered by martite rubble.

The main lode between drill holes 4 and 9 may not be continuous, but may actually consist of two en echelon lenses. This area is covered with large blocks of martite that seem to be in place, but costeaming between these two drill holes should be done to determine whether the lode is continuous or whether two separate lenses exist.

The small outcrop of solid lode material between drill holes 9 and 11 appears from drill hole data to be part of the main lode. The area between this outcrop and the outcrop of the main lode is also covered with large martite boulders, and should be costeamed to determine whether the two outcrops are part of the same mass.

Three subsidiary lenses crop out in the vicinity of plane table station 9 (200S/500W). These do not form prominent outcrops, and the southern ends of the two eastern-most bodies do not crop out at all, but have been exposed only in pits. Pits dug between these lenses have exposed only martite rubble overlying syenite.

Four small outcrops of martite, only one of them prominent, occur between plane table stations 10 (360N/660W) and 12 (530N/330E). Pits dug between the two largest of these have not exposed any martite in place.

A single small outcrop of martite south-east of the main lode at 350S/660W at first appears to be an extension of the narrow parallel lode, but diamond drill holes 4a and 4b show that
they are not connected.

The outcropping material in the main lode and in all the subsidiary lodes is apparently identical. It consists of massive martite (hematite after magnetite), and on the whole is strongly magnetic. Large octahedra, pseudomorphs after magnetite, fill some joints and cavities. Some boxworks are present; the cavities are normally partially filled with limonite, rare iron sulphate (?) minerals, and even rarer sulphides, both pyrite and chalcopyrite. Limonite also coats most joints and seams, and some thin quartz veinlets occur along the lode.

A very pronounced system of joints occurs in most parts of the lode. These joints are normally horizontal, although at both ends of the lode they dip as much as 20º to the north-east. These joints are usually several feet apart, but are quite closely spaced in a few places.

Besides martite, the only other rock type that is found at the surface is the Mt. Goyder Syenite, part of the Mt. Goyder Syenite-Mt. Bundey Granite igneous complex (Hasan, 1958). The syenite crops out only on the flats surrounding the lode. It is coarse-grained and strongly foliated, the foliation being marked by the alignment of large tabular orthoclase crystals. The syenite has been intruded by aplite dykes up to 12 inches wide which are commonly parallel to the foliation.

Diamond drill hole 1 was drilled by the Bureau of Mineral Resources in 1958, to test for the presence of sulphides at depth on the chance that the martite lode was a gossan. It passed approximately 300 feet beneath the top of the outcrop, and encountered only coarse-grained syenite.

The Mines Branch, Northern Territory Administration, drilled the remaining drill holes during the dry season of 1962, to test the extent and configuration of the lode and the nature of the lode material at depth in order to determine whether the lode is a possible economic source of iron ore. Sixteen holes were drilled for a total of 2,042 feet.
Drill holes 8 and 9 had to be abandoned before completion so that the rigs could be moved out of the area before the track became impassable.

For the most part, the drill holes encountered only martite/magnetite or syenite. At a vertical depth of approx. 80 feet from the top of the outcrop, up to 10% of sulphides occur with the magnetite, and a thin veinlet of malachite appears in the core from DDH 2. The core from drill holes 2 and 3a was therefore assayed for gold, silver and copper. No gold or silver was found, and the highest copper content was 0.50%, so that subsequent assays were done only to determine the presence of copper as a possible deleterious impurity.

The syenite in the drill holes is similar to the outcrops surrounding the ridge except for the material encountered in drill holes 2, 3a, and 4a (between the main lode and the narrow parallel lode), which is considerably finer-grained syenite.

A small amount of chlorite-rich material, identified by W. Morgan (Bureau of Mineral Resources, Canberra, personal communication) as hornfels, is interbanded within the magnetite. In drill holes 10 and 11 this banding is very marked near the bottom of the hole, where, in addition to the hornfels, calcite and fine-grained syenite bands are present.

Near the contact between the fine-grained syenite and the lodes, several inches of an apple-green micaceous mineral occur in several drill holes. This was identified by x-ray analysis in Canberra as a barium-bearing muscovite (W. Morgan, personal communication).

The drilling shows that the main lode is widest at the south-west end and that its lower limits are rather irregular. Near both extremities, in drill holes 10 and 11, there is abundant banding, which is thought to represent the inter-fingering of the lode material and the country rock.

The extent of the subsidiary lodes is not as well known since none has been intersected by more than one drill hole and some have not been drilled at all.
At first, Pritchard's Lode was thought to be the result of magmatic segregation during crystallization of the syenite. The presence of hornfels bands in the lode, however, suggests that the lode is the replacement of a roof pendant, or pendants.

This replacement apparently took place before final crystallization of the syenite. Some of the hornfels bands that were intersected in diamond drill hole No. 11 have been veined by scapolite; pyrite and magnetite were introduced at the same time; and these have all been veined by later potash feldspar (W. Morgan, personal communication).

Outside the area of the accompanying map, several syenite porphyry dykes intrude the main syenite mass. One of these about a mile south-west of the Pritchard's Lode strikes roughly parallel to the lode and contains rare pyrite, so that the metasomaticism responsible for the sulphide contents of the lodes may be related to this period of dyke intrusion.

GEOPHYSICAL SURVEY:

J. Ashley (Bureau of Mineral Resources, Darwin), made a preliminary magnetometer survey over the area of Pritchard's Lode to determine whether deposits of this kind would produce an anomaly that could be detected by an aeromagnetic survey (Ashley, 1962). The surface survey showed anomalies of the order of 10,000 gammas, certainly large enough to be determined by an aeromagnetic survey.

In the course of this survey, Ashley determined three anomalies that do not conform exactly with the lode outcrop pattern. Drill holes 6, 7a, 7b and 13 were drilled to test these anomalies. None of these intersected any significant amount of martite or magnetite. The general shape of the magnetic anomalies, however, corresponds to the outcrop pattern of the lode.

ORE RESERVES:

The data now available from mapping and diamond drilling give the following ore reserves:
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<tr>
<td>Proved + Probable Ore</td>
<td>869,000</td>
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<td>Possible Ore</td>
<td>615,000</td>
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All the core that appeared to be ore was sent to Australian Mineral Development Laboratories to be assayed for total iron, sulphur, copper and phosphorus. The above figures of ore reserves refer only to that material which has an iron content of at least 62% and a sulphur content lower than 0.25%. Most of the samples showed a much lower sulphur content than this, and the weighted averages for all the drill hole intersections classed as ore is 0.07% sulphur, 0.052% phosphorus and 0.044% copper. The average composition of the surface samples is similar as regards sulphur and copper, but a little higher in phosphorus (0.073%). On the cross sections (Plates 2-7), heavy lines have been used to indicate those parts of the drill hole intersections which have been classed as ore for the purpose of these calculations. A factor of eight cubic feet to the ton was used in these calculations.

### Proved Ore

**Main Lode**

- DDH 4 - DDH 3
  - Horizontal dimensions 250' x 45'
  - Mineable to 80'
  - 112,000 tons

- DDH 3 - DDH 5
  - Horizontal dimensions 250' x 35'
  - Mineable to 80'
  - 87,000 tons

- DDH 5 - DDH 8
  - Horizontal dimensions 250' x 35'
  - Mineable to 80'
  - 101,000 tons

- DDH 8 - DDH 10
  - Horizontal dimensions 200' x 35'
  - Mineable to 70'
  - 61,000 tons

**Total proved ore**
- 361,000 tons

### Probable Ore

**Main Lode**

- DDH 10 - North End of Lode
  - Horizontal dimensions 400' x 35'
  - Assumed mineable depth 70'
  - 122,000 tons

- DDH 4 - DDH 9
  - Horizontal dimensions 300' x 40'
  - Assumed mineable depth 80'
  - 120,000 tons

- DDH 9 - DDH 11
  - Horizontal dimensions 260' x 55'
  - Assumed mineable depth 80'
  - 143,000 tons
DDH 11 - South End of Lode
Horizontal dimensions 210' x 30'
Assumed mineable depth 80' 63,000 tons

Parallel Lode
Horizontal dimensions 400' x 15'
Assumed mineable depth 80' 60,000 tons

Total Probable Ore 508,000 tons

Possible Ore

Main Lode

Caving to the relatively wide spacing of drill holes, the dimensions of the main lode are not very accurately known in the section south of diamond drill hole 4. If the average width of this section could be shown to be 5 feet more than assumed above, and the average mineable depth could be increased by 10 feet, the resulting additional ore would amount to: 100,000 tons

Minor Lodes in Saddle
Three bodies, - 300', 500' and 300' long, - each averaging 25' in width.
Assumed mineable depth 60' 208,000 tons

Outcrops near Anomaly A
Three bodies, - 200' x 40', 100' x 40' and 60' x 30'.
Assumed mineable depth 40' 69,000 tons

Boulder and Scree Ore
This has not been measured. It may occur in a zone 100 feet wide surrounding the whole of the main lode (4,000' x 100', excluding the saddle area) and the minor lodes (1,000' x 100', excluding the saddle area), and on the flanks of the saddle between the two (south flank 300' x 100', north flank 150' x 100' + 200' x 300'). It may have an average thickness of nine feet in the saddle area and six feet in the remainder of the area. Assuming 12 tons of recoverable ore to the cubic yard, the possible reserves amount to: 221,000 tons

There is also an area of about 1,000' x 220' extending from the north end of the minor lodes to the vicinity of diamond drill holes 6 and 7, where recoverable scree ore with an average thickness of three feet may occur, amounting to: 37,000 tons

Total Possible Ore 635,000 tons
FURTHER WORK:

The most important further work to be done in the immediate area of Pritchard's Lode is to determine the extent and depth of recoverable rubble ore. The figure of 250,000 tons is a conservative one but, at the present time, only a few pits scattered at random over the area give any idea of the amount of rubble that may be available. Systematic coteaming over the area could well prove a significant amount of easily recoverable ore.

Further work should also be done to prove the continuity of the main lode both between drill holes 4 and 9 and between the main lode and the north-eastern extension. Further drilling should also be done to determine the mineable depths of the subsidiary lodes.

The preliminary geophysical survey over the area suggests that no further ore bodies will be found in the immediate area of Pritchard's Lode by the use of a ground magnetometer. An aermagnetic survey over the entire igneous mass, however, might indicate similar magnetite lodes that are not exposed.

REFERENCES:


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The surface ore map is scaled at 1 inch to 100 feet and is laid out in grid form in 200 feet x 200 feet squares which, when taken to the nearest yard, equal 4,356 square yards. The main locations of the ore-body are taken from the geological map and the approximate margins of the various rubble zones are measured from the main ore-body. As mentioned before, the rubble extends further in some directions but has over-burden and granite outcrops through it. At this stage I have only included what appears to be the most economic to work and only where the grade is clean of impurities.

The map has been cut into twelve sheets for easy calculations, and the margins of boulder ore, rubble ore and ferricrete are at this stage approximate, but serve to give an indication of the actual lay-out. In any case all rubble and boulder ore inside the red line is workable.

Each square on the grid has an alphabetical letter indicating its row, and a number indicating the cross sections. The geological map and the magnetometer map are marked in feet south and feet west.

The method of determining actual tonnage and area was carried out in the first instance with considerable ground work and inspection in the field across the various lines, then after the map was drawn up each square was examined and the various amounts of each ore type in square yards were recorded. This is enclosed attached to the map.

Regarding ore yield considerable sieving and weighing was carried out in the field over various sites. The main investigation was to make sure no impurities would come into the ore after sieving.

It must be realized that 40% of surface ore must be considered as possible ore not being covered by pits or cuestas, but as the rubble areas only involve 3 feet average at this stage I am confident that it will live to this. Boulder ore is different as we have quite a lot of information on this class of ore.

Pritchard Ore Reserves

No. 1 Surface Ore.

Surface ore calculations will include three ore types classified as follows:

Boulder and Surface Lode Ore:

This is shown on the surface ore map as black and blue striped, the black indicates lode ore, the blue striped area is boulder ore. The name boulder ore has been given to this ore type mainly because a large section of the ore consists of boulders ranging in size from 8 inch spalls to boulders 20 feet through. This ore type occurs adjacent to solid outcrops of lode and represents the primary weathering stage of the lode.

The majority of the lode ore on the surface to a depth of around 9 feet is fractured and weathered and would be included in an initial mining programme in the removal of all surface ore before mining lode ore, so as over-burden stripping from the side of the lode can be pushed back on barren ground.

The basis of calculations of this ore group are as follows.
MOORE ROAD MACHINERY (Aust.) PTY. LTD.

SECTION I

SPECIFICATIONS of a Mack model B673X Cab and Chassis
Application - PRIME MOVER OF ORE CARRYING ROAD TRAIN
Estimated Gross Train Weight - 110 tons.

Wheelbase: 186¼"

Engine: Cummins model N9E-63 supercharged diesel

Clutch: Mack model CL505, two plate dry type.

Electrical System: 12 Volt, 55 amp. The system includes a
battery disconnect switch conveniently mounted on the chassis
rail.

Transmission: Mack model TR130 in conjunction with a Brown-
Besseaux auxiliary model 3031-E.

<table>
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<td>RATIO</td>
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The transmission will be equipped with a power tower type power
take-off to drive the hydraulic pump arrangement for the
hydraulic hoisting of the truck body and trailer bodies.

Front Axle: Mack model FA 600 - 16,000 lb. capacity.

Rear Bogie: Mack model SWD592 with power divider - 60,000 lb.
capacity. Final ratio is 11.38. Estimated maximum speed in
direct gear through power train 28-30 M.P.H. when loaded. Speed
on return trip 35 M.P.H.

Brakes: - Air operated mechanical. Front 17½" x 5" x 3½".
       Rear 1½" x 6" x 3½". Hand brake 12" x 3½" x 3½".

Chassis Frame: 10½" x 3½" x 5/16" with ½" inside channel rein-
forcement. Section modulus - 24.3. Of heat treated chrome-
mo-lybdenum steel.

Springs: Front 5½" x 3½" x 3 leaves .401" and 11 leaves .360" -
       aided by shock absorbers. Rear Inverted semi elliptic 58" x 5" x
       10 leaves of 1½".

Wheels and Tyres: 11 only 11.00 x 24 x 14 ply, Traction Hi-Miles
       type of Rayon construction fitted to 8.5 x 20 rims on spoke type
       hubs.

Steering Gear: Mack model S.G. 26 with steering wheel diameter
       of 22" and a ratio of 23.4.

Cabin: Mack model CA 30.

Fuel Capacity: 2 - 75 gallon capacity step tanks.
Recommended factory equipped extras:

- Lubric fumes 500C by-pass filter, Sheppard power steering,
- Perry water filter, West coast mirrors, Uaisen action seat,
- Solax windshield, right hand drive, 12 ton jack, wheel brace
  and handle.

Painting:

- Choice of Mack Red, Green, Yellow, Orange, Blue or Black.

We strongly recommend Yellow in this application.

(Sgd.)

J. Murphy.
SECTION 2
SIDE TIPPING PRIME MOVER AND TRAILER BODY AND HOIST ARRANGEMENTS.

Item 1

Each prime mover will be fitted with equipment in accordance with the following specification:

Body Section: The dump body for the prime mover will be of similar construction to that of the trailer.

Body Capacity: 6 cu. yd.

Hoists: Each prime mover is fitted with two only EDBRO Model 5 SLB, 2 stage ram assemblies. A pamphlet describing EDBRO tipping gear is enclosed.

Trailer Coupling: One only 100 ton capacity Rockinger automatic safety coupling and draw bar eye, as shown in the attached pamphlet.

Prime Mover Brake Equipment: The prime mover will be fitted with all necessary controls for the operation of the individual trailer brakes.

Painting: The body section will be sealed, primed and painted to selected colour.

Other Items Included: Tail light, width lights, side lights, reflector, special 12 cylinder EDBRO pump for operation of hoist equipment. Large capacity hydraulic oil tank.

Item 2

Each ore carrying trailer will comply with the following general specifications:

Body Section: The body section will be of all steel electrically welded construction, incorporating in its form 3/16" M.S.P. for sides, 1" M.S.P. for floor, 10" x 4" R.S.J. for main members and 9" x 3" channel for cross members. The sides and floor will be adequately and suitably stiffened and braced with channel and angle sections. The floor will be angled as shown in the drawings to accept shock loading.

Body Capacity: 9 cu. yd.

Body Dimensions: 11' x 7'8" x 4'9" approx. Actual over-all trailer dimensions as shown in drawings.

Hoists: Each trailer is fitted with two only EDBRO Model 5 SLB, 2 stage ram assemblies. A pamphlet describing EDBRO tipping gear is enclosed.

Bogie: The rear trailer bogie is the D.P.W. 16 ton capacity unit as shown in the attached pamphlet. It is equipped with two only 3.P.7. square hollow axles which are in turn fitted with 10 stud hubs and 16½" x 7" compressed air mechanical brakes. Each axle is fitted with Westinghouse boosters. The suspension is of the single point type and is clearly shown in the attached literature. The front trailer bogie is exactly the same as the rear bogie except that it is not equipped with brakes.
An average depth of 9 feet was found to be reliable as pits in the saddle went to 14 feet in good rubble, and most areas along the lode go to 10 feet.

A figure of 1 1/3 tons of iron ore per cubic yard is the estimated yield of this ore type. This was derived after the following test:

Two samples were taken of 1 ton each from pits in this ore group in areas G7, G8, G9, G10, H10, H12. The first sample which represented rubble from alongside the lode consisted of lumps below six inch, large boulders were not included. The sieving trials gave the following results: From 780 lbs. quartered out of 1 ton sample 397 lbs. were above half inch. Of the remaining 383 lbs., this was tramelled and fines from half inch to 6 mm. mesh were removed, these weighed 45 lbs. The remaining fines consisted by visual examination to be approx. 70% Fe fines, 30% clay in small nodules, small grains of quartz (approx. 2%), and a mixture of decomposed pyenite and slates, all of these carrying flakes of limonite in their make-up.

A careful visual examination of each piece of ore above half inch showed no sign of any other foreign matter but iron. This is a representative sample of the following areas on the map: H5, H7, H9, H9, I9, I10, I11, I12, I13, I14, I15, I17, I18, I19, G17, G16, G15, F16, F15, F14, F13, H13, H12, H11, H10, G10, G9, G8, G7, F6, F7, F8 bottom half, F9 bottom half, F10, F11, H12. All of these areas are of constant grade.

In area G10 on the top of the lode (in the top right hand corner of G10), it was found that the iron had intruded the original slates leaving lenses of slates in the iron lode. A pit was sunk on one of these lenses of slates and this was found to contain iron rubble in the form of flat sections and small round nodules. 1 ton of this material was taken, sieved and weighed with the following results: This was quartered down to 224 lbs., after sieving to half inch 93 lbs. remained as very little iron under half inch was in the fines, no 6 mm. test was carried out. I considered this test very important, due to the fact that some of the nodules around half inch consisted of small lumps of limonite that could have affected the assay. But after testing in the tramelled the larger lumps of iron disintegrated the limonite lumps, also any clay and slate lumps were removed. After checking the ore sample above half inch visually it was found to contain approx. 5% of clay and limonite lumps. If a scrubber was used in cleaning this ore it is fairly certain that all clay and limonite lumps would disintegrate.

A further sample was taken of approx. 1 ton from area F8 from three pits across a section of altered slates that contain thin bands of martite through them. To what depth these go we have not yet found out, but it was found to continue up to 14 feet. The results of these tests were from 234 lbs. quartered out of approx. 1 ton, after sieving to half inch 67 lbs. remained, approx. 1/3 of the slates is good ore being in lumps mainly over 2 inches and of flat section. This would be representative of the following areas on the map, F8 top half, F9 top half, G10, G11, F11, J6, J7, I7.

Iron recovery from these areas would not be as high as the first group, on an average approx. 1 ton per yard. The sieving tests did not include large lumps of iron above 8 inch. There were no impurities in the samples above half inch.
A visual examination was carried out on material removed from a line of pits in area C16, G16. This was similar in size to the first group, the main difference being this rubble contained more magnetic iron than anywhere else and also a higher silica content, although in most samples below 5%. The ore in G17 and C17 is similar and consists of mainly 2 inch to 4 inch fragments of iron cemented together to a depth of 10 feet. The material cementing the fragments is limonite, hematite and clay in fine particles and breaks up once movement takes place. This also contains a high percentage of magnetic ore.

After carefully examining the total area covered by this group which consists of approx. 164,007 square yards, calculated at an average depth of 9 feet with a yield of 1 1/3 tons per cubic yard, gives a tonnage of 636,028 tons of Fe grade 65% above half inch.

In calculating this figure consideration was given to the fact that actual boulder ore on the surface of the lode would yield 2 tons Fe per cubic yard, and areas such as the saddle would yield a ton and 1/3, it is reasonable to expect an average yield of 1 1/3 tons. Regarding depth the 9 foot estimate is safe as for instance rubble in the saddle and other areas tested goes to 14 feet.

The iron throughout this ore type is mainly martite and in the main is non-magnetic. This ore is just as good as any of the lode ore.

Rubble and Scree ore:

This is shown on the surface ore map enclosed by a red line and covers an area of 462,897 square yards, estimated to an average depth of 3 feet. Small saproide pits were dug around the area and some places such as G17, E17 rubble continued to 15 feet, but the surface 3 feet was the best grade, this mainly being particle size from 1 to 4 inches with a yield of approx. 1 1/3 tons per yard. In area E12 similar rubble went to 4 feet, after which considerable fines appeared. In area E3 a band of good sized rubble appeared on the surface to 10 inches, thence 12 inches of fines, thence 2 feet of larger particles average from 1 to 3 inches with 50% fines. In area F6 good rubble followed through to 5 feet. In E12 and G12 rubble continued to 6 feet.

From visual examination of all the surface rubble in this area no foreign material was found except for isolated lumps around six inches of syenite. It was found that in some areas approx. 50% of material under half inch was either clay, decomposed syenite and slates or bauxite particles, none of this material was found above half inch. Although other patches of rubble occur around the area shown, the section inside the red line as calculated appears to be the best workable portion, however, subsequent costuming may disclose workable extensions to the above, also it will be necessary to costem the above area to obtain an accurate assessment of over-all yield and quantity. At this stage it is only possible on present knowledge to calculate this area to 3 feet, average tonnage could improve considerably once costemming was completed. There is also no over-bruden in any of the area calculated.

Tonnage estimated at a yield of 1 ton iron ore above half inch per cubic yard at a Fe grade 65% average.
Ferricrete:

This is shown on the surface map enclosed by a red dotted line and covers an area of approx. 61,499 square yards, with an average depth of 6 feet giving a total of 122,996 cubic yards with a yield of iron ore of 1 ton per cubic yard. This material consists of fragments of iron ranging in size from half inch to six inches on an average with a small percentage of fines which are all cemented together by fine-grained hematite, limonite and clay. Movement will break away a portion of the ore but crushing will be required followed by scrubbing to clean this ore effectively, therefore I have listed it separately. As portion of the ferricrete is covered with rubble the areas shown are approximate, it is not known as yet if any lode exists below this area of ferricrete. In area 59, 510 large boulders appear on the surface and it appears this is a definite continuation of D14 and D15. Photos will be enclosed showing this type of ore.
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| I 4 | 1089     | 1089    | 1089          |     |
| I 5 | 1089     | 1089    | 1089          |     |
| I 6 | 1089     | 1089    | 1089          |     |
| I 7 | 1089     | 1089    | 1089          |     |
| I 8 | 4000     | 4000    | 4000          |     |
| I 9 | 4000     | 4000    | 4000          |     |
| I10 | 4000     | 4000    | 4000          |     |
| I11 | 4000     | 4000    | 4000          |     |
| I12 | 4000     | 4000    | 4000          |     |
| I13 | 4000     | 4000    | 4000          |     |
| I14 | 4000     | 4000    | 4000          |     |
| I15 | 4000     | 4000    | 4000          |     |
| I16 | 4000     | 4000    | 4000          |     |
| I17 | 4000     | 4000    | 4000          |     |
| I18 | 4000     | 4000    | 4000          |     |
| I19 | 4000     | 4000    | 4000          |     |
| I20 | 4000     | 4000    | 4000          |     |
| I21 | 4000     | 4000    | 4000          |     |
|     | 5678     | 25931   | 50250         |     |

<p>| J 2 | 256      | 256     | 256           |     |
| J 3 | 504      | 1452    | 1452          |     |
| J 4 | 1089     | 1089    | 1089          |     |
| J 5 | 2178     | 2178    | 2178          |     |
| J 6 | 2178     | 2178    | 2178          |     |
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| J 8 | 1089     | 1089    | 1089          |     |
| J 9 | 1089     | 1089    | 1089          |     |
| J10 | 1089     | 1089    | 1089          |     |
| J11 | 1089     | 1089    | 1089          |     |
| J12 | 1089     | 1089    | 1089          |     |
| J13 | 1089     | 1089    | 1089          |     |
| J14 | 1089     | 1089    | 1089          |     |
| J15 | 1089     | 1089    | 1089          |     |
| J16 | 1089     | 1089    | 1089          |     |
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**Total Amount of Ore in Grid Areas**

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**61499 cubic yards**  **164007 cubic yards**  **462897 cubic yards**

**Boulder Ore**

Average: 9 feet deep yield 1 1/3 ton per yard

**656028 tons**

**Rubble Ore**

Estimated 1 ton per yard average 3 feet deep:

**462897**

**Ferricrete Ore**

Estimated 1 ton per yard average 6 feet deep:

**122998**

**Total tonnage:**

**1241923 tons**
The Australian Mineral Development Laboratories

Dated 7th October, 1963.

Mr. A.V. Sampson,
Newam Industries Pty. Ltd.,
44-46 Elizabeth Street,
MELBOURNE VIC.

REPORT AN1491 - 63

Your Reference: Letter dated 16.9.63
Date Received: 24.9.63

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<th>Sample Mark</th>
<th>Copper Cu</th>
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<th>Sulphur S</th>
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Analysis by: D. McIlharnin and J.A. Powell

Officer in Charge, Analytical Section: T.R. Frost

L. Wallace Coffer
Director.
VOGLIOTTI & LAPIRA PTY. LIMITED


Newman Mining Co. Pty. Ltd.,
Post Office Box 255,
DARWIN. N.T.

Quotation

Dear Sir,

We have pleasure in submitting our quotation below, as verbally discussed and requested by B.D. Brown.

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<th>Load</th>
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<td>120,000 tons/yr.</td>
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<td>130,000 tons/yr.</td>
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<td>150,000 tons/yr.</td>
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<td>160,000 tons/yr.</td>
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These prices are based assuming the crushing and watering plant cost £50,000.0.0, if this should be higher, prices will be adjusted accordingly.

Trusting this will meet with your favourable consideration.

(Sgd.)
G. VOGLIOTTI
for VOGLIOTTI & LAPIRA PTY. LIMITED.
VOGLIOTTI & LARIBA PTY. LIMITED


Mr. A.T. Sampson,
Anglo-Pacific Trading Co. Pty. Ltd.,
44-46 Elizabeth Street,
MELBOURNE, VIC.

Dear Sir,

It was with pleasure that we received your letter, and we now take this opportunity of introducing ourselves to you.

We have been in operation in the Northern Territory for the past eight years, during which time we have completed numerous projects, mainly in the Darwin area, to name but five, Nightcliff and Rapid Creek subdivisions and extensions. This includes all sewerage, pumping station, water mains, storm water drainage, reticulation, kerb and guttering, roads and footpaths and all bitumen surfacing. Verification can be made at the Department of Works Darwin, who we are sure, will provide us with the very best of references.

Further, we are associated with a 50% share-holding with Darwin Crushed Metal Pty. Limited (Quarries and Crushing Plant) at the 17 Mile, Stuart Highway, Darwin, also Ready Mix Concrete Pty. Limited, of Stuart Park, Darwin, (equipped with gravity feed installation).

Our organization is based on a basis of thirty keymen, when the need arises this number is increased to approx. one hundred men. In Darwin we have both housing and camping facilities, a fully equipped workshop (specialist tools included), a two-way radio is installed. All plant, buildings and properties are entirely owned and carry no encumbrances.

Our bankers are The English Scottish & Australian Bank, Smith Street Darwin, local manager, Mr. G. Askew. Our accountants and auditors, Wilson Bishop & Henderson, Chin's Arcade, Savannah Street, Darwin.

Our planning for the Mt. Dundy project would be as follows:

Bubble Ore: Dazing - thence to a scrubbing and washing plant, for which we have already contacted several plant manufacturers, we ourselves favour Allis Chalmers.

Lode Ore: Drilling firstly, then blast with nitrogel, thence to crushing plant and on to scrub and wash.

With the exception of washing and scrubbing plant we have no need to purchase any other equipment (see attached plant list).

The total capacity we are able to handle at the present time seems to be well in excess of probable requirement, however, if required we should be able to supply approx. 500,000 tons per annum.

It would be our intention to erect both workshop and full camping facilities on site.

Trusting that you will find these particulars favourable.

(Sgd.) (G. VOGLIOTTI.)
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<td>Cranes</td>
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<td>Yes</td>
</tr>
<tr>
<td>Trucks</td>
<td>6</td>
<td>Yes</td>
</tr>
<tr>
<td>Flat Tops</td>
<td>3</td>
<td>Yes</td>
</tr>
<tr>
<td>Blitz</td>
<td>2</td>
<td>Yes</td>
</tr>
</tbody>
</table>

All the above plant is maintained and in full working order.
VOGLIOTTI & LAPRA Pty. LIMITED


Mr. M.V. Sampson,
Anglo-Pacific Trading Co. Pty. Ltd.,
44-46 Elizabeth Street,
MELBOURNE. VIC.

Dear Sir,

As requested, we will endeavour to provide details, as fully as we are able to at this stage, of our plans and proposals for the mining and dressing of iron ore from Mt. Bundy. We know that you will appreciate that a firm proposal cannot be made until we are completely aware of the quality of the ore, and of the actual requirements of your principals.

However, we are in the position where we can meet the desired requirements of mining, crushing, screening, washing and delivery to trucks, based on a production of 100,000 tons during 1965 and 200,000 tons per year until 1972 - 3.

Mining: - Our proposal is to commence mining at a position on the Eastern side of the South end of the lode, opposite borehole No. 4.

The lode will be opened up by bulldozers, face shovel and front-end loaders. The material thus won will be fed to a conveyor belt by a "Chinaman" and front-end loader and then conveyed to the crushing plant.

Treatment: - A treatment plant will be set up near this location, clear of any ore-bearing strata. A crusher will break down the ore to the required 8". Subject to ground water conditions in the mining area, the material will then pass through either a dry or wet scrubber.

A water supply will be laid on by pipeline, either from a dam to be constructed or a direct line to the river some three miles distant. This supply will be needed to dispose of waste, in addition to any required for washing.

The processed ore will be conveyed to the stockpile by conveyor belt.

The proposal outlined will enable us to work either lode or rubble areas, as both are adjacent to the site that we suggest.

Plant: - In addition to the list of plant attached to our letter of 3rd October, 1963, we now own a 150 ton steel barge powered by twin diesel motors. The barge is equipped with a Ransom Napier crane. We have also acquired "Delmag" pile-driving equipment capable of handling piles 90" 0" in length.

The size and type of crusher and screening plant will depend on the quality of the ore, and this plant cannot be ordered until the results of sampling are known.

Manned: - We have our own crew of men who are skilled in open-cut mining.

Housing: - We propose to use portable huts, caravans and tents.
Notice Required for Commencement:

On receipt of a firm date and notice to start work, we would require five to six months to be fully set up with plant, equipment and labour.

We trust that this brief outline will give an indication of our plans.

Yours faithfully,
VOGLIOTTI & LAPIRA PTY. LIMITED.

(Sgd.)
C. VOGLIOTTI.
MOORE ROAD MACHINERY (N.A.) Pty. Ltd.

Dated 11th December, 1962.

Managing Director,
Anglo-Pacific Trading Co. Pty. Ltd.,
Leonard House,
44-46 Elizabeth Street,
MELBOURNE. VIC.

Attention Mr. A.V. Sampson

Dear Sir,

I have for acknowledgment your letter of the 27th November, and thank you for your advice confirming our telephone conversation regarding recommendations, prices, details and operating cost estimates of Mack vehicles suitable for carrying iron ore from Mount Bundy in the Northern Territory to Darwin Wharf.

This company has been engaged in considerable research extending over some years into the question of road transport of all types of commodities including iron ore, and we were fortunate in that a little over two years ago we received an order from Great Western Consolidated of Ballinfinch, a subsidiary of Western Mining Corporation, for the supply of one complete road train for hauling gold-bearing ore from a mine site at Beverley situated 25 miles south of Southern Cross, Western Australia, to the Company's treatment plant at Bullfinch, 25 miles north of Southern Cross.

The nature of the operation with the exception of the volume to be handled, was very similar to the proposition you have now detailed, and the delivery of this one unit has enabled our executives to confirm cost estimates over a period of some 20 months, during which this particular road train has covered a distance of some 269,000 miles carting an average load one way of 60 tons.

Reverting to your own transport problem, we have no hesitation in recommending a similar type of operation based on the use of a Mack prime mover in their model B673X which is a six-wheeled tandem drive diesel truck tractor with a Cummins 300 horsepower diesel engine. Each Mack truck tractor would haul a tandem or triple-axled semi-trailer together with a four-axle detached trailer with a gross combination weight of approximately 77 tons, a tare weight of 27 tons and a payload of 50 tons. With this recommendation and accepting the general details supplied by you, we set out the following as a recommended approach to this Darwin proposition. There are, however, some comments which should be made and which would require some further information -

1. In your general details you listed No. 4 - "Roads will be all bitumen...", etc.

   a) What concessions, if any, could be obtained from the Northern Territory Administration to permit overwidth vehicles up to 8 feet 7-1/16th inches, overlength vehicles up to 65 feet overall, and axle weights up to 10 tons per axle, provided guarantees could be made that by means of using miles per hour Telematics, speeds could be controlled below an absolute maximum of 40 miles per hour.

   b) Our calculations regarding vehicle registration costs
are based on Western Australian figures which may vary from those in force in the Northern Territory.

2. General detail No. 6 - "Minimum initial operating period of six years". Depreciation on the complete road train has been calculated on the basis of writing off the entire fleet in this six year period. There would, of course, be a residual value at the end of that period, but we consider it preferable to write off the equipment in the six years.

3. General detail No. 9 - "Unloading at a flat stock-pile". For this purpose it is considered that end tipping bodies with built-in hydraulics, both in the semi-trailer and trailer, would be the best means of handling the commodity in either one of two ways -

(a) By tipping the trailer load first, running on unhooking the trailer, then backing and tipping the semi-trailer, and connecting up again with the trailer.

(b) Using an overhead open ramp so that both the semi-trailer load and the trailer load could be dumped without unhitching, and a doser unit or conveyor system be used to stock-pile the ore from the tipping point.

4. General detail No. 12 - "Recommendations for spares". Our recommendation for spares would be that the Company purchase spares mainly in the form of components to the value of their first six months' usage, which is calculated at £17,500 per year, and that we would undertake to carry in stock a similar amount of spares to back up the components and spares held by the Company. This would enable a normal replacement over every six months.

We now set down our recommendations -

Carting 250,000 tons in ten month period

\[ \begin{align*}
\text{250,000 tons} & \text{ per month} \\
\hline
\text{25,000 tons} & \text{ per month} \\
\hline
\text{1,000 tons} & \text{ per day}
\end{align*} \]

Distance - 70 mile lead

140 mile per round trip

Loading from bins - brief loading period

Unloading by tipping - brief unloading period

Roads - all bitumen

Grades - mostly very easy

On the basis of Mack B373Ax prime movers, each hauling a triple-axle semi and a four-axle trailer -

\[ \begin{align*}
\text{Gross Tons} & \quad 5 \quad 16 \quad 24 \quad 16 \quad 16 = 77 \\
\text{Tare Tons} & \quad 10 \quad 8 \quad 9 \quad = 27 \\
\text{Payload Tons} & \quad 50 
\end{align*} \]

A payload of 50 tons would be permitted under Western Australian conditions and probably the same would apply in the Territory.
Round trip - 140 miles
Allow 5 hours per round trip
Thus in 2 x 10 hour shifts per day each outfit would
do 4 round trips per day
or 100 round trips per month
and earn 5,000 tons per month

Thus a minimum of five outfits would be necessary, but
to cover the possibility of breakdowns, unusual weather-
caused delays or accidents, the practical minimum would
be six outfits.

On the basis of shifting 250,000 tons per year (ten
months) at the rate of 50 tons per outfit/trip, 5,000
outfit trips would be necessary, each of 140 miles,
so that total miles per year (of ten months) would be -

5,000 x 140 = 700,000 outfit miles

and this is the same whether five or six outfits are used.
If five outfits were employed, annual mileage each would
be 140,000.
If six outfits were employed annual mileage each would
be 116,666.

In estimating costs the annual "Cost of Ownership" of
six outfits has been calculated and divided by 700,000 to
arrive at the Cost of Ownership per outfit mile, and the
operating cost has been based on the assumption that five
outfits would be the maximum in operation at any time,
with the sixth outfit in reserve or under maintenance, etc.

COST OF OWNERSHIP

Based on -

6 Mack model 3873S chassis
6 Triple-axle hydraulic tipping semi-trailers
6 Four-axle hydraulic tipping trailers

Costing per outfit -

1 Mack 3873S £16,674
1 Triple-axle trailer (semi) £ 6,070
1 Four-axle trailer £ 7,866

£30,612

Cost of 6 outfits - £183,672

Assumed that all units except from Sales Tax.

Annual Cost

Depreciation on 6 outfits costing £183,672 on
assumption units are written off completely in
six years. £30,612

Interest on Investment based on the average
depreciated value at 6% p.a. £183,672 x Average
Rate (5.33%) x .06 £ 6,428

Insurance - Comprehensive insurance (£100 excess) on
6 outfits disregarding no-claim bonnuses, etc. and
taken at same average figure as interest, based on
a nett initial premium of £2,520. £ 1,462
Road Tax – approximate only (W.A.)
Average Annual cost.

£ 521

£39,023

Cost per outfit/mile on 700,000 miles per year – 13.30d.

OPERATING COST FOR 700,000 MILES PER YEAR

Cost per Year

Fuel
Based on average consumption figure of 3.5 miles per gallon, 200,000 gals.
fuel at 1/-d. per gallon.
£ 30,000

Lube oil,grease etc.
Engine oil changes each 4,000 miles;
transmission oil changes each 10,000 miles;
Oil filter changes each 4,000 miles;
fuel filter changes each 25,000 miles,
Corrosion Resistor bags each 10,000 miles.
£ 3,321

Tyres
Using 12.00 x 24 tyres all round – 38 tyres per outfit. Average life per
tyre – 50,000 miles. Cost of each
tyre and tube – £2. 14 sets of 38
tyres required.
£ 43,624

Parts
On the basis of £25 per 1,000 miles
for prime movers and trailers.
£ 17,500

Wages &
holiday pay
2 drivers per outfit – 5 outfits
operating and 1 idle. Thus 10 drivers
at £40 per week for 52 weeks per year.
2 Mechanics at £40 per week for 52
weeks per year – 12 men on £2,080 per
annum each.
£ 24,960

Accident
Insurance,
Sick Pay,
etc.
Say 5% of wages figure
£ 1,248
£120,653

Cost of running 700,000 outfit miles.
£120,653
Cost per outfit mile.
41.37 pence.

Summary:
Operating cost per outfit mile as
above – 41.37 pence
Ownership cost per outfit mile – 13.38 pence
54.75 pence

Total cost per ton/mile = 54.75 x 2 ÷ 50
= 2.19 pence

From the foregoing calculations it will be seen that the
total investment would be under £200,000 and the cost per ton
mile of 2.19d. is soundly based and is probably conservative
because of the residual value that would remain in the fleet of
vehicles at the end of six years period. In addition, if a 10-
ton axle loading concession could be obtained from the Northern
Territory Administration, the payloads could be lifted slightly
whilst still keeping within the road train’s warranted capacity,
and thus further slightly reduce the cost per ton mile.
You may take it that these estimates are based on sound experience, as the unit supplied to Great Western Consolidated has continuously, during more than 1½ million miles, operated at less than 2.75d. per ton mile one way.

The above sets out our initial suggestion for your handling problem. From this information you will undoubtedly form a number of alternatives and we would be only too pleased to discuss these with you and offer our suggestions. We could arrange for Mr. Wilkinson, our West Australian Manager, to come over to Melbourne early February to discuss all aspects with you.

We await your advice.

Yours faithfully,

MOORE ROAD MACHINERY (W.A.) PTY. LTD.

(Sgd.)

E.S. Carter

Director.
Price for Standard Chassis and Cab.  

$28,600

**Plus Optional Extras:**

- Frame Reinforcement - 3/8ths inch outside.  
  
- Lubefiner - 7500.  
  $330

- Air Starting - 10 H.P. Ingersoll Rand.  
  $262

- Power Steering - Mack Linkage type.  
  $432

- Fuel Tanks - 2 x 35 gal. Step Tanks.  
  $235

- Full Trailer Brake connections  
  $62

- Engine Water Filter - Perry.  
  $35

  $31

- Hand Control Valve for trailer brakes.  
  $55

- West Coast Mirrors.  
  $40

- Bostron Viking Seat.  
  $76

- Spare Rim - 8.5 x 24  
  $31

- Spare tyre, group 1, 14 ply.  
  $255

- Mack Push-Button direction signals.  
  $36

- Front wheel brake limiting valve.  
  $37

- Argos T008-7/4F seven day, 0-45 m.p.h.  
  $150

- Tachograph with driver change device.  
  $23

- Battery disconnect switch  
  $21  
  **$2,100**

Delivery to New York.  
$120

Factory Handling.  
$98

Booking for export.  
$1400  
**$1,918**

F.A.S. New York.  
$31,718

**Plus -**

- Freight - N.Y. to Fremantle.  
  $2800

- Insurance, Commission and Charges.  
  $710  
  **$1,510**

$333,288

Convert to £ at 2.24 6 per £.  

**£14,834**

**Plus -**

- Duty  
  £2,380

- Clearing and Cartage  
  £20

- Assembly, oil, tools, etc.  
  £20  
  **£1,840**

£16,674

Plus Sales Tax if applicable.
A.V. Sampson, Esq.,
Anglo-Pacific Trading Co. Pty. Ltd.,
44-46 Elizabeth Street,
MELBOURNE, C.I.

Dear Mr. Sampson,

Further to your recent request for a firm price for 2 only proposed road trains for the transport of iron ore in the Northern Territory, we have pleasure in submitting the following proposition which we consider to be the most economical and efficient method.

2 only Mack Road Trains, each consisting of Mack model B873X prime mover and hauling 3 trailers.

The Mack and trailers would haul the iron ore within the limitations of the laws applying to the Road Traffic Act in the Northern Territory.

We estimate 80 ton payload at writing but this would be subject to the tare weight of the truck and trailers after you have agreed with the final detailed construction of the road train. These detailed drawings would be submitted within three weeks of receipt of your valued firm order.

At this stage we are not submitting different operating costs to those submitted to you in previous correspondence as, although the initial capital cost structure has increased by less than 25%, the payload has increased by over 50% and the operating conditions are considerably less arduous in this instance.

The delivery of the two trains may be effected within six months from receipt of your order.

Attached are the following sections -

Section 1
Detail of the Mack model B873X prime mover

Section 2
Detail of the proposed body and trailer arrangement

Section 3
Price structure

We trust that the above will meet with all your requirements, and we assure you of our best attention at all times.

Yours faithfully,

MOORE ROAD MACHINERY (AUST.) PTY. LTD.

(Sgd.)
J. Murphy
Sales Manager - Mack Division.
Brakes: In addition to the braking equipment described under the sub-heading "Bogies", each trailer will be fitted with suitable relay and break-away valve equipment, all necessary double line pipes and fittings and will incorporate through the prime mover system delay valve operation to ensure that braking is applied in correct sequence.

Wheels: 16 only series No. 1202 H, 20 x 7.5, 10 stud disc wheels.

Tyres: 16 only 10.00 x 20, 12 ply tyres and tubes.

Trailer coupling: Only One 100 ton capacity Rockinger automatic safety coupling and draw bar eye, as shown in the attached pamphlet.

Turntable: One only B.R.W. series DK 10,000 double ball-race turntable suitably mounted to trailer floor carriage.

Painting: Each unit will be sealed, primed and painted to selected colour.

Additional Items Included: Tail light, side lights, width lights, reflectors, spare wheel carrier, spare wheel and spare tyre.

(3gd.)

J. Murphy.
**MOORE ROAD MACHINERY (AUST.) PTY. LTD.**

**SECTION 3**

**PRICE STRUCTURE**

**2 ONLY MACK IRON ORE CARRYING ROAD TRAINS**

<table>
<thead>
<tr>
<th>Each Unit:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Mack model B873X</td>
<td>£15,712</td>
</tr>
<tr>
<td>Sales Tax</td>
<td>1,571</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£17,283</strong></td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Body, three trailers and hoist equipment</td>
<td>£18,200</td>
</tr>
<tr>
<td>Sales Tax</td>
<td>2,048</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£20,248</strong></td>
</tr>
</tbody>
</table>

**E37,531 Nett**

**Total Nett Price**  
**£75,062**

The price includes the subsequent delivery and testing on the site of the application and normal warranty applies to the complete trains as quoted.

(Sgd.)

J. Murphy
Dated 22nd October, 1963.

Mr. A.V. Sampson,
Newsam Industries Pty. Ltd.,
Box 1126J, G.P.O.
MELBOURNE, VIC.

Conveyance of Iron Ore
North Australia Railway

Dear Mr. Sampson,

I refer to your letter AWS:MS of 3rd September last and your recent conversation with this Department's Traffic Officer concerning proposal to transport iron ore from Mt. Bundey to Darwin, for export to Japan.

During my recent visit to Darwin I took the opportunity of discussing this matter with your Mr. B.D. Brown, and I am satisfied that this Department will have no difficulty in handling this traffic by rail from McMinn's Lagoon siding to Darwin. I understand that there is a possibility of the traffic increasing to approx. 250,000 tons per annum by 1967, and it is advised that the additional tonnage could also be handled by rail.

I now confirm the rate of 3d. per ton-mile, inclusive of shunting charges, tentatively quoted to you in this office on 15th August, 1963.

As verbally advised, this matter has since been referred to me by the Secretary, Department of Territories, Canberra, who has been advised that this Department is in a position to handle the iron ore traffic and that the abovementioned rate will apply for carriage of the ore over the North Australia Railway.

Yours faithfully,

(Sgd.)

K.A. Smith
COMMISSIONER
Northern Territory Administration


Mr. Burke Brown,
Manager,
Newcom Industries Pty. Ltd.,
c/o Post Office,
BATCHelor, N.T.

Dear Mr. Brown,

I have for acknowledgment your letter of the 26th February, with further reference to the discussions you had with myself and the Director of Works, Mr. George Redmond.

I wish to confirm that the Northern Territory Administration in its budget for the coming financial year is providing an amount of £180,000 for the building of a bridge across the Adelaide River near Beatrice Hill, and will also construct a stage one road as far as Mt. Bundy. When this is completed it should enable you to move your ore as required.

I regret that at the present juncture I cannot give you any further details, as the plans are being prepared by the Department of Works, and naturally details of the budget are confidential until released by the Federal Treasurer.

Yours sincerely,

(Sgd.)
(Roger Nott)
Administrator.
LETTER OF INTENT

REDUNDY MINING CO. P.TT. LTD., having its registered office in Darwin, Northern Territory, Australia, (hereinafter referred to as Seller) and THE MISSHIO COMPANY LTD., Tokyo Branch, having its registered office in Tokyo, Japan, (hereinafter referred to as Buyer) hereby

AGREE

to enter into the undertaking on the terms and conditions set forth below, for the purpose of establishing a Sale and Purchase Contract of Mt. Bunday iron ore in future.

ARTICLE I.

1. Commodity:

Iron ore in lump, produced from Mt. Bunday iron ore deposit in Northern Territory, Australia.

2. Specification & Size:

1) Chemical composition —— on dry basis

<table>
<thead>
<tr>
<th>Element</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe</td>
<td>64% base, rejection below 62%</td>
</tr>
<tr>
<td>SiO2 + Al2O3</td>
<td>5.00% maximum</td>
</tr>
<tr>
<td>S</td>
<td>0.10% maximum</td>
</tr>
<tr>
<td>P</td>
<td>0.07% maximum</td>
</tr>
<tr>
<td>Cu</td>
<td>0.05% maximum</td>
</tr>
<tr>
<td>TiO2</td>
<td>0.10% maximum</td>
</tr>
</tbody>
</table>

Other metals (ex. Mn, Mg & Ca) 0.15% maximum

2) Free Moisture loss at 105°C 5% maximum

3) Size —— on wet basis

<table>
<thead>
<tr>
<th>Size</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 10 m.m.</td>
<td>10% maximum</td>
</tr>
<tr>
<td>maximum size</td>
<td>200 m.m.</td>
</tr>
</tbody>
</table>

The chemical composition, free moisture loss at 105°C, and size stipulated above shall be applied to each shipment, and not to the average of the total shipments.

3. Quantity:

- minimum 700,000 dry long tons
- maximum 1,200,000 dry long tons
1) The quantities for each fiscal year shall be as follows with 10% more or less allowance at Buyer's option.

<table>
<thead>
<tr>
<th>Year</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1965</td>
<td>0 L/T</td>
<td>80,000 L/T</td>
</tr>
<tr>
<td>1966</td>
<td>100,000</td>
<td>160,000</td>
</tr>
<tr>
<td>1967</td>
<td>100,000</td>
<td>160,000</td>
</tr>
<tr>
<td>1968</td>
<td>100,000</td>
<td>160,000</td>
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<tr>
<td>1969</td>
<td>100,000</td>
<td>160,000</td>
</tr>
<tr>
<td>1970</td>
<td>100,000</td>
<td>160,000</td>
</tr>
<tr>
<td>1971</td>
<td>100,000</td>
<td>160,000</td>
</tr>
<tr>
<td>1972</td>
<td>100,000</td>
<td>160,000</td>
</tr>
<tr>
<td>Total</td>
<td>700,000 L/T</td>
<td>1,200,000 L/T</td>
</tr>
</tbody>
</table>

2) The quantities for each fiscal year shall be decided at Buyer's option within the range mentioned above.

3) For the fiscal year of 1965, Buyer shall decide and declare to Seller the quantity to be delivered for the fiscal year at least 6 months before the estimated date of commencing shipment (not later than 31st March, 1965) in consideration of demand and supply position of iron ore on Japanese side and development situation of the Mt. Bunday iron ore deposit.

For the fiscal year of 1966 and onward, Buyer shall decide and declare to Seller the quantity to be delivered for the next fiscal year at least 3 months before the beginning of the next fiscal year (not later than 31st December).

4) Each fiscal year shall be from 1st April to 31st March of the next year.

4. Price:

US$12.50 per one dry long ton of 2,240 lbs. C&F (FO) one safe port in Japan, on Fe 64.5% basis,

Alternatively

US$18.60 per one dry long ton of 2,240 lbs. FOB (Stowed and Trimmed) Port Darwin.

The price shall be in US Dollar or in Sterling Pound, and the conversion rate of the two currencies shall be as
Stg. £1-0-0 = US$2.80.

In case that Buyer prefers the price on FOB stowed and trimmed Darwin basis to the C&F (FO) Japan basis, Buyer shall decide either price to take for the contract at his option not later than 31st September, 1964.

The contract price shall be fixed for the initial 5 years (1965-1969, if no shipment in 1965, 4 years covering 1966-1969). For the next three fiscal years (1970-1972), the price for the period shall be decided upon mutual agreement not later than 31st September, 1969, within the range of 5% more or less against the initial contract price and according to the prevailing market price at that time.

5. Price variations:

The price shall be increased or decreased according to the bonus and penalties mentioned below for each shipment.

1) Fe bonus and penalty
   + US$20.— per Fe 1% of each dry long ton above Fe 64%
   - US$30.— per Fe 1% of each dry long ton below Fe 64%
   down to Fe 62%

2) Size penalty
   - US$2.80 per wet long ton for fine ore (-10 m.m.) exceeding
     10% franchise of out-turn weight
   - US$20.— per wet long ton for lump ore exceeding 200 m.m.
     in size

3) Moisture

In case the price fixed on FOB stowed and trimmed, the ocean freight amount corresponding to moisture loss of over 3% to 5% of the shipment shall be borne by Seller.

The bonus and penalties mentioned above shall be applied to each shipment, and fractions thereof shall be calculated in pro-rata.

In the event that the shipment of iron ore does not meet the above-mentioned guaranteed specification and size, Buyer shall be entitled to accept the shipment with due penalty at rates to be mutually agreed and in accordance with penalty rates applicable to similar contracts.
In the event that two consecutive shipments of iron ore do not meet the above-mentioned guaranteed specification and size, Buyer shall hold the right to suspend the further shipments until the improvement of such circumstances are guaranteed by Seller and acknowledged by Buyer.

In such a case or cases, any expense and loss arising from the suspension or alteration of vessels allotment shall be borne by Seller.

Buyer has the option either to accept or cancel the quantity suspended during such period.

6. Shipping Port:

Port Darwin, Australia.

Seller shall guarantee Buyer that approach channels with minimum depth of 32' to the loading berth shall be available at all times for about 20,000 tons type ore or bulk carriers.

Seller shall also guarantee Buyer that suitable berth for accommodating such carriers shall be available at all times, which is equipped with suitable conveyor-type bulk-loading facilities with a capacity of minimum 400 tons per hour.

7. Shipping period:


Shipment shall be effected as evenly as possible over the each fiscal year.

8. Shipping terms:

1) At the loading port Seller shall guarantee to load at a rate of minimum 5,000 long tons per running day.
2) Demurrage and despatch money at the loading port shall be for Seller's account.
3) Time for waiting tide and shifting time of vessel at the loading port shall be counted as laytime.
4) Overtime charge, if any, shall be for the account of the party ordering same but crew and officers' overtime charge shall always be for the account of the vessel's owner.
5) Any other terms and conditions of loading shall be decided later upon mutual agreement principally in accordance
with usual shipping terms and conditions to be used for
the same type vessels in similar cases.

2. Discharging terms:

Terms and conditions of discharging shall be decided later
upon mutual agreement principally in accordance with usual
discharging terms and conditions to be used for the same type
vessels in similar cases.

10. Determination of quality and size:

At the time of discharge of the shipment, Buyer shall for
Buyer's Account take a representative sample from the shipment
in accordance with Japanese Industrial Standard No. JIS M8105
promulgated on March 31, 1954, and the alteration thereof, if
any.

The sample shall be divided into two equal parts, one of
which shall be placed under seal and the other of which shall
be analysed by Buyer. After analysing the sample, Buyer shall
issue a certificate of analysis for each shipment showing
percentages of Iron (Fe) Silica (SiO2) Alumina (Al2O3) Phosphorus
(P) Sulphur (S) Copper (Cu) Titanium (TiO2) and all other
metallic elements on a dry (105°C) basis, the amount of free
moisture loss at 105°C, the result of sizing test on the shipment
and others. Such certificate of analysis shall be final and
binding upon all parties of the contract.

Seller has the option to have an authorized surveyor duly
appointed by Seller and approved by Buyer present at the time
of such sampling and analysis in Japan for Seller's account.

11. Determination of weight:

Upon arrival of each shipment at the discharging port,
Japan Marine Surveyors & Sworn Measurers' Association shall
conduct the vessel's draft survey in accordance with the
international practice for Buyer's Account and issue a weight
certificate stating the wet weight of the shipment. Such weight
certificate shall be final in respect of wet weight and binding
upon all parties of the contract. The final settlement weight
for each shipment shall be calculated on basis of the above
wet weight by deducting free moisture loss at 105°C as stipulated in the Paragraph 10. Seller has the option to have an authorized surveyor duly appointed by Seller and approved by Buyer present at the time of each weighing in Japan for Seller's account.

12. Payment:
Buyer shall establish in principle and irrevocable letter of credit in US Dollar or Sterling Pound for 100% value of each shipment in favour of Seller 30 days before the estimated arrival time of the vessel at Port Darwin.

The letter of credit shall be available against Seller's sight draft for the amount of 90% of provisional invoice value when accompanied by the following documents:

a) Full set of clean on board ocean Bills of Lading, marked freight prepaid.

b) Seller's provisional commercial invoice in 5 copies.

c) Certificate of analysis issued by an authorized surveyor at the loading port in 5 copies.

d) Certificate of weight issued by an authorized surveyor at the loading port in 5 copies.

Balance of payment after completion of sampling, analysis, moisture determination and weighing at destination, if any, shall be settled against Seller's sight draft when accompanied by the following documents:

a) Seller's final invoice reflecting the amount of Buyer's final calculation sheet in 3 copies.

b) Buyer's final calculation sheet

c) Certificate of analysis issued at the discharging port in accordance with the above paragraph "Determination of quality and size" in 3 copies.

d) Certificate of weight issued at the discharging port in accordance with the above paragraph "Determination of weight" in 3 copies.

13. Insurance:
Insurance shall be effected by Buyer for 110% CIF invoice
value for Buyer's Account, covering -
Institute Cargo Clauses (F.P.A.)
Institute War Clauses
Institute Strikes Riots & Civil Commotions Clauses

14. Title & Risk:

Title of each shipment shall pass to Buyer when Seller has negotiated the relative shipping documents and received the proceeds from the negotiating bank after completion of loading on board the vessel at the Port Darwin.

Risk of each shipment shall pass to Buyer when ore has been loaded and trimmed on board the vessel. The quantity loaded on board shall be determined by the vessel's captain in accordance with the international practice in the presence of the Seller's representatives, or by the vessel's draft survey weight made by an authorized surveyor at the loading port.

15. Force Majeure:

In the event of delivery of all or any part of ore under this contract being obstructed and delayed by inability or insufficiency of securing foreign exchange allocation from the Japanese Government, prohibition of exportation or importation, refusal to issue export or import licenses, arrest or restraints effected by rulers, Government or people, war, blockade, revolution, insurrection, mobilization, strikes, lockouts, civil commotions, riots, Acts of God, plague or other epidemics, destruction of goods by fire or flood, or any other cause or causes beyond the control of Seller and Buyer, Seller or Buyer shall not be liable for the execution of all or any part of this contract. In such a case or cases where non-delivery of all or any part of the contract arises owing to any of the causes hereinabove mentioned, Seller or Buyer shall give a written notice to the other party within two weeks of the occurrence of events hereinabove mentioned. The other party shall have the option upon written confirmation either to postpone all or any part of the contract during the time when the delivery is prevented by such a cause or causes, or to
cancel the portion of contract in respect of the undelivered quantity.

Documentary proof of such a case or cases of Force Majeure shall be provided by Seller or Buyer to the other party.

16. Arbitration:

All disputes, controversies, or differences which may arise between the parties, out of or in relation to or in connection with this contract, or for the breach thereof, and can not be settled upon mutual agreement, shall be settled by arbitration. The arbitration shall be made in Japan in accordance with the rules of the Japan Commercial Arbitration Association. However, in the event that the Japan-Australia Arbitration Agreement will be established in future between the two countries, the arbitration shall be referred to and settled by pursuant to the rule of the Agreement. The award shall be final and binding upon both parties.

17. Cost Fluctuation:

Any cost fluctuation including inland freight, stevedorage, wharfage, storage, freight tax and other expenses, charges, taxes, tolls, etc. on Australian side shall be borne by Seller.

In case of C&F contract, any fluctuation of ocean freight also shall be borne by Seller.

18. Loss in transit:

In case of total loss in transit from the loading port to the discharging port, final payment shall be made from Buyer to Seller on the basis of Bills of Lading weight and the amount of the Seller's provisional invoice.

In case of partial loss in transit from the loading port to the discharging port, final payment shall be made from Buyer to Seller on the basis of the out-turn weight plus the weight lost in transit as determined by internationally acceptable methods and the analysis results determined at the discharging port. In such a case or cases of loss in transit, Seller shall not be liable to Buyer to replace any lost ore.
19. **Parity Variation:**

In case of parity variation, the contract price will be altered upon mutual agreement on basis of the altered parity.

20. **Others:**

Other terms and conditions not stipulated in this **ARTICLE I** shall be decided later upon mutual agreement.

New terms and conditions so agreed between the two parties shall be effected and valid only after a written confirmation on the terms and conditions is exchanged with signature between the both parties.

**ARTICLE 2.**

The formal Sale and Purchase Contract on the terms and conditions stipulated in **ARTICLE 1** shall be concluded not later than 31st May, 1964, between the two parties, provided that the terms and conditions set forth below should be fulfilled by Seller to the satisfaction of Buyer.

1) **Sellers** shall make up a concrete development plan of the Mt. Bundy iron ore deposit, which makes possible the delivery of iron ore in conformity to the terms and conditions stipulated in **ARTICLE 1**, and then shall set out on preparatory works for the exploitation. Seller shall submit periodically or from time to time concrete and detailed information and reports on the progress to Buyer. Seller shall at the same time start immediately concrete negotiations with the authorities concerned to provide all governmental facilities necessary for transportation, loading of ore, improvement of port, etc. Seller shall submit periodically or from time to time concrete and detailed information and reports on the progress to Buyer.

2) The information and reports mentioned above shall include the following items:

   a) **Progress and results of prospecting works on floating ore areas.**

   b) **Concrete development plan of the Mt. Bundy iron ore deposit, including stripping, mining, dressing,**
transportation programmes, etc.
c) Concrete plan on construction of ore transportation road from the deposit to Port Darwin, bridge crossing over the Adelaide River, stockyard at Port Darwin, loading facilities at Port Darwin, loading berth etc., together with dredging plan of approach channels and loading berth in Port Darwin.
d) A written confirmation of the Australian Commonwealth Government and/or the Administration of Northern Territory stating that the construction of governmental facilities and dredging works mentioned in the above item c shall be undertaken by the Government, shall be proceeded with at earliest possible date after conclusion and signing of the formal contract, and shall be completed well before the scheduled time of commencement of shipment stipulated in 3 and 7, ARTICLE I.
e) Export License to cover the whole quantity of iron ore under the terms and conditions of ARTICLE I, or a written confirmation of the Australian Commonwealth Government and/or the Administration of Northern Territory, stating that Export License to cover the whole quantity of iron ore under the terms and conditions of ARTICLE I shall be issued from the authorities immediately after conclusion and signing of the formal contract.

3) All information, reports and written confirmations stipulated in the above item (2) shall be submitted by Seller to Buyer not later than 31st March, 1964.

ARTICLE 3

In case that Buyer despatches an engineer(s) or representative(s) for the purpose of co-operation with Seller in the works mentioned in the above item a and b, 2) ARTICLE 2, necessary expenses for his (their) stay in Australia shall be borne by Seller. The amount of such expenses shall be decided later upon mutual agreement.
DATE: 10th October, 1963

SELLER: NEWSAM MINING CO. PTY. LTD.

(Sgd.) A.V. Sampson
Managing Director

BUYER: THE NISSHO COMPANY, LIMITED

(Sgd.) Tatsushi
Manager, Perrous Material Department.
MEMORANDUM

With reference to the LETTER OF INTENT established at the date of 10th October, 1963, between NEVSAM MINING CO. PTY. LTD. and THE NISSHO COMPANY LIMITED, it has been mutually agreed by and between the two parties that NEVSAM MINING CO. PTY. LTD. shall pay to THE NISSHO COMPANY LIMITED the commission to be calculated at the rate set forth below, in the light of close cooperation extended by the latter to the former in the exploration of the Mt. Bunday iron ore deposit.

1) Australian Pound 3/9 per long ton of 2,240 lbs. for the total quantity to be shipped under the LETTER OF INTENT, when the shipped quantity is up to 100,000 long tons per annum.

2) Australian Pound 4/3 per long ton of 2,240 lbs. for the total quantity to be shipped under the LETTER OF INTENT, when the shipped quantity exceeds 100,000 long tons per annum.

The payment shall be made at the time of final payment on each shipment.

This MEMORANDUM shall form an integral part of the LETTER OF INTENT which shall be valid and binding upon both parties only after the conclusion and signing of the two documents by the representatives of the two parties.

DATE: 10th October, 1963.

NEVSAM MINING CO. PTY. LTD.

(Sgd.) A.V. Sampson
Managing Director

THE NISSHO COMPANY, LIMITED

(Sgd.) Takashi
Manager, Ferrous Materials Dept.
Re: SS Molucca

Northern Agency Building,
Bennett Street,
Darwin, Northern Territory,
AUSTRALIA.

MT. BUNDEY IRON ORE

Dear Sirs,

We have received through our Australian office a series of your letters, i.e. dated 24th, 27th February, 4th, 10th and 17th March, 1964, and wish to refer especially to the last one.

It is now confirmed that the letter of intent signed and exchanged between the two parties under the date of 10th October, 1963, concerning the development of Mt. Bundey iron ore deposit in Northern Territory, became invalid legally at the end of March, 1964. This is just because the provision of 3) Article 2 of the letter of intent had not been followed out as stipulated by that time.

However, we much appreciate your fullest understanding that this never means a renouncement of Mt. Bundey iron ore deposit on our part. Though the letter of intent ended its effect legally, we are still well prepared to work with you for the development, in view of the past circumstances surrounding the deposit and in the spirit of mutual co-operation, just as we did before signing the letter of intent.

Our Australian office reported us in this concern that an official meeting would be held in Canberra by the authorities concerned to discuss a proposed construction of 1,000 t/h loading facilities at Port Darwin with 32 feet draft under the budget of £350,000. We are looking forward to the outcome of the discussion with keen interest, and if the things develop more favourably for both of us, the development of Mt. Bundey will be taken up from a fresh point of view.

Yours truly,

THE NIKKO COMPANY LTD.
(Sgd.)
A. Sekine
Sub-Manager
Ferrous Materials Dept.
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<th>Description</th>
<th>17/6</th>
<th>17/-</th>
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<th>15/-</th>
<th>15/3</th>
<th>15/-</th>
<th>14/6</th>
<th>14/-</th>
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<tr>
<td>Haulage 22 miles 3d. per ton mile - firm quote</td>
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<td>5/6</td>
<td>5/6</td>
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<td>5/6</td>
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<tr>
<td>Goods - Firm rates</td>
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<td>Goods and wharf facilities</td>
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<tr>
<td>Preliminary inspection of goods at 6d. - firm quote</td>
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<td>7/6</td>
<td>7/6</td>
<td>7/6</td>
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<td>Commercial Commission, Marketing and Sales, Royalties, etc. Average firm rate</td>
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<td>1/-</td>
<td>1/-</td>
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<td>1/-</td>
<td>1/-</td>
<td>1/-</td>
<td>1/-</td>
<td>1/-</td>
<td>1/-</td>
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<tr>
<td>General overheads, prospecting etc. £20,000</td>
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<td>Mineral, expenditure</td>
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<td>1/-</td>
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<td>1/-</td>
<td>1/-</td>
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<tr>
<td>Mineral extraction, expenditure</td>
<td>4/-</td>
<td>4/-</td>
<td>4/-</td>
<td>4/-</td>
<td>4/-</td>
<td>4/-</td>
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<td>Average - base at 6d.</td>
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<tr>
<td>Equipment, drilling - fixed figure</td>
<td>3d.</td>
<td>3d.</td>
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<tr>
<td>Commission at rail siding - estimated rate</td>
<td>1/-</td>
<td>1/-</td>
<td>1/-</td>
<td>1/-</td>
<td>1/-</td>
<td>1/-</td>
<td>1/-</td>
<td>1/-</td>
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<td>1/-</td>
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<tr>
<td>Price - £12.80 cif</td>
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<tr>
<td>Freight - £4.25 (London rates)</td>
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<tr>
<td>Gross margin - per ton - 64% Fe</td>
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<td>- per annum</td>
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<tr>
<td>Price Contract 1965-72 - (1)</td>
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<tr>
<td>Minimum 10,000,000 tons annually, maximum 160,000,000 tons annually &amp; £12.80 per ton CIF or £8.60 CIF</td>
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<tr>
<td>(2) Quantities to be declared 3 months before the beginning of each year.</td>
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<tr>
<td>(3) Sellers hold the right to sell any surplus production capacity to other ships annually.</td>
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<tr>
<td>(4) Excludes all preliminary expenses and variables such as weight and quality.</td>
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<tr>
<td>(5) Excludes further proving for future reserves - to be decided later.</td>
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<tr>
<td>Proved quantities</td>
<td>1.5 million tons</td>
<td>64% Fe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Estimated surrounding rubble areas</td>
<td>400,000 tons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>
**Analysis of Outlay**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Amount</th>
<th>Date/Details</th>
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<tbody>
<tr>
<td>Transport</td>
<td>Trucks</td>
<td>£75,000</td>
<td>March, 1965</td>
</tr>
<tr>
<td></td>
<td>Spares &amp; Equipment</td>
<td>£5,000</td>
<td>March, 1965</td>
</tr>
<tr>
<td></td>
<td>Transporting Costs</td>
<td>£9,375</td>
<td>Over 4 months commencing June 1965 - £2,350 per month.</td>
</tr>
<tr>
<td></td>
<td>Holden</td>
<td>£1,000</td>
<td>June, 1964</td>
</tr>
<tr>
<td>Vehicels</td>
<td>Cancelled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mining</td>
<td>Running Expenses</td>
<td>£2,500</td>
<td>£112.10. 0 per month commencing May, 1963.</td>
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<tr>
<td></td>
<td>Proving Rubble at Mt. Bunday</td>
<td>£3,000</td>
<td>June/July, 1964</td>
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<tr>
<td></td>
<td>Prospecting &amp; Proving</td>
<td>£3,000</td>
<td>£500 per month June/November, 1964</td>
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<td>Lease Rentals, etc.</td>
<td>£1,000</td>
<td>December, 1964</td>
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<td>Buildings</td>
<td>Mt. Bunday</td>
<td>£2,000</td>
<td>March, 1965</td>
</tr>
<tr>
<td></td>
<td>Rail Siding - Bin &amp; Conveyor</td>
<td>£4,000</td>
<td>March, 1965</td>
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<tr>
<td>Rentals etc.</td>
<td>Darwin River Base</td>
<td>£2,040</td>
<td>£50 per month commencing May, 1964</td>
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<tr>
<td>Mining</td>
<td>Sub-contract Mining Advance</td>
<td>£18,750</td>
<td>March, 1965</td>
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<tr>
<td>Rail Freight</td>
<td></td>
<td>£6,875</td>
<td>May/July - £2,300 per month May/June/July, 1965</td>
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<tr>
<td>Salaries</td>
<td>Cancelled</td>
<td>£19,800</td>
<td>£825 per month commencing May, 1964</td>
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<td>Overheads</td>
<td>Travelling, etc. etc.</td>
<td>£5,000</td>
<td>£210 per month commencing May, 1964</td>
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<tr>
<td></td>
<td>(Not evenly spread monthly in actual practice)</td>
<td></td>
<td></td>
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</tbody>
</table>
Dated April 17th, 1964.

Mr. A.V. Sampson,
Beaver Industries Pty. Ltd.,
Box 1126J, G.P.O.
MELBOURNE.

Dear Sir,

Further to your telephone call on Wednesday, we enclose as requested a modified drawing of proposed facilities at Port Darwin.

This drawing No. B 1 indicates one possible way in which handling equipment could be arranged, additional to that shown on the drawing submitted to the Department of Territories with the full Duval Holdings Pty. Ltd./McDonald Constructions Pty. Ltd. proposal, to cater for ore from your proposed mine. Our preliminary estimate for these additional works is £150,000.

Yours faithfully,

MCDONALD CONSTRUCTIONS Pty. LIMITED.

(Sgd.)

Cavan McDonald
per T.D. Vaughan,
GENERAL MANAGER
OVERSEAS TELECOMMUNICATIONS COMMISSION (AUST)

DATED 15TH APRIL 1964

HERBERT F WALSH ESQ
MALLESONS
MELBOURNE (AUSTRALIA)

HEVSAM MINING PROJECT RECEIVING FAVORABLE CONSIDERATION HERE BUT DELIBERATIONS UNAVOIDABLY INTERRUPTED BY PEABODY INTENSIVE US LABOR NEGOTIATIONS JUST CONCLUDED WHICH PREEMPTED TOP MANAGEMENT ATTENTION STOP IN VIEW OF CIRCUMSTANCES THEY AND WE WILL APPRECIATE TEN DAY EXTENSION TO RESPOND TO YOUR MARCH THIRTEENTH OFFER KINDLY ADVISE

BEST REGARDS

GEORGE F FOX
INVESTMENT OFFICER
CHASE INTERNATIONAL INVESTMENT CORP.
NEW YORK.
<table>
<thead>
<tr>
<th>D.D.H. 2</th>
<th>Total Iron %</th>
<th>Sulphur %</th>
<th>Phosphorus %</th>
<th>Copper %</th>
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<tr>
<td>45&quot;</td>
<td>61&quot;</td>
<td>66.3</td>
<td>0.03</td>
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<tr>
<td>83&quot;</td>
<td>96&quot;</td>
<td>62.0</td>
<td>3.50</td>
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<td>96&quot;</td>
<td>100&quot;</td>
<td>64.9</td>
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<td>0.023</td>
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<table>
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<th>D.D.H. 3A</th>
<th>Total Iron %</th>
<th>Sulphur %</th>
<th>Phosphorus %</th>
<th>Copper %</th>
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<tr>
<td>51&quot;</td>
<td>61&quot;</td>
<td>65.0</td>
<td>0.18</td>
<td>0.089</td>
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<td>61&quot;</td>
<td>71&quot;</td>
<td>63.8</td>
<td>0.11</td>
<td>0.039</td>
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<td>71&quot;</td>
<td>81&quot;</td>
<td>63.0</td>
<td>1.74</td>
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<tr>
<td>81&quot;</td>
<td>91&quot;</td>
<td>63.7</td>
<td>0.24</td>
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<tr>
<td>91&quot;</td>
<td>101&quot;</td>
<td>63.6</td>
<td>1.93</td>
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<tr>
<td>101&quot;</td>
<td>111&quot;</td>
<td>62.1</td>
<td>4.43</td>
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<tr>
<td>111&quot;</td>
<td>121&quot;</td>
<td>64.3</td>
<td>2.79</td>
<td>0.021</td>
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<td>121&quot;</td>
<td>131&quot;</td>
<td>64.4</td>
<td>1.90</td>
<td>0.021</td>
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</table>

<table>
<thead>
<tr>
<th>D.D.H. 3B</th>
<th>Total Iron %</th>
<th>Sulphur %</th>
<th>Phosphorus %</th>
<th>Copper %</th>
</tr>
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<tbody>
<tr>
<td>105&quot;</td>
<td>112&quot;</td>
<td>62.6</td>
<td>3.01</td>
<td>0.040</td>
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<tr>
<td>112&quot;</td>
<td>116&quot;</td>
<td>63.9</td>
<td>2.56</td>
<td>0.024</td>
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<tr>
<td>119&quot;</td>
<td>122&quot;</td>
<td>63.1</td>
<td>2.01</td>
<td>0.024</td>
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<tr>
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<td>0.048</td>
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<td>1.24</td>
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<td>1.60</td>
<td>0.148</td>
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<tr>
<td>164&quot;</td>
<td>166&quot;</td>
<td>63.1</td>
<td>0.54</td>
<td>0.090</td>
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<table>
<thead>
<tr>
<th>D.D.H. 4A</th>
<th>Total Iron %</th>
<th>Sulphur %</th>
<th>Phosphorus %</th>
<th>Copper %</th>
</tr>
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<tbody>
<tr>
<td>57&quot;</td>
<td>67&quot;</td>
<td>66.7</td>
<td>0.060</td>
<td>0.016</td>
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<tr>
<td>67&quot;</td>
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<td>66.1</td>
<td>0.051</td>
<td>0.012</td>
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<tr>
<td>77&quot;</td>
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<td>66.5</td>
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<td>0.021</td>
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<tr>
<td>87&quot;</td>
<td>97&quot;</td>
<td>66.2</td>
<td>0.037</td>
<td>0.020</td>
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<tr>
<td>97&quot;</td>
<td>107&quot;</td>
<td>66.4</td>
<td>0.036</td>
<td>0.025</td>
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<tr>
<td>107&quot;</td>
<td>111&quot;</td>
<td>55.8</td>
<td>0.138</td>
<td>0.057</td>
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<tr>
<td>111&quot;</td>
<td>115&quot;</td>
<td>63.0</td>
<td>0.033</td>
<td>0.027</td>
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<table>
<thead>
<tr>
<th>D.D.H. 5A</th>
<th>Total Iron %</th>
<th>Sulphur %</th>
<th>Phosphorus %</th>
<th>Copper %</th>
</tr>
</thead>
<tbody>
<tr>
<td>75 4&quot;</td>
<td>80 2&quot;</td>
<td>62.5</td>
<td>0.12</td>
<td>0.074</td>
</tr>
<tr>
<td>80 11&quot;</td>
<td>88 11&quot;</td>
<td>62.6</td>
<td>0.12</td>
<td>0.057</td>
</tr>
<tr>
<td>88 11&quot;</td>
<td>95 0&quot;</td>
<td>62.4</td>
<td>0.59</td>
<td>0.029</td>
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<tr>
<td>95 0&quot;</td>
<td>104 0&quot;</td>
<td>60.5</td>
<td>1.06</td>
<td>0.041</td>
</tr>
<tr>
<td>104 0&quot;</td>
<td>115 10&quot;</td>
<td>64.0</td>
<td>0.11</td>
<td>0.033</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D.D.H. 6</th>
<th>Total Iron %</th>
<th>Sulphur %</th>
<th>Phosphorus %</th>
<th>Copper %</th>
</tr>
</thead>
<tbody>
<tr>
<td>51 9&quot;</td>
<td>54 0&quot;</td>
<td>52.0</td>
<td>0.035</td>
<td>0.120</td>
</tr>
<tr>
<td>54 0&quot;</td>
<td>55 4&quot;</td>
<td>55.7</td>
<td>0.035</td>
<td>0.071</td>
</tr>
<tr>
<td>60 4&quot;</td>
<td>61 7&quot;</td>
<td>56.4</td>
<td>0.045</td>
<td>0.055</td>
</tr>
<tr>
<td>61 7&quot;</td>
<td>70 7&quot;</td>
<td>57.3</td>
<td>5.73</td>
<td>0.137</td>
</tr>
<tr>
<td>70 7&quot;</td>
<td>81 5&quot;</td>
<td>61.4</td>
<td>1.82</td>
<td>0.042</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>D.D.H. 8</th>
<th>Total Iron %</th>
<th>Sulphur %</th>
<th>Phosphorus %</th>
<th>Copper %</th>
</tr>
</thead>
<tbody>
<tr>
<td>43 8&quot;</td>
<td>45 6&quot;</td>
<td>62.8</td>
<td>0.15</td>
<td>0.054</td>
</tr>
<tr>
<td>45 9&quot;</td>
<td>52 3&quot;</td>
<td>63.7</td>
<td>0.15</td>
<td>0.014</td>
</tr>
<tr>
<td>62 0&quot;</td>
<td>72 0&quot;</td>
<td>65.4</td>
<td>0.07</td>
<td>0.066</td>
</tr>
<tr>
<td>72 0&quot;</td>
<td>73 4&quot;</td>
<td>63.8</td>
<td>0.07</td>
<td>0.053</td>
</tr>
<tr>
<td>73 4&quot;</td>
<td>78 8&quot;</td>
<td>60.7</td>
<td>0.15</td>
<td>0.169</td>
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<tr>
<td>78 8&quot;</td>
<td>86 10&quot;</td>
<td>62.5</td>
<td>0.06</td>
<td>0.117</td>
</tr>
<tr>
<td>86 10&quot;</td>
<td>88 9&quot;</td>
<td>63.1</td>
<td>0.03</td>
<td>0.052</td>
</tr>
<tr>
<td>D.D.H. 8 cont'd.</td>
<td>Total Iron %</td>
<td>Sulphur %</td>
<td>Phosphorus %</td>
<td>Copper %</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------</td>
<td>-----------</td>
<td>--------------</td>
<td>----------</td>
</tr>
<tr>
<td>88' 9&quot; - 92' 4&quot;</td>
<td>65.7</td>
<td>0.055</td>
<td>0.057</td>
<td>0.040</td>
</tr>
<tr>
<td>92' 4&quot; - 93' 4&quot;</td>
<td>61.8</td>
<td>2.90</td>
<td>0.048</td>
<td>0.785</td>
</tr>
<tr>
<td>94' 6&quot; - 97' 6&quot;</td>
<td>60.0</td>
<td>2.45</td>
<td>0.029</td>
<td>0.40</td>
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<tr>
<td>D.D.H. 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6' - 8'</td>
<td>65.9</td>
<td>0.06</td>
<td>0.026</td>
<td>0.018</td>
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<tr>
<td>8' - 18'</td>
<td>65.1</td>
<td>0.04</td>
<td>0.059</td>
<td>0.030</td>
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<tr>
<td>18' - 45'</td>
<td>65.4</td>
<td>0.028</td>
<td>0.059</td>
<td>0.028</td>
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<tr>
<td>58' - 69'</td>
<td>64.1</td>
<td>0.14</td>
<td>0.089</td>
<td>0.036</td>
</tr>
<tr>
<td>69' - 75'</td>
<td>62.3</td>
<td>0.23</td>
<td>0.066</td>
<td>0.040</td>
</tr>
<tr>
<td>75' - 78'</td>
<td>64.3</td>
<td>0.08</td>
<td>0.034</td>
<td>0.030</td>
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<tr>
<td>D.D.H. 10</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50' - 69'</td>
<td>63.4</td>
<td>0.04</td>
<td>0.096</td>
<td>0.054</td>
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<tr>
<td>69' - 76'</td>
<td>63.7</td>
<td>0.037</td>
<td>0.039</td>
<td>0.052</td>
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<tr>
<td>76' - 82'</td>
<td>62.1</td>
<td>2.51</td>
<td>0.018</td>
<td>0.166</td>
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<tr>
<td>84' - 90'</td>
<td>62.1</td>
<td>1.83</td>
<td>0.040</td>
<td>0.076</td>
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<tr>
<td>D.D.H. 11</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7' - 22'</td>
<td>65.7</td>
<td>0.05</td>
<td>0.085</td>
<td>0.037</td>
</tr>
<tr>
<td>25' - 53'</td>
<td>66.3</td>
<td>0.013</td>
<td>0.037</td>
<td>0.028</td>
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<tr>
<td>56' - 67' 6&quot;</td>
<td>63.2</td>
<td>0.043</td>
<td>0.062</td>
<td>0.056</td>
</tr>
<tr>
<td>87' - 96'</td>
<td>65.7</td>
<td>0.024</td>
<td>0.042</td>
<td>0.045</td>
</tr>
<tr>
<td>96' - 101' 6&quot;</td>
<td>65.9</td>
<td>0.06</td>
<td>0.016</td>
<td>0.031</td>
</tr>
<tr>
<td>101' 6&quot; - 111' 6&quot;</td>
<td>65.6</td>
<td>0.020</td>
<td>0.021</td>
<td>0.033</td>
</tr>
<tr>
<td>115' 3&quot; - 125' 8&quot;</td>
<td>64.5</td>
<td>0.037</td>
<td>0.041</td>
<td>0.062</td>
</tr>
<tr>
<td>125' 8&quot; - 130' 8&quot;</td>
<td>65.6</td>
<td>0.045</td>
<td>0.021</td>
<td>0.054</td>
</tr>
<tr>
<td>131' 0&quot; - 132' 4&quot;</td>
<td>66.6</td>
<td>0.025</td>
<td>0.019</td>
<td>0.035</td>
</tr>
<tr>
<td>143' 6&quot; - 148' 8&quot;</td>
<td>59.5</td>
<td>3.00</td>
<td>0.021</td>
<td>0.078</td>
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<tr>
<td>D.D.H. 12</td>
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</tr>
<tr>
<td>81' - 89'</td>
<td>62.6</td>
<td>0.030</td>
<td>0.063</td>
<td>0.044</td>
</tr>
<tr>
<td>89' - 95' 6&quot;</td>
<td>62.3</td>
<td>0.020</td>
<td>0.074</td>
<td>0.055</td>
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<tr>
<td>110' - 128'</td>
<td>63.0</td>
<td>0.020</td>
<td>0.072</td>
<td>0.099</td>
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</tbody>
</table>

Australian Mineral Development Laboratories, Adelaide.
MOUNT BUNDEY: ASSAY RESULTS

SURFACE SAMPLES NEAR D.D.H. 3, 4, 5, 8, 9, 10.

11 and 12 FOR TOTAL IRON, SILICA,
PHOSPHORUS, SULPHUR AND COPPER

<table>
<thead>
<tr>
<th>D.D.H.</th>
<th>Total Iron Fe %</th>
<th>Silica SiO2 %</th>
<th>Phosphorus P %</th>
<th>Sulphur S %</th>
<th>Copper Cu %</th>
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<tbody>
<tr>
<td>3</td>
<td>67.1</td>
<td>1.10</td>
<td>0.086</td>
<td>0.013</td>
<td>0.029</td>
</tr>
<tr>
<td>4</td>
<td>65.7</td>
<td>2.12</td>
<td>0.085</td>
<td>0.057</td>
<td>0.036</td>
</tr>
<tr>
<td>5</td>
<td>65.6</td>
<td>2.00</td>
<td>0.074</td>
<td>0.065</td>
<td>0.031</td>
</tr>
<tr>
<td>8</td>
<td>66.6</td>
<td>1.73</td>
<td>0.068</td>
<td>0.108</td>
<td>0.044</td>
</tr>
<tr>
<td>9</td>
<td>65.6</td>
<td>3.19</td>
<td>0.016</td>
<td>0.072</td>
<td>0.023</td>
</tr>
<tr>
<td>10</td>
<td>65.1</td>
<td>2.34</td>
<td>0.156</td>
<td>0.055</td>
<td>0.047</td>
</tr>
<tr>
<td>11</td>
<td>66.2</td>
<td>1.59</td>
<td>0.038</td>
<td>0.094</td>
<td>0.053</td>
</tr>
<tr>
<td>12</td>
<td>65.5</td>
<td>2.87</td>
<td>0.060</td>
<td>0.116</td>
<td>0.036</td>
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</table>

Nissho Mining Company,

Tokyo.
## DIAMOND DRILL HOLE NO. 2 : MT. BUNDEY

**Collar of Hole 520S/28W (Geophysical Grid)**
- **Bearing:** 325° (magnetic)
- **Depression:** 45°

### Footage

<table>
<thead>
<tr>
<th>Footage</th>
<th>Recovery</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0' – 10'</td>
<td>Cuttings only</td>
<td>Martite rubble.</td>
</tr>
<tr>
<td>10' – 20'</td>
<td>Cuttings only</td>
<td>Red syenite sand with some martite.</td>
</tr>
<tr>
<td>20' – 33'</td>
<td>Cuttings only</td>
<td>As above but richer in martite.</td>
</tr>
<tr>
<td>33' – 41'</td>
<td>Cuttings only</td>
<td>Pale red to yellow clay — probably decomposed syenite.</td>
</tr>
<tr>
<td>41' – 45'10&quot;</td>
<td>5&quot;</td>
<td>Pale white clay — followed by martite — vuggy with boxworks — slightly magnetic.</td>
</tr>
<tr>
<td>45'10&quot; – 51'2&quot;</td>
<td>2'5&quot;</td>
<td>Vuggy martite — slightly magnetic.</td>
</tr>
<tr>
<td>51'2&quot; – 55'3&quot;</td>
<td>6&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>55'3&quot; – 56'4&quot;</td>
<td>9&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>56'4&quot; – 61'4&quot;</td>
<td>6&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>61'4&quot; – 66'3&quot;</td>
<td>4&quot;</td>
<td>Fine-grained pink syenite.</td>
</tr>
<tr>
<td>66'3&quot; – 76'5&quot;</td>
<td>4&quot;</td>
<td>Fine pink clay — probably decomposed syenite — some martite fragments — probably dropped from upper part of hole.</td>
</tr>
<tr>
<td>76'5&quot; – 81'0&quot;</td>
<td>Cuttings only</td>
<td>Decomposed syenite with abundant martite. Chlorite (?) with magnetite veinlets. 7&quot; Chlorite (?) 2'9&quot; martite with up to 10% pyrite — small patches of chlorite. Martite with up to 30% pyrite — small amount of chalcopyrite — small patches of chlorite. Martite with less than 5% pyrite — a few thin (1/16&quot;) veinlets of malachite within the martite — martite strongly magnetic and vuggy. Martite — strongly magnetic — pyrite and chalcopyrite less than 3% — 4&quot; band of white clay (?) within martite.</td>
</tr>
<tr>
<td>81'0&quot; – 86'5&quot;</td>
<td>5&quot;</td>
<td></td>
</tr>
<tr>
<td>86'5&quot; – 91'2&quot;</td>
<td>3'4&quot;</td>
<td></td>
</tr>
<tr>
<td>91'2&quot; – 93'5&quot;</td>
<td>2'0&quot;</td>
<td></td>
</tr>
<tr>
<td>93'5&quot; – 96'0&quot;</td>
<td>2'3&quot;</td>
<td></td>
</tr>
<tr>
<td>96'0&quot; – 100'2&quot;</td>
<td>3'7&quot;</td>
<td></td>
</tr>
</tbody>
</table>

Hole abandoned at 100'6" due to caving higher up the hole.

**Note:** Chlorite (?) found from 81'0" to 87'0" is similar to material from D.D.H. 3b that has been identified as a Barium muscovite.
## DIAMOND DRILL HOLE 3A : MT. BUNDEY

**Collar of Hole** 360S/157 (Geophysical grid)

**Bearing** : 145° (magnetic)

**Depression** : 45°

<table>
<thead>
<tr>
<th>Footage</th>
<th>Recovery</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0' - 8'</td>
<td>Cuttings only</td>
<td>Light red clay - some marteite fragments</td>
</tr>
<tr>
<td>8' - 16'</td>
<td>Cuttings only</td>
<td>Pale brown syenite - some large marteite fragments.</td>
</tr>
<tr>
<td>16' - 26'</td>
<td>Cuttings only</td>
<td>Pale brown syenite</td>
</tr>
<tr>
<td>26' - 36'</td>
<td>Cuttings only</td>
<td>As above</td>
</tr>
<tr>
<td>36' - 46'</td>
<td>Cuttings only</td>
<td>As above</td>
</tr>
<tr>
<td>46' - 51' 8&quot;</td>
<td>2&quot;</td>
<td>Martite - no sulfides</td>
</tr>
<tr>
<td>51' 8&quot; - 53' 0&quot;</td>
<td>1' 4&quot;</td>
<td>Vuggy martite with some boxwork and some iron sulphate staining</td>
</tr>
<tr>
<td>53' 0&quot; - 56' 6&quot;</td>
<td>3' 2&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>56' 6&quot; - 62' 4&quot;</td>
<td>3' 8&quot;</td>
<td>As above</td>
</tr>
</tbody>
</table>

**Hole Caved - Redrilled from 47 Feet**

<table>
<thead>
<tr>
<th>Footage</th>
<th>Recovery</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>47' 0&quot; - 51' 0&quot;</td>
<td>3&quot;</td>
<td>Vuggy martite with boxworks</td>
</tr>
<tr>
<td>51' 0&quot; - 53' 0&quot;</td>
<td>10&quot;</td>
<td>As above - some iron sulphate staining</td>
</tr>
<tr>
<td>53' 0&quot; - 54' 0&quot;</td>
<td>6&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>54' 0&quot; - 56' 1&quot;</td>
<td>1' 2&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>56' 1&quot; - 58' 0&quot;</td>
<td>1' 8&quot;</td>
<td>As above - slightly magnetic</td>
</tr>
<tr>
<td>58' 0&quot; - 58' 7&quot;</td>
<td>3&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>58' 7&quot; - 63' 4&quot;</td>
<td>4' 4&quot;</td>
<td>As above - rare thin quartz veinlets</td>
</tr>
<tr>
<td>63' 4&quot; - 63'10&quot;</td>
<td>5&quot;</td>
<td>As above - no quartz</td>
</tr>
<tr>
<td>63'10&quot; - 67' 0&quot;</td>
<td>2' 7&quot;</td>
<td>As above - non magnetic</td>
</tr>
<tr>
<td>67' 0&quot; - 69' 0&quot;</td>
<td>2' 0&quot;</td>
<td>As above - rare quartz veinlets</td>
</tr>
<tr>
<td>69' 0&quot; - 73' 4&quot;</td>
<td>1' 8&quot;</td>
<td>As above - no quartz - boxworks very common.</td>
</tr>
<tr>
<td>73' 4&quot; - 75' 4&quot;</td>
<td>1' 7&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>75' 4&quot; - 77' 2&quot;</td>
<td>1' 8&quot;</td>
<td>Martite lode with about 2% pyrite</td>
</tr>
<tr>
<td>77' 2&quot; - 79' 0&quot;</td>
<td>1' 9&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>79' 0&quot; - 80' 6&quot;</td>
<td>1' 6&quot;</td>
<td>Martite with rare pyrite - boxworks very common</td>
</tr>
<tr>
<td>80' 6&quot; - 82' 5&quot;</td>
<td>1' 9&quot;</td>
<td>Martite with rare pyrite and rare boxworks</td>
</tr>
<tr>
<td>82' 5&quot; - 85' 0&quot;</td>
<td>2' 1&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>85' 0&quot; - 85'10&quot;</td>
<td>8&quot;</td>
<td>Martite - strongly magnetic - rare pyrite</td>
</tr>
<tr>
<td>85'10&quot; - 90' 4&quot;</td>
<td>12&quot;</td>
<td>5&quot; solid martite</td>
</tr>
<tr>
<td>90' 4&quot; - 97' 2&quot;</td>
<td>1' 1&quot;</td>
<td>8&quot; martite with up to 5% disseminated pyrite - all strongly magnetic</td>
</tr>
<tr>
<td>97' 2&quot; - 99' 5&quot;</td>
<td>9&quot;</td>
<td>Martite with 5% disseminated pyrite - rare chalcopyrite - some chlorite (?)</td>
</tr>
<tr>
<td>99' 5&quot; - 108' 8&quot;</td>
<td>9' 3&quot;</td>
<td>Martite strongly magnetic - up to 10% pyrite with rare chalcopyrite - pyrite in veinlets - some chlorite</td>
</tr>
<tr>
<td>108' 8&quot; - 115' 9&quot;</td>
<td>6' 3&quot;</td>
<td>As above with chalcopyrite - up to 5%</td>
</tr>
<tr>
<td>115' 9&quot; - 117' 6&quot;</td>
<td>1' 8&quot;</td>
<td>As above - less chalcopyrite</td>
</tr>
<tr>
<td>117' 6&quot; - 123' 6&quot;</td>
<td>9&quot;</td>
<td>Martite strongly magnetic - rare sulphides</td>
</tr>
<tr>
<td>FOOTAGE</td>
<td>RECOVERY</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>123' 6&quot; - 128'10&quot;</td>
<td>4' 0&quot;</td>
<td>Granular magnetite - disseminated pyrite up to 5% - some chalcopyrite - possibly some Arsenopyrite - one 9&quot; band of pale blue-green clay or gouge.</td>
</tr>
<tr>
<td>128'10&quot; - 136' 4&quot;</td>
<td>7' 2&quot;</td>
<td>Abundant magnetite crystals-pyrite and chalcopyrite both up to 5%. At 135'6&quot; change to hard chlorite rock - up to 2% pyrite in veinlets.</td>
</tr>
<tr>
<td>136' 4&quot; - 137'11&quot;</td>
<td>9&quot;</td>
<td>4&quot; - chlorite rock (?) 5&quot; - fine-grained syenite - 2% pyrite</td>
</tr>
<tr>
<td>137'11&quot; - 147' 6&quot;</td>
<td>2' 0&quot;</td>
<td>Fine-grained syenite - thoroughly chloritized - some coarse-grained syenite 1&quot; coarse-grained chloritized syenite 2'8&quot; granular magnetite - pyrite and chalcopyrite up to 10% - some chlorite.</td>
</tr>
<tr>
<td>147' 6&quot; - 150'10&quot;</td>
<td>2' 9&quot;</td>
<td>As above - chlorite abundant for bottom 6&quot; Coarse-grained chloritized syenite</td>
</tr>
<tr>
<td>150'10&quot; - 152' 9&quot;</td>
<td>1' 7&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>152' 9&quot; - 155' 9&quot;</td>
<td>3' 0&quot;</td>
<td></td>
</tr>
<tr>
<td>155' 9&quot; - 156' 3&quot;</td>
<td>6&quot;</td>
<td></td>
</tr>
<tr>
<td>156' 3&quot;</td>
<td></td>
<td>END OF HOLE</td>
</tr>
<tr>
<td>FOOTAGE</td>
<td>RECOVERY</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>0' - 10'</td>
<td>Cuttings only</td>
<td>Red sand</td>
</tr>
<tr>
<td>10' - 20'</td>
<td>Cuttings only</td>
<td>Sand - some martite pebbles</td>
</tr>
<tr>
<td>20' - 30'</td>
<td>Cuttings only</td>
<td>Decomposed syenite - clay rich</td>
</tr>
<tr>
<td>30' - 40'</td>
<td>Cuttings only</td>
<td>Decomposed syenite - clay rich</td>
</tr>
<tr>
<td>40' - 50'</td>
<td>Cuttings only</td>
<td>Decomposed syenite - biotite rich</td>
</tr>
<tr>
<td>50' - 55'</td>
<td>Cuttings only</td>
<td>Decomposed syenite - with altered feldspars</td>
</tr>
<tr>
<td>55' - 60'</td>
<td>Cuttings with pieces of core</td>
<td>Deeply weathered syenite</td>
</tr>
<tr>
<td>60' - 70'</td>
<td>Cuttings with pieces of core</td>
<td>Deeply weathered syenite</td>
</tr>
<tr>
<td>70' - 80'</td>
<td>Cuttings with pieces of core</td>
<td>Deeply weathered syenite - some bands rich in biotite</td>
</tr>
<tr>
<td>80' - 84'</td>
<td>Cuttings with pieces of core</td>
<td>Weathered syenite - biotite rich</td>
</tr>
<tr>
<td>84' - 89'</td>
<td>Cuttings with pieces of core</td>
<td>Weathered syenite - chlorite rich</td>
</tr>
<tr>
<td>89' - 90'</td>
<td></td>
<td>Weathered syenite - abundant apple green barium muscovite. Weathered syenite to 97' - fresh syenite below</td>
</tr>
<tr>
<td>90' - 94'</td>
<td>2' 6&quot;</td>
<td>Fresh coarse-grained syenite to 103'. From 103' - 105'2&quot; fine-grained banded black chlorite rock (?) possibly sediment - up to 1% pyrite. Below 105'2&quot; - magnetite lode - up to 3% pyrite</td>
</tr>
<tr>
<td>94' - 100'</td>
<td>6' 0&quot;</td>
<td>Magnetite lode - up to 5% pyrite - some bands containing silicate minerals. 1&quot; band of chart.</td>
</tr>
<tr>
<td>100' - 106'6&quot;</td>
<td>6' 6&quot;</td>
<td>115'11&quot; - 118'11&quot;, chlorite magnetite rock - very soft - 2% pyrite</td>
</tr>
<tr>
<td>106'6&quot; - 115'11&quot;</td>
<td>9' 2&quot;</td>
<td>118'11&quot; - 124'10&quot; magnetite lode - up to 10% pyrite</td>
</tr>
<tr>
<td>115'11&quot; - 124'10&quot;</td>
<td>8' 9&quot;</td>
<td>Magnetite lode - up to 10% brown chlorite filling interstices between magnetite crystals - up to 10% pyrite.</td>
</tr>
<tr>
<td>124'10&quot; - 132'0&quot;</td>
<td>6' 8&quot;</td>
<td>Magnetite lode with abundant chlorite partings - rare pyrite. As above. Magnetite with barium muscovite bands up to 3&quot; - pyrite up to 3% in magnetite 1% in chlorite</td>
</tr>
<tr>
<td>FOOTAGE</td>
<td>RECOVERY</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>-------------</td>
<td>----------</td>
<td>-----------------------------------------------------------</td>
</tr>
<tr>
<td>145’ 3” - 148’ 6”</td>
<td>8”</td>
<td>4” barium muscovite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3” magnetite with abundant chlorite</td>
</tr>
<tr>
<td>148’ 6” - 151’ 5”</td>
<td>3”</td>
<td>1” granular quartz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1” massive pyrite</td>
</tr>
<tr>
<td>151’ 5” - 154’11”</td>
<td>1’ 9”</td>
<td>2” magnetite lode with 2% pyrite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1” massive pyrite</td>
</tr>
<tr>
<td>154’11” - 156’ 2”</td>
<td>10”</td>
<td>1’8” magnetite lode with 2% pyrite</td>
</tr>
<tr>
<td>156’ 2” - 157’11”</td>
<td>1’ 3”</td>
<td>Magnetite lode - 2% pyrite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1” massive pyrite</td>
</tr>
<tr>
<td>157’11” - 162’ 0”</td>
<td>3’ 9”</td>
<td>1’2” magnetite lode - 2% pyrite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Magnetite lode - up to 5% pyrite</td>
</tr>
<tr>
<td>162’ 0” - 165’ 0”</td>
<td>2’ 3”</td>
<td>As above</td>
</tr>
<tr>
<td>165’ 0” - 167’ 1”</td>
<td>2’ 1”</td>
<td>1.5” as above</td>
</tr>
<tr>
<td>167’ 1” - 171’ 1”</td>
<td>4’ 0”</td>
<td>8” coarse-grained chloritized syenite</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coarse-grained chloritized syenite</td>
</tr>
</tbody>
</table>

END OF HOLE.
<table>
<thead>
<tr>
<th>FOOTAGE</th>
<th>RECOVERY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0' - 10'</td>
<td>N - No core</td>
<td>Martite? boulders</td>
</tr>
<tr>
<td>10' - 52'</td>
<td></td>
<td>Cuttings indicate decomposed syenite with increasing amounts of hematite in depth</td>
</tr>
<tr>
<td>52' - 57'</td>
<td>4&quot;</td>
<td>Coarsely crystalline martite</td>
</tr>
<tr>
<td>57' - 58'</td>
<td>12&quot;</td>
<td>Crystalline martite with abundant? boxworks</td>
</tr>
<tr>
<td>58' - 58'6&quot;</td>
<td>2&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>58'6&quot; - 59'</td>
<td>6&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>59' - 59'6&quot;</td>
<td>6&quot;</td>
<td>Martite with limonite coatings on joint planes</td>
</tr>
<tr>
<td>59'6&quot; - 60'</td>
<td>4&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>60' - 60'1&quot;</td>
<td>1&quot;</td>
<td>Martite</td>
</tr>
<tr>
<td>60'1&quot; - 64'4&quot;</td>
<td>3'2&quot;</td>
<td>Martite with boxworks. Some pug seams on major joint planes</td>
</tr>
<tr>
<td>64'4&quot; - 65'7&quot;</td>
<td>1'3&quot;</td>
<td>Martite with? boxworks</td>
</tr>
<tr>
<td>65'7&quot; - 68'</td>
<td>2'4&quot;</td>
<td>Martite with? boxworks</td>
</tr>
<tr>
<td>68' - 71'9&quot;</td>
<td>4'2&quot;</td>
<td>Some limonite coatings on joint planes</td>
</tr>
<tr>
<td>71'9&quot; - 72'8&quot;</td>
<td>6&quot;</td>
<td>Coarsely crystalline martite with abundant vuggy cavities</td>
</tr>
<tr>
<td>72'8&quot; - 76'6&quot;</td>
<td>2'9&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>76'6&quot; - 79'2&quot;</td>
<td>1'9&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>79'2&quot; - 79'3&quot;</td>
<td>1&quot;</td>
<td>Chert, partly replaced by iron oxides</td>
</tr>
<tr>
<td>79'3&quot; - 81'7&quot;</td>
<td>6&quot;</td>
<td>Vuggy martite with occasional pockets of clay, up to 3/4&quot;</td>
</tr>
<tr>
<td>81'7&quot; - 83'6&quot;</td>
<td>12&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>83'6&quot; - 83'9&quot;</td>
<td>3&quot;</td>
<td>Coarsely crystalline martite with vuggy cavities. Clay and limonite seams on joint planes</td>
</tr>
<tr>
<td>83'9&quot; - 86'9&quot;</td>
<td>12&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>86'9&quot; - 87'</td>
<td>3&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>87' - 89'4&quot;</td>
<td>1'6&quot;</td>
<td>Martite, dominantly fine-grained, with abundant vuggy cavities</td>
</tr>
<tr>
<td>89'4&quot; - 90'</td>
<td>6&quot;</td>
<td>Martite, coarsely-crystalline with abundant vuggy cavities</td>
</tr>
<tr>
<td>90' - 91'2&quot;</td>
<td>1'3&quot;</td>
<td>Crystalline martite, moderately abundant boxworks, traces of? kaolin. As above. Very sheared and in part altered to limonite.</td>
</tr>
<tr>
<td>91'2&quot; - 93'6&quot;</td>
<td>1'3&quot;</td>
<td>As above. Very abundant boxworks in part</td>
</tr>
<tr>
<td>93'6&quot; - 95'10&quot;</td>
<td>2'8&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>95'10&quot; - 99'3&quot;</td>
<td>1'3&quot;</td>
<td>As above. In places martite has coarsely granular texture.</td>
</tr>
<tr>
<td>99'3&quot; - 101'</td>
<td>12&quot;</td>
<td>Crystalline martite, becoming more limonitic and puggy in depth.</td>
</tr>
<tr>
<td>101' - 107'9&quot;</td>
<td>9&quot;</td>
<td></td>
</tr>
<tr>
<td>FOOTAGE</td>
<td>RECOVERY</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>110' 7&quot; - 115' 2&quot;</td>
<td>12&quot;</td>
<td>Pug and limonite</td>
</tr>
<tr>
<td></td>
<td>9&quot;</td>
<td>Martite with pug zones</td>
</tr>
<tr>
<td></td>
<td>2' 3&quot;</td>
<td>Granules of martite in kaolinitic and chloritic matrix. Kaolinised feldspar crystals and fragments of decomposed shale occur as inclusions.</td>
</tr>
<tr>
<td>115' 2&quot; - 119'</td>
<td>3&quot;</td>
<td>Altered fine-grained syenite with abundant veinlets of chlorite. Some specks of martite and of sulphides</td>
</tr>
<tr>
<td>119' - 123'</td>
<td>2' 3&quot;</td>
<td>Syenite, coarse-grained, otherwise similar to above</td>
</tr>
<tr>
<td>123' - 123' 7&quot;</td>
<td>6&quot;</td>
<td>Syenite, rather fresher than above</td>
</tr>
<tr>
<td>123' 7&quot; - 126' 8&quot;</td>
<td>2' 0&quot;</td>
<td>Fresh coarse syenite – rare pyrite</td>
</tr>
<tr>
<td>126' 8&quot; - 128' 0&quot;</td>
<td>1' 4&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>128' 0&quot; - 133' 6&quot;</td>
<td>4' 10&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>133' 6&quot; - 141' 0&quot;</td>
<td>4' 8&quot;</td>
<td>As above</td>
</tr>
</tbody>
</table>

END OF HOLE

Martite throughout the hole shows patches of moderately to strongly magnetic material, alternating irregularly with non-magnetic material.
<table>
<thead>
<tr>
<th>FOOTAGE</th>
<th>RECOVERY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0' - 2'</td>
<td>Cuttings only</td>
<td>Red-brown soil</td>
</tr>
<tr>
<td>2' - 5'</td>
<td>Cuttings only</td>
<td>Soil with fragments of marmite</td>
</tr>
<tr>
<td>5' - 11'</td>
<td>Cuttings only</td>
<td>Soil with short pieces of marmite core</td>
</tr>
<tr>
<td>11' - 20'</td>
<td>Cuttings only</td>
<td>Syenite sand</td>
</tr>
<tr>
<td>20' - 25'</td>
<td>Cuttings only</td>
<td>As above</td>
</tr>
<tr>
<td>25' - 29'</td>
<td>Cuttings only</td>
<td>Syenite sand with some fragments of syenite - 1/8&quot;</td>
</tr>
<tr>
<td>29' - 31'</td>
<td>Cuttings only</td>
<td>Large (1&quot;) syenite fragments - few marmite fragments probably from top of hole</td>
</tr>
<tr>
<td>31' - 32'</td>
<td>Cuttings only</td>
<td>Syenite sand</td>
</tr>
<tr>
<td>32' - 44'</td>
<td>Cuttings only</td>
<td>Feldspar and magnetite sands</td>
</tr>
<tr>
<td>44' - 46'</td>
<td>Cuttings only</td>
<td>Syenite sand - rare magnetite grains</td>
</tr>
<tr>
<td>46' - 51'</td>
<td>Cuttings only</td>
<td>Syenite sand - up to 5% magnetite grains</td>
</tr>
<tr>
<td>51' - 56'</td>
<td>Cuttings only</td>
<td>Syenite sand - up to 10% magnetite grains</td>
</tr>
<tr>
<td>56' - 57'</td>
<td>Cuttings only</td>
<td>Deeply weathered syenite fragments</td>
</tr>
<tr>
<td>57' - 61'</td>
<td>Cuttings only</td>
<td>Syenite sand</td>
</tr>
<tr>
<td>61' - 66'</td>
<td>Cuttings only</td>
<td>As above</td>
</tr>
<tr>
<td>66' - 68'</td>
<td>Cuttings only</td>
<td>As above</td>
</tr>
<tr>
<td>68' - 71'</td>
<td>Cuttings only</td>
<td>As above</td>
</tr>
<tr>
<td>71' - 79'</td>
<td>Cuttings only</td>
<td>1'11&quot;</td>
</tr>
<tr>
<td>79' - 81'</td>
<td>Cuttings only</td>
<td>Biotite rich sand with 1'1&quot; of core showing deeply weathered biotite rich syenite</td>
</tr>
<tr>
<td>81' - 88'</td>
<td>Cuttings only</td>
<td>Biotite rich sand</td>
</tr>
<tr>
<td>88' - 91'</td>
<td>Cuttings only</td>
<td>Biotite rich sand plus fragments of deeply weathered syenite - 1&quot; of core is weathered syenite with green platy mineral</td>
</tr>
<tr>
<td>91' - 96'</td>
<td>Cuttings only</td>
<td>Biotite-rich sand</td>
</tr>
<tr>
<td>96' - 98'</td>
<td>Cuttings only</td>
<td>Weathered syenite with green platy mineral</td>
</tr>
<tr>
<td>98' - 106'</td>
<td>Cuttings only</td>
<td>As above</td>
</tr>
<tr>
<td>106' - 116'</td>
<td>Cuttings only</td>
<td>Biotite-rich sand</td>
</tr>
<tr>
<td>116' - 126'</td>
<td>Cuttings only</td>
<td>Biotite-rich sand followed by fresh coarse-grained syenite</td>
</tr>
<tr>
<td>126' - 135'</td>
<td>Cuttings only</td>
<td>As above</td>
</tr>
</tbody>
</table>

END OF HOLE.

NOTE: Green platy mineral is apparently the same as green mineral in drill hole 3b, which has been identified as barium muscovite.
### Diamond Drill Hole 5A: Mt. Bunedy

**Collar of Hole 3755/238E (Geophysical Grid)**

<table>
<thead>
<tr>
<th>Footage</th>
<th>Recovery</th>
<th>Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>0'</td>
<td>15'</td>
<td>Cuttings only</td>
</tr>
<tr>
<td>15'</td>
<td>20'</td>
<td>Cuttings only</td>
</tr>
<tr>
<td>20'</td>
<td>30'</td>
<td>Cuttings only</td>
</tr>
<tr>
<td>30'</td>
<td>40'</td>
<td>Cuttings only</td>
</tr>
<tr>
<td>40'</td>
<td>71'</td>
<td>Cuttings only</td>
</tr>
<tr>
<td>71'</td>
<td>76' 6&quot;</td>
<td>Cuttings only</td>
</tr>
<tr>
<td>76' 6&quot;</td>
<td>77' 8&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>77' 8&quot;</td>
<td>78' 2&quot;</td>
<td>1&quot;</td>
</tr>
<tr>
<td>78' 2&quot;</td>
<td>79' 6&quot;</td>
<td>12&quot;</td>
</tr>
<tr>
<td>79' 6&quot;</td>
<td>80' 2&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>80' 2&quot;</td>
<td>80'11&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>80'11&quot;</td>
<td>84' 3&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>84' 3&quot;</td>
<td>84'10&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>84'10&quot;</td>
<td>85' 3&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>85' 3&quot;</td>
<td>86' 4&quot;</td>
<td>11&quot;</td>
</tr>
<tr>
<td>86' 4&quot;</td>
<td>86'11&quot;</td>
<td>7&quot;</td>
</tr>
<tr>
<td>86'11&quot;</td>
<td>87' 4&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>87' 4&quot;</td>
<td>88' 2&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>88' 2&quot;</td>
<td>88' 8&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td>88' 8&quot;</td>
<td>89' 4&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>89' 4&quot;</td>
<td>89' 7&quot;</td>
<td>3&quot;</td>
</tr>
<tr>
<td>89' 7&quot;</td>
<td>91' 7&quot;</td>
<td>2' 0&quot;</td>
</tr>
<tr>
<td>91' 7&quot;</td>
<td>94' 4&quot;</td>
<td>2' 9&quot;</td>
</tr>
<tr>
<td>94' 4&quot;</td>
<td>96' 8&quot;</td>
<td>1' 9&quot;</td>
</tr>
<tr>
<td>96' 8&quot;</td>
<td>99'10&quot;</td>
<td>2' 1&quot;</td>
</tr>
<tr>
<td>99'10&quot;</td>
<td>102' 0&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>102' 0&quot;</td>
<td>104'10&quot;</td>
<td>2'10&quot;</td>
</tr>
<tr>
<td>104'10&quot;</td>
<td>105' 6&quot;</td>
<td>8&quot;</td>
</tr>
<tr>
<td>105' 6&quot;</td>
<td>107' 8&quot;</td>
<td>9&quot;</td>
</tr>
<tr>
<td>107' 8&quot;</td>
<td>114' 0&quot;</td>
<td>3' 8&quot;</td>
</tr>
<tr>
<td>114' 0&quot;</td>
<td>115'10&quot;</td>
<td>1' 4&quot;</td>
</tr>
</tbody>
</table>

**Hole Abandoned** – **Bit Lost at Bottom.**
<table>
<thead>
<tr>
<th>FOOTAGE</th>
<th>RECOVERY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0' - 90'</td>
<td>No cored</td>
<td>Green (barium) mica - some small quartz grains</td>
</tr>
<tr>
<td>90' - 95'</td>
<td>3&quot;</td>
<td>Deeply weathered banded hornfels - Banding/core = 10° - some green (barium) mica.</td>
</tr>
<tr>
<td>95' - 98'</td>
<td>1'0&quot;</td>
<td>As above - no green mica</td>
</tr>
<tr>
<td>98' - 98'9&quot;</td>
<td>3&quot;</td>
<td>Banded hornfels (?) weathered chert and clay</td>
</tr>
<tr>
<td>98'9&quot; - 102'</td>
<td>2'1&quot;</td>
<td>Martite - boxworks - 1% pyrite - slightly magnetic</td>
</tr>
<tr>
<td>102' - 103'2&quot;</td>
<td>1'1&quot;</td>
<td>Martite - boxworks filled with limonite</td>
</tr>
<tr>
<td>103'2&quot; - 104'9&quot;</td>
<td>1'6&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>104'9&quot; - 105'9&quot;</td>
<td>1'0&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>105'9&quot; - 108'6&quot;</td>
<td>2'7&quot;</td>
<td>Weathered chlorite (?) rock</td>
</tr>
<tr>
<td>118'6&quot; - 115'10&quot;</td>
<td>6'0&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>115'10&quot; - 124'</td>
<td>2'4&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>124' - 127'</td>
<td>3'0&quot;</td>
<td>1'0&quot; as above - relict martite - abundant quartz - slightly magnetic</td>
</tr>
<tr>
<td>127' - 129'</td>
<td>2'0&quot;</td>
<td>Clay - small amount of martite at bottom of hole</td>
</tr>
</tbody>
</table>
| 129' - 132' | 3"     | END OF HOLE.
<table>
<thead>
<tr>
<th>FOOTAGE</th>
<th>RECOVERY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0' - 42'</td>
<td>Cuttings only</td>
<td>Mostly decomposed syenite - some martite pebbles</td>
</tr>
<tr>
<td>42' - 51' 9&quot;</td>
<td>Cuttings only</td>
<td>Apple green clay mineral similar to mineral in DDH3b identified as a barium muscovite</td>
</tr>
<tr>
<td>51' 9&quot; - 54' 0&quot;</td>
<td>9&quot;</td>
<td>Martite crystals in matrix of limonite, slightly magnetic</td>
</tr>
<tr>
<td>54' 0&quot; - 55' 4&quot;</td>
<td>1' 4&quot;</td>
<td>Martite with some boxworks. Some vugs filled with opaline silica</td>
</tr>
<tr>
<td>55' 4&quot; - 61' 7&quot;</td>
<td>1' 3&quot;</td>
<td>Decomposed syenite - no core. All core is martite - slightly magnetic - some limonite.</td>
</tr>
<tr>
<td>61' 7&quot; - 67' 0&quot;</td>
<td>7&quot;</td>
<td>Decomposed syenite - no core. Core is martite - up to 5% pyrite.</td>
</tr>
<tr>
<td>67' 0&quot; - 70' 7&quot;</td>
<td>3' 7&quot;</td>
<td>Magnetite lode - up to 10% pyrite - Quartz abundant in some sections.</td>
</tr>
<tr>
<td>70' 7&quot; - 74' 2&quot;</td>
<td>3' 0&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>74' 2&quot; - 78' 4&quot;</td>
<td>1' 4&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>78' 4&quot; - 81' 5&quot;</td>
<td>4&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>81' 5&quot; - 82' 8&quot;</td>
<td>1' 2&quot;</td>
<td>Quartz rich hornfels - up to 2% pyrite, banding/core angle 30, some chlorite</td>
</tr>
<tr>
<td>82' 8&quot; - 88' 1&quot;</td>
<td>3' 2&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>88' 1&quot; - 90' 10&quot;</td>
<td>1' 1&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>90' 10&quot; - 95' 4&quot;</td>
<td>2' 0&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>95' 4&quot; - 98' 6&quot;</td>
<td>2' 9&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>98' 6&quot; - 105' 1&quot;</td>
<td>1' 9&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>105' 1&quot; - 107' 7&quot;</td>
<td>2' 6&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>107' 7&quot; - 110' 0&quot;</td>
<td>1' 6&quot;</td>
<td>As above</td>
</tr>
</tbody>
</table>

END OF HOLE.
### DIAMOND DRILL HOLE 7A: MT. BUNDEY

**Collar of Hole 600N/800E (Geophysical grid)**
- **Bearing:** 117°
- **Depression:** 60°

<table>
<thead>
<tr>
<th>Footage</th>
<th>Recovery</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0'-10'</td>
<td>1' 0&quot; Cuttings only</td>
<td>Martite</td>
</tr>
<tr>
<td>10'-55'</td>
<td>55' Cuttings only</td>
<td>Decomposed syenite</td>
</tr>
<tr>
<td>55'-84'</td>
<td>84' 10' 0&quot; Cuttings only</td>
<td>Syenite</td>
</tr>
</tbody>
</table>

**Rods Struck - Hole Abandoned**

### DIAMOND DRILL HOLE 7B: MT. BUNDEY

**Collar of Hole 600N/800E (Geophysical grid)**
- **Bearing:** 117°
- **Depression:** 50°

<table>
<thead>
<tr>
<th>Footage</th>
<th>Recovery</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0'-14'</td>
<td>14' Cuttings only</td>
<td>Weathered syenite</td>
</tr>
<tr>
<td>14'-58'</td>
<td>58' Cuttings only</td>
<td>Fresh coarse syenite - some bands of chlorite</td>
</tr>
<tr>
<td>58'-64'</td>
<td>64' 5' 0&quot; Cuttings only</td>
<td>Fresh syenite - vug filled with calcite crystals</td>
</tr>
<tr>
<td>64'-77'</td>
<td>77' 9&quot; 3' 6&quot; Cuttings only</td>
<td>As above</td>
</tr>
<tr>
<td>77'-87'</td>
<td>87' 9&quot; 8' 6&quot; Cuttings only</td>
<td>9&quot; fresh syenite as above</td>
</tr>
<tr>
<td>87'-93'</td>
<td>93' 10&quot; 6' 1&quot; Cuttings only</td>
<td>3'4&quot; magnetite with 2% pyrite - some orthoclase crystals</td>
</tr>
<tr>
<td>93'-103'</td>
<td>103' 8' 6&quot; Cuttings only</td>
<td>2'0&quot; fresh syenite as above</td>
</tr>
<tr>
<td>103'-110'</td>
<td>110' 7' 0&quot; Cuttings only</td>
<td>Fresh syenite as above</td>
</tr>
<tr>
<td>110'-120'</td>
<td>120' 10' 0&quot; Cuttings only</td>
<td>2'2&quot; fresh syenite as above</td>
</tr>
<tr>
<td>120'-125'</td>
<td>125' 5' 0&quot; Cuttings only</td>
<td>7'0&quot; chlorite and feldspar rich hornfels with 2% pyrite</td>
</tr>
<tr>
<td>125'-131'</td>
<td>131' 6&quot; 6' 6&quot; Cuttings only</td>
<td>10&quot; chlorite - magnetite with 5% pyrite</td>
</tr>
<tr>
<td>131'-140'</td>
<td>140' 8' 4&quot; Cuttings only</td>
<td>Chlorite-feldspar hornfels, 2% pyrite</td>
</tr>
<tr>
<td>140'-146'</td>
<td>146' 9&quot; 6' 9&quot; Cuttings only</td>
<td>As above - banding/core = 45°</td>
</tr>
<tr>
<td>146'-155'</td>
<td>155' 8' 3&quot; Cuttings only</td>
<td>As above - orthoclase porphyroblasts (?)</td>
</tr>
<tr>
<td>155'-165'</td>
<td>165' 9' 6&quot; Cuttings only</td>
<td>1'7&quot; chlorite hornfels - 1% pyrite banding/core = 30°</td>
</tr>
</tbody>
</table>

**End of Hole.**
### DIAMOND DRILL HOLE 8 : MT. BUNDEY

**Collar of Hole 2883/465E (Geophysical Grid)**
- **Bearing**: 115° (Magnetic)
- **Depression**: 45°

<table>
<thead>
<tr>
<th>Footage</th>
<th>Recovery</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0'</td>
<td>17'</td>
<td>6&quot; Ferruginous soil</td>
</tr>
<tr>
<td>17'</td>
<td>33'9&quot;</td>
<td>3&quot; Fine light brown powdery material—probably sericite</td>
</tr>
<tr>
<td>33'9&quot;</td>
<td>34'3&quot;</td>
<td>4&quot; Decomposed lode material—limonite</td>
</tr>
<tr>
<td>34'3&quot;</td>
<td>43'8&quot;</td>
<td>3&quot; Light brown powdery material—probably sericite</td>
</tr>
<tr>
<td>43'8&quot;</td>
<td>45'6&quot;</td>
<td>1'10&quot; Martite—slightly magnetic boxwork with limonite</td>
</tr>
<tr>
<td>45'6&quot;</td>
<td>45'9&quot;</td>
<td>No recovery Martite with boxworks</td>
</tr>
<tr>
<td>45'9&quot;</td>
<td>52'3&quot;</td>
<td>4'0&quot; No recovery—thought to be limonitic hornfels or slate</td>
</tr>
<tr>
<td>52'3&quot;</td>
<td>62'0&quot;</td>
<td>5'0&quot; Martite—boxworks with limonite</td>
</tr>
<tr>
<td>62'0&quot;</td>
<td>72'0&quot;</td>
<td>4'3&quot; Martite—boxworks with limonite</td>
</tr>
<tr>
<td>72'0&quot;</td>
<td>73'4&quot;</td>
<td>1'2&quot; Martite—boxworks with limonite</td>
</tr>
<tr>
<td>73'4&quot;</td>
<td>78'8&quot;</td>
<td>1'0&quot; Martite—boxworks with limonite</td>
</tr>
<tr>
<td>78'8&quot;</td>
<td>86'10&quot;</td>
<td>2'6&quot; Weathered martite</td>
</tr>
<tr>
<td>86'10&quot;</td>
<td>88'9&quot;</td>
<td>1'0&quot; Martite with limonite in cavities</td>
</tr>
<tr>
<td>88'9&quot;</td>
<td>92'4&quot;</td>
<td>3'6&quot; Martite with limonite in cavities</td>
</tr>
<tr>
<td>92'4&quot;</td>
<td>93'9&quot;</td>
<td>1'5&quot; Solid martite—sulphides beginning at 92'6&quot;</td>
</tr>
<tr>
<td>93'9&quot;</td>
<td>94'6&quot;</td>
<td>No recovery Martite—up to 5% pyrite</td>
</tr>
<tr>
<td>94'6&quot;</td>
<td>97'6&quot;</td>
<td>3'0&quot; Micaceous hornfels (?)</td>
</tr>
<tr>
<td>97'6&quot;</td>
<td>98'0&quot;</td>
<td>6&quot; Martite</td>
</tr>
<tr>
<td>98'0&quot;</td>
<td>99'0&quot;</td>
<td>No recovery</td>
</tr>
<tr>
<td>99'0&quot;</td>
<td>99'6&quot;</td>
<td>6&quot; Martite</td>
</tr>
</tbody>
</table>

**Bottom of Hole** - Abandoned due to rain season.
### Diamond Drill Hole 9: Mt. Bunedy

**Collar of Hole 280S/409W (Geophysical Grid)**
- **Bearing:** 132° (magnetic)
- **Depression:** 45°

<table>
<thead>
<tr>
<th>Footage</th>
<th>Recovery</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0'      - 6'</td>
<td>No recovery</td>
<td>Vuggy martite - slightly magnetic</td>
</tr>
<tr>
<td>6'      - 8'</td>
<td>1' 6&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>8' 0&quot;   - 9'</td>
<td>6&quot;</td>
<td>Vuggy martite - boxworks common</td>
</tr>
<tr>
<td>9'      - 10'</td>
<td>1' 0&quot;</td>
<td>Vuggy martite - boxworks common</td>
</tr>
<tr>
<td>10'     - 13'</td>
<td>1' 0&quot;</td>
<td>Vuggy martite - boxworks common</td>
</tr>
<tr>
<td>13'     - 17'</td>
<td>9&quot;</td>
<td>Vuggy martite - boxworks common</td>
</tr>
<tr>
<td>17'     - 18' 6&quot;</td>
<td>No recovery</td>
<td>Vuggy martite - boxworks common</td>
</tr>
<tr>
<td>18' 6&quot;  - 24' 4&quot;</td>
<td>1' 3&quot;</td>
<td>Martite fragments - possibly from near 44'</td>
</tr>
<tr>
<td>24' 4&quot;  - 30' 0&quot;</td>
<td>No recovery</td>
<td>Solid martite lode - no vugs</td>
</tr>
<tr>
<td>30' 0&quot;  - 45' 0&quot;</td>
<td>0' 9&quot;</td>
<td>Solid martite lode - feebly magnetic</td>
</tr>
<tr>
<td>45' 0&quot;  - 58' 0&quot;</td>
<td>No recovery</td>
<td>Martite lode</td>
</tr>
<tr>
<td>58' 0&quot;  - 69' 0&quot;</td>
<td>2' 0&quot;</td>
<td></td>
</tr>
<tr>
<td>69' 0&quot;  - 75' 0&quot;</td>
<td>5' 0&quot;</td>
<td></td>
</tr>
<tr>
<td>75' 0&quot;  - 78' 0&quot;</td>
<td>1' 0&quot;</td>
<td></td>
</tr>
</tbody>
</table>

**Hole Abandoned - Rods Stuck in Hole**
### Diamond Drill Hole 10: Mt. Bundy

**Collar of Hole 182S/685E (Geophysical Grid)**
- **Bearing:** 145° (magnetic)
- **Depression:** 45°

<table>
<thead>
<tr>
<th>Footage</th>
<th>Recovery</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0' - 7'</td>
<td>4&quot;</td>
<td>Rubble - core is martite boulder</td>
</tr>
<tr>
<td>7' - 15'</td>
<td>Cuttings only</td>
<td>Weathered syenite</td>
</tr>
<tr>
<td>15' - 26'</td>
<td>Cuttings only</td>
<td>Weathered syenite</td>
</tr>
<tr>
<td>26' - 35' 6&quot;</td>
<td>No recovery</td>
<td>Badly weathered syenite - mostly clay</td>
</tr>
<tr>
<td>36' 6&quot; - 45' 0&quot;</td>
<td>2' 2&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>45' 0&quot; - 50' 0&quot;</td>
<td>2' 3&quot;</td>
<td>Deeply weathered martite</td>
</tr>
<tr>
<td>50' 0&quot; - 52' 6&quot;</td>
<td>20&quot;</td>
<td>Deeply weathered martite</td>
</tr>
<tr>
<td>52' 6&quot; - 60' 3&quot;</td>
<td>3&quot;</td>
<td>Deeply weathered martite with clay seams</td>
</tr>
<tr>
<td>60' 3&quot; - 65' 8&quot;</td>
<td>2' 2&quot;</td>
<td>Martite - small crystals - some limonite and clay</td>
</tr>
<tr>
<td>65' 8&quot; - 70' 0&quot;</td>
<td>2' 5&quot;</td>
<td>Martite - vuggy - crystalline - some limonite and clay</td>
</tr>
<tr>
<td>70' 0&quot; - 75' 0&quot;</td>
<td>3' 0&quot;</td>
<td>Martite - strongly magnetic - 2% pyrite - some vugs and boxworks</td>
</tr>
<tr>
<td>75' 0&quot; - 81' 3&quot;</td>
<td>3'10&quot;</td>
<td>7&quot; Martite - strongly magnetic</td>
</tr>
<tr>
<td>81' 3&quot; - 83' 6&quot;</td>
<td>2'11&quot;</td>
<td>21/4&quot; chloritic hornfels - rare pyrite</td>
</tr>
<tr>
<td>83' 4&quot; - 84' 4&quot;</td>
<td>10&quot;</td>
<td>6&quot; chloritic hornfels - rare pyrite - 4&quot; martite</td>
</tr>
<tr>
<td>84' 4&quot; - 86' 6&quot;</td>
<td>1' 2&quot;</td>
<td>Magnetite - rare pyrite - 1&quot; band of white clay</td>
</tr>
<tr>
<td>86' 6&quot; - 87' 3&quot;</td>
<td>9&quot;</td>
<td>Magnetite - 2 to 3% pyrite</td>
</tr>
<tr>
<td>87' 3&quot; - 91' 6&quot;</td>
<td>4' 3&quot;</td>
<td>21/2&quot; magnetite - 2 to 3% pyrite</td>
</tr>
<tr>
<td>91' 6&quot; - 97' 1&quot;</td>
<td>5' 7&quot;</td>
<td>21/1&quot; magnetite with bands of hornfels</td>
</tr>
<tr>
<td>97' 1&quot; - 98' 1&quot;</td>
<td>1' 0&quot;</td>
<td>Magnetite with bands of hornfels</td>
</tr>
<tr>
<td>98' 1&quot; - 105' 0&quot;</td>
<td>6'11&quot;</td>
<td>4&quot; solid pyrite - 8&quot; magnetite with 2% pyrite</td>
</tr>
<tr>
<td>105' 0&quot; - 108' 0&quot;</td>
<td>3' 0&quot;</td>
<td>40&quot; magnetite - 8&quot; magnetite with 2% pyrite - 2'11&quot; white hornfels with magnetite bands</td>
</tr>
<tr>
<td>108' 0&quot; - 115' 5&quot;</td>
<td>7' 5&quot;</td>
<td>Hornfels with magnetite bands with orthoclase crystals and 1% pyrite</td>
</tr>
<tr>
<td>115' 5&quot; - 121' 0&quot;</td>
<td>5' 3&quot;</td>
<td>Hornfels - magnetite bands parallel to banding - banding/core angle 15° - rare calcite crystals</td>
</tr>
<tr>
<td>121' 0&quot; - 123' 0&quot;</td>
<td>2' 0&quot;</td>
<td>5&quot; magnetite - 5% pyrite</td>
</tr>
<tr>
<td>123' 0&quot; - 125' 0&quot;</td>
<td>2' 0&quot;</td>
<td>410&quot; hornfels - bands of magnetite - banding/core angle 45° - chlorite veins - calcite crystals in magnetite</td>
</tr>
</tbody>
</table>

**Hole End.**
<table>
<thead>
<tr>
<th>FOOTAGE</th>
<th>RECOVERY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0'</td>
<td>6'</td>
<td>Cuttings only</td>
</tr>
<tr>
<td>6'</td>
<td>7'</td>
<td>Cuttings only</td>
</tr>
<tr>
<td>7'</td>
<td>15'</td>
<td>Martite fragments and ferruginous sand</td>
</tr>
<tr>
<td>15'</td>
<td>22'</td>
<td>Martite with abundant boxworks</td>
</tr>
<tr>
<td>22'</td>
<td>25' 6&quot;</td>
<td>Martite with magnetite grains</td>
</tr>
<tr>
<td>25' 6&quot;</td>
<td>29' 9&quot;</td>
<td>Weathered syenite</td>
</tr>
<tr>
<td>29' 9&quot;</td>
<td>37' 4&quot;</td>
<td>Martite - abundant boxworks - some limonite</td>
</tr>
<tr>
<td>37' 4&quot;</td>
<td>45' 0&quot;</td>
<td>Core is martite as above - most of the run done very rapidly - no water return - probably decomposed syenite</td>
</tr>
<tr>
<td>45' 0&quot;</td>
<td>53' 0&quot;</td>
<td>Martite as above</td>
</tr>
<tr>
<td>53' 0&quot;</td>
<td>56' 0&quot;</td>
<td>Martite with boxworks</td>
</tr>
<tr>
<td>56' 0&quot;</td>
<td>60' 0&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>60' 0&quot;</td>
<td>60' 8&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>60' 8&quot;</td>
<td>62' 4&quot;</td>
<td>As above - slightly magnetic - rare secondary (?) quartz</td>
</tr>
<tr>
<td>62' 4&quot;</td>
<td>67' 6&quot;</td>
<td>Martite - slightly magnetic - limonite common</td>
</tr>
<tr>
<td>67' 6&quot;</td>
<td>72' 6&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>72' 6&quot;</td>
<td>86' 6&quot;</td>
<td>Martite - slightly magnetic - limonite common</td>
</tr>
<tr>
<td>86' 6&quot;</td>
<td>94' 6&quot;</td>
<td>Martite as above</td>
</tr>
<tr>
<td>94' 6&quot;</td>
<td>96' 0&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>96' 0&quot;</td>
<td>98' 9&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>98' 9&quot;</td>
<td>101' 6&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>101' 6&quot;</td>
<td>111' 6&quot;</td>
<td>Weathered syenite - some martite pebbles</td>
</tr>
<tr>
<td>111' 6&quot;</td>
<td>115' 3&quot;</td>
<td>Martite - clay along joint planes</td>
</tr>
<tr>
<td>115' 3&quot;</td>
<td>118' 1&quot;</td>
<td>2° martite as above - followed by cuttings of weathered syenite - 1°2° martite as above</td>
</tr>
<tr>
<td>118' 1&quot;</td>
<td>120' 3&quot;</td>
<td>Martite - abundant boxworks, slightly magnetic - clay on joint planes</td>
</tr>
<tr>
<td>120' 3&quot;</td>
<td>125' 8&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>125' 8&quot;</td>
<td>128' 3&quot;</td>
<td>As above with thin band of weathered syenite</td>
</tr>
<tr>
<td>128' 3&quot;</td>
<td>129' 3&quot;</td>
<td>1°4° martite</td>
</tr>
<tr>
<td>129' 3&quot;</td>
<td>131' 0&quot;</td>
<td>1°2° martite</td>
</tr>
<tr>
<td>131' 0&quot;</td>
<td>132' 4&quot;</td>
<td>2° siliceous hornfels</td>
</tr>
<tr>
<td>132' 4&quot;</td>
<td>133' 1&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>133' 1&quot;</td>
<td>137' 0&quot;</td>
<td>As above up to 1° pyrite</td>
</tr>
<tr>
<td>137' 0&quot;</td>
<td>138' 7&quot;</td>
<td>As above up to 1% pyrite</td>
</tr>
<tr>
<td>138' 7&quot;</td>
<td>143' 6&quot;</td>
<td>5° as above</td>
</tr>
<tr>
<td>143' 6&quot;</td>
<td>148'10&quot;</td>
<td>4° magnetite - up to 2% pyrite. Boxworks still common. 3° hornfels</td>
</tr>
<tr>
<td>148'10&quot;</td>
<td>151' 6&quot;</td>
<td>5° 10° magnetite - up to 10% pyrite. Boxworks still common. 3° hornfels</td>
</tr>
<tr>
<td></td>
<td>2°10&quot;</td>
<td>Hornfels - chlorite bands - rare pyrite</td>
</tr>
<tr>
<td>FOOTAGE</td>
<td>RECOVERY</td>
<td>DESCRIPTION</td>
</tr>
<tr>
<td>------------</td>
<td>----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>151' 6&quot; - 155' 7&quot;</td>
<td>4' 6&quot;</td>
<td>Banded hornfels - banding/core angle 45° up to 2% pyrite - 2&quot; band of magnetite with 5% pyrite followed by 2&quot; band of chlorite</td>
</tr>
<tr>
<td>155' 7&quot; - 158' 6&quot;</td>
<td>2'11&quot;</td>
<td>5&quot; hornfels 7&quot; magnetite with 2% pyrite 16&quot; hornfels 5&quot; magnetite with 2% pyrite 2&quot; hornfels</td>
</tr>
<tr>
<td>158' 6&quot; - 164' 6&quot;</td>
<td>6' 0&quot;</td>
<td>15&quot; hornfels - up to 2% pyrite 2'4&quot; magnetite - 2% pyrite - large calcite crystals common</td>
</tr>
<tr>
<td>164' 6&quot; - 172' 6&quot;</td>
<td>7' 2&quot;</td>
<td>2'5&quot; hornfels - banding/core angle 45° - bands of magnetite roughly parallel to banding make up approx. 50% by volume - magnetite contains about 5% pyrite</td>
</tr>
<tr>
<td>172' 6&quot; - 181' 0&quot;</td>
<td>6' 6&quot;</td>
<td>Banded hornfels - banding/core angle 15° - partial irregular replacement by magnetite and pyrite</td>
</tr>
<tr>
<td>181' 0&quot; - 188' 4&quot;</td>
<td>7' 9&quot;</td>
<td>Banded hornfels - banding/core angle 30° - 2% pyrite rare magnetite</td>
</tr>
<tr>
<td>188' 4&quot; - 188' 8&quot;</td>
<td>4' 4&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>188' 4&quot; - 194' 8&quot;</td>
<td>6' 0&quot;</td>
<td>As above - small piece of martite probably fell from higher up the hole.</td>
</tr>
<tr>
<td>194' 8&quot; - 199' 6&quot;</td>
<td>4' 9&quot;</td>
<td>Hornfels - up to 2% pyrite - some feldspar porphyroblasts (?) up to 6 mm. across.</td>
</tr>
<tr>
<td>199' 6&quot; - 201' 0&quot;</td>
<td>1' 3&quot;</td>
<td>As above</td>
</tr>
</tbody>
</table>
## DIAMOND DRILL HOLE 12 : MT. BUNDEY

**Collar of Hole 175S/386W (Geophysical grid)**

<table>
<thead>
<tr>
<th>Footage</th>
<th>Recovery</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0' - 17' 0&quot;</td>
<td>Cuttings only</td>
<td>Ferruginous clay</td>
</tr>
<tr>
<td>17' 6&quot; - 21' 0&quot;</td>
<td>Cuttings only</td>
<td>Martite - strongly magnetic open boxworks - probably a boulder</td>
</tr>
<tr>
<td>21' 0&quot; - 31' 0&quot;</td>
<td>Cuttings only</td>
<td>Weathered syenite</td>
</tr>
<tr>
<td>31' 0&quot; - 41' 0&quot;</td>
<td>Cuttings only</td>
<td>Weathered syenite</td>
</tr>
<tr>
<td>41' 0&quot; - 51' 0&quot;</td>
<td>Cuttings only</td>
<td>Weathered syenite</td>
</tr>
<tr>
<td>51' 0&quot; - 61' 0&quot;</td>
<td>Cuttings only</td>
<td>Weathered syenite</td>
</tr>
<tr>
<td>61' 0&quot; - 71' 0&quot;</td>
<td>4&quot;</td>
<td>Martite</td>
</tr>
<tr>
<td>71' 0&quot; - 81' 0&quot;</td>
<td>2&quot;</td>
<td>Martite - followed by cuttings of plastic white clay</td>
</tr>
<tr>
<td>81' 0&quot; - 82' 0&quot;</td>
<td>6&quot;</td>
<td>Martite - slightly magnetic</td>
</tr>
<tr>
<td>82' 0&quot; - 82' 5&quot;</td>
<td>3&quot;</td>
<td>As above - some fine quartz veins</td>
</tr>
<tr>
<td>82' 5&quot; - 83' 7&quot;</td>
<td>1' 2&quot;</td>
<td>Martite - abundant boxworks - some filled with limonite</td>
</tr>
<tr>
<td>83' 7&quot; - 88' 6&quot;</td>
<td>2' 9&quot;</td>
<td>Martite as above - vugs filled with limonite and clay</td>
</tr>
<tr>
<td>88' 6&quot; - 90' 6&quot;</td>
<td>1' 5&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>90' 6&quot; - 95' 6&quot;</td>
<td>2'10&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>95' 6&quot; - 110' 6&quot;</td>
<td>No recovery</td>
<td>As above</td>
</tr>
<tr>
<td>110' 6&quot; - 120' 6&quot;</td>
<td>2&quot;</td>
<td>Martite - abundant limonite and clay</td>
</tr>
<tr>
<td>120' 6&quot; - 126' 0&quot;</td>
<td>5&quot;</td>
<td>Martite - slightly magnetic</td>
</tr>
<tr>
<td>126' 0&quot; - 127' 0&quot;</td>
<td>3&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>127' 0&quot; - 127' 6&quot;</td>
<td>6&quot;</td>
<td>As above</td>
</tr>
<tr>
<td>127' 6&quot; - 128' 0&quot;</td>
<td>2&quot;</td>
<td>As above</td>
</tr>
</tbody>
</table>

**Hole Abandoned - Caving Ground**
## DIAMOND DRILL HOLE 13: MT. BUNDEY

<table>
<thead>
<tr>
<th>FOOTAGE</th>
<th>RECOVERY</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0' - 3' 6&quot;</td>
<td>Cuttings only</td>
<td>Martite rubble</td>
</tr>
<tr>
<td>3' 6&quot; - 6' 6&quot;</td>
<td>Cuttings only</td>
<td>Martite rubble</td>
</tr>
<tr>
<td>6' 6&quot; - 11' 0&quot;</td>
<td>Cuttings only</td>
<td>Clay</td>
</tr>
<tr>
<td>11' 0&quot; - 21' 0&quot;</td>
<td>Cuttings only</td>
<td>Clay with martite pebbles</td>
</tr>
<tr>
<td>21' 0&quot; - 76' 0&quot;</td>
<td>Cuttings only</td>
<td>Weathered syenite with martite pebbles</td>
</tr>
<tr>
<td>76' 0&quot; - 77' 0&quot;</td>
<td>1' 0&quot;</td>
<td>Martite with rare quartz crystals</td>
</tr>
<tr>
<td>77' 0&quot; - 101' 0&quot;</td>
<td>Cuttings only</td>
<td>Clay</td>
</tr>
</tbody>
</table>

END OF HOLE.