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98-4171
Vol. 1 of 2

NEWNHAM EXPLORATION & MINING SERVICES

ANDERSONS CREEK PROJECT

EL 10/96

ANNUAL REPORT

TO END MAY, 1998

(Volume 1 of 2)

For:

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CONTENTS

1. SUMMARY

Allegiance Mining NL holds Exploration Licence EL 10/96 of 18 square kilometres at Andersons Creek near Beaconsfield.

The licence allows Allegiance to explore for nickel and cobalt to a depth of 30 metres.

Allegiance has to date completed 116 reverse circulation air core drill holes totalling 1,179 m in two programs.

Based on this and previous drilling, an inferred mineral resource of 12,027,000 tonnes 0.94% nickel and 0.052% cobalt has been estimated.

Limited mineralogical and metallurgical test work completed to date indicates that most of the nickel is present in the clay mineral smectite, and that the laterites are amenable to extraction of the nickel and cobalt by pressure leaching in sulfuric acid at elevated temperatures.

By Australian and world standards this is only a modest resource in terms of grade and tonnage. Potential exists to increase the tonnage, possibly by a factor of two. A two-stage program of drilling to test this potential has been designed.

However, even if the resource was doubled, it may still be too small to justify on-site processing using currently available technologies.

Another development option in this case may be to direct-ship an upgraded mined product to a processing plant on the mainland.

Expenditure for the 12-month period was $192,242, bringing total expenditure to date to $257,913.

2. LAND TENURE

EL 10/96 was granted to Allegiance Mining NL on 28 June, 1996 for nickel and cobalt, to a vertical depth of 30 metres.

Other parties hold exploration licences with reference to all minerals below 30 m, and to all minerals other than Ni and Co above 30 m.

A complex arrangement of other mining tenements, crown lands and private property overlay the area, and are specified in a special access report attached as Appendix A in the 1997 Annual Report for EL 10/96.

Crown Land classifications are designed specifically to maximise protection of two rare and endangered plant species.

Despite the complexity of the land tenure, all parties involved have proved most co-operative in assisting Allegiance with the performance of their exploration work in this area.

Access in this area is extremely good, being serviced by a network of sealed and unsealed roads and tracks.

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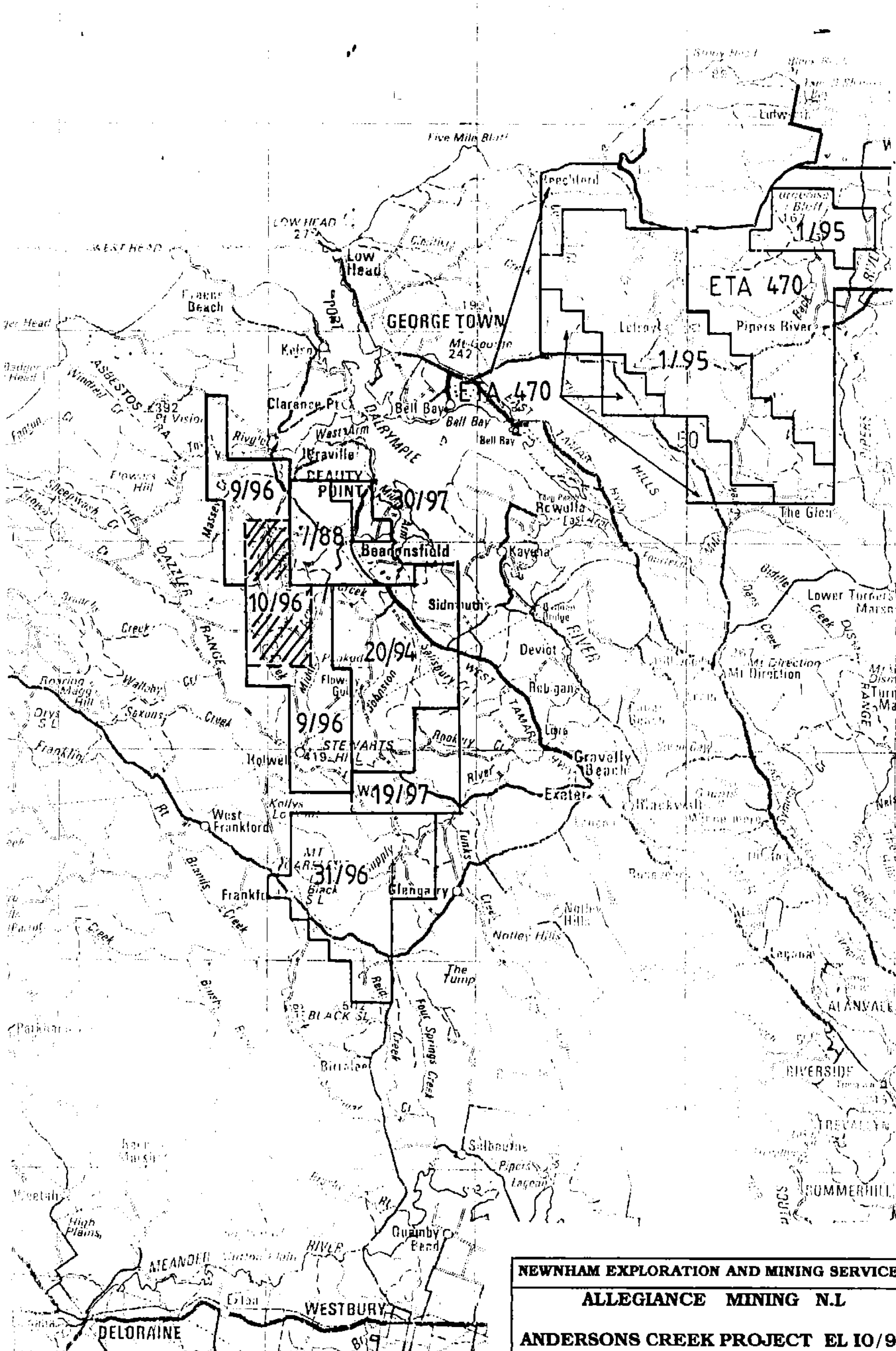

NEWNHAM EXPLORATION AND MINING SERVICES

ALLEGIANCE MINING N.L

ANDERSONS CREEK PROJECT EL 10/96

LOCATION PLAN

	Scale:1:250000

Drawn: LAN	Date: May 98	Fig 1

3. WORK COMPLETED

The following work was completed during the year:

3.1. Preparation of a resource report following the first drilling program

3.2 Mineralogical studies on laterite samples

3.3 Metallurgical test work on laterite samples

3.4 Completion of second drilling program

3.5 Preparation of a resource report following the second drilling program

3.1 First Drilling Program Report:

The results of the first drilling program completed in early 1997 were reported in:

> "Andersons Creek Laterite Mineral Resource Estimate August 1997" by MV McKeown for Allegiance Mining NL.

A copy of this report is attached as Appendix A.

3.2 Mineralogical Studies:

Samples from the first drilling program were forwarded to Amdel for mineralogical studies aimed at identifying the various nickel minerals present and their associations.

Results of this work are reported upon in:

> "Mineralogy of Eleven Laterite Samples: Report G686300G/97" by Amdel, 08 July, 1997.

A copy of this report is attached as Appendix B.

3.3 Metallurgical Test Work:

Pressure acid leach test work using sulfuric acid at elevated temperatures was undertaken by Amdel on nine of the samples selected for mineralogical work.

Results suggest most of the nickel can be extracted at modest acid consumption levels.

Results are reported upon in:

> "Nickel Laterite Leaching: Report G693500G/97" by Amdel, 08 July, 1997.

A copy of this report is attached as Appendix C.

3.4 Second Drilling Program:

A second air core drilling program, completed in late 1997, resulted in the inferred mineral resource being increased to 12,027,000 tonnes 0.94 %Ni and 0.052 %Co.

3.5 Preparation of a Resource Report:

Following completion of the second drilling program a comprehensive resource report was prepared:

> "Andersons Creek Laterite Mineral Resource Estimate March 1998" by MV McKeown for Allegiance Mining NL.

A copy of this report is attached as Appendix D.

4. WORK PLANNED

Potential exists to increase the inferred resource at Andersons Creek, possibly by up to twice the current resource.

If such a resource were to be regarded as commercially viable, then a further drilling program would be required to test the possibility.

Such a program has been designed and consists of two stages of drilling. If Stage 1 produced encouraging results, then Stage 2 would be justified.

Estimated costs are:	Stage 1	$67,000
	Stage 2	$30,000

Details of the proposal are presented in:

> "EL 10/96 Andersons Creek Project, Tasmania. Proposed Drilling Program, March, 1998" by MV McKeown for Allegiance Mining NL.

A copy of this report is attached as Appendix E.

5. EXPENDITURE

5.1 Expenditure details for 12 months to April, 1998 are:

Drilling:	73,029
Geology:	23,740
Laboratory:	70,895
Tenement costs:	0
Administration:	24,578
Total	$192,242

5.2 Expenditure 1997-1998: $192,242

Total Expenditure to date: $257,913

APPENDIX A

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ANDERSONS CREEK LATERITE

MINERAL RESOURCE ESTIMATE

AUGUST 1997

Prepared by

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for

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on behalf of

ALLEGIANCE MINING N.L.

SUMMARY

Exploration Licence number 10/96 (EL 10/96) covers an area of 18 square kilometres about 5 kilometres to the west of Beaconsfield on the Tamar River in northern Tasmania.

The Exploration Licence covers an area of Cambrian ultramafic rocks which have been intruded into a sequence of Cambrian sedimentary rocks.

A laterite has developed over the ultramafic rocks and nickel and cobalt have concentrated in parts of the laterite .

A drilling programme to test the nickel bearing laterite was undertaken in February and March 1997. Fifty one holes were drilled for a total drilled length of 558 metres using reverse circulation methods.

The results of the drilling programme suggest that the nickel resource is more extensive than previously thought and a new resource estimate has been made. An Inferred Mineral Resource of 9,743,000 tonnes at 0.93% Ni and 0.052% Co has been estimated.

Mineralogical investigations indicate that most of the nickel present occurs in smectite, a clay mineral.

Samples of mineralised laterite have been submitted for metallurgical assessment.

Further drilling to increase the size of the resource is recommended.

IMPORTANT NOTES

This report is not intended for use as a public document or, in whole or in part, in a public document.

Throughout this report, figures quoted have not been rounded and are not intended to indicate a degree of accuracy; figures are quoted exactly as stated during calculations so that the sources of figures can be traced and confirmed if necessary.

This report has been prepared using information and data available to the author at the time of writing.

ABBREVIATIONS

textual abbreviations

ACC	Andersons Creek ultramafic Complex
AM	Allegiance Mining N.L.
AMDEL	Australian Mineral Development Laboratories
CRA	Conzinc Rio Tinto Australia Limited
EL	Exploration Licence
KIS	King Island Scheelite Limited
MM	McKeown Mining Pty Ltd

scientific abbreviations

Al	aluminium
Au	gold
Ca	calcium
Co	cobalt
Cr	chromium
Cu	copper
Fe	iron
K	potassium
LOI	loss on ignition
Mg	magnesium
Mn	manganese
Na	sodium
Ni	nickel
P	phosphorous
S	sulphur
Si	silicon
Ti	titanium

CONTENTS

APPENDICES

Appendix 1	Summary of exploration prior to the acquisition by Allegiance Mining N.L. of Exploration Licence 10/96
Appendix 2	Co-ordinates and lengths of holes drilled during the drilling programme from February to March 1997
Appendix 3	Logs of holes drilled during the drilling programme from February to March 1997
Appendix 4	Resource outlines and thickness contours for the resource estimate
Appendix 5	Frequency plots for the nickel analyses from samples from holes drilled during the drilling programme from February to March 1997

TABLES

FIGURES

Note that all figures appear at the end of the text before the appendices

PLANS

1 INTRODUCTION

Exploration Licence number 10/96 (EL 10/96) covers an area of 18 square kilometres about 5 kilometres to the west of Beaconsfield on the Tamar River in northern Tasmania. The EL is known as the Andersons Creek Licence after a creek which runs from south to north through the Licence.

The EL is transected from south to north by Andersons Creek and encompasses three significant topographic highs: Scotts Hill and Mt Vulcan in the north, and Barnes Hill in the centre.

The EL covers an area of Cambrian ultramafic rocks which have been intruded into a sequence of Cambrian sedimentary rocks. Exploration of ironstone which occurs in the laterite overlying the ultramafic rocks began in 1866 (Gould, 1866) and mining of **iron** ore began at Mt Vulcan in 1872 and continued sporadically until 1875.

Chromite, shed from the Cambrian ultramafic rocks, has been concentrated in some places in Tertiary sands and gravels and these were mined for a brief period during the early 1980s before the operation proved to be uneconomic.

The first mention of **nickel** in the area was made in 1930 by Nye who reported on the high nickel content of the iron ore at Mt Vulcan (Nye, 1930). Exploration for nickel in the Andersons Creek laterite began in 1956 and continued to 1969, by which time a resource of 6.1 million tonnes at 1.04% Ni and 0.06% Co had been estimated (Anthony, 1969). In 1994, CRA Exploration Pty Ltd (CRAE) took up an EL over the Anderson's Creek laterite and re-commenced exploration for nickel. This EL was relinquished in 1995.

A summary of the exploration which was undertaken prior to the acquisition of the EL by Allegiance Mining N.L. is attached as Appendix 1.

Allegiance Mining NL was granted EL 10/96 in June 1996. The EL was granted from the surface of the earth down to a depth of 30 metres, that is, the EL covers the volume of ground which staff of Mineral Resources Tasmania thought likely to contain all laterite. Following data review and hole planning (Newnham 1996a, 1996b and 1996c), a drilling campaign was commenced on the 25th of February 1997. This report describes the resource estimate which has been made based on the results of that drilling programme.

2 GEOLOGICAL SETTING

A complete and detailed description of the geology of the EL is beyond the scope of this report but a brief description of the geology is given so that a sensible appreciation of the resource estimate can be made.

The Andersons Creek Complex (ACC) is a package of Cambrian ultramafic rocks which have been intruded into a metamorphosed sequence of Cambrian and Ordovician sedimentary rocks which lie to the east of the Precambrian Badger Head Block.

The ACC outcrop is elongate in a north-north-west direction and is about 6.5 kilometres long and about 1.5 kilometres wide although, within this area, there are several rafts of older metamorphosed sedimentary rocks and other parts of the ACC are obscured by Tertiary and Quaternary sediments. Aerial magnetics surveys indicate that, in total, the ACC is a north-north-west trending lozenge shaped body which is 20 kilometres long and 3 kilometres wide (Newnham, 1996b).

The original lithologies of the ACC have been extensively altered by metamorphism and, consequently, the descriptions of rocks by various authors have been inconsistent and confusing with rocks being mis-identified by early workers (Gee and Legge, 1979). However, the descriptions of the major rock types which occur have been summarised from a few relatively recent publications and are listed in Table 1. At the present time, the broad scale mapping which exists suggests a layered distribution of rock types within the ACC with the boundaries of the layers parallel to the long axis of the ACC (Summons et al, 1981).

Tasmanian ultramafic successions are known to be the source of platinum group minerals, gold, copper and nickel, and the successions have been classified, and the platinum group mineral enrichments associated with each succession have been described, by Brown (1992):

- LDH — layered dunite-harzburgite — iridium, osmium and ruthenium, with or without gold
- LPD — layered pyroxenite-dunite — platinum, palladium, rhodium, with or without gold
- LPG — layered pyroxenite-gabbro

The descriptions of the lithologies present in the ACC suggest that the complex is a mixture of LDH and LPG types.

The serpentinite, pyroxenite and gabbronorite listed in Table 1 are referred to collectively as "serpentinites" for the remainder of this report.

Nickel and cobalt occur in varying proportions in the serpentinites: nickel content is known to range up to 0.41% and cobalt up to 779ppM (Maher, 1994 and 1995). The spatial distribution of the rock types listed in Table 1 will, almost certainly, be a determining factor in the distribution of nickel and cobalt in the overlying laterite.

A primary laterite developed over the ACC during the late Mesozoic-early Tertiary (Summons et al, 1981), presumably during what Colhoun (1989) described as "relatively warm humid climatic and predominantly forested conditions". During the middle Tertiary, a secondary ferruginous laterite formed from the primary laterite at Scotts Hill, Mt Vulcan and Barnes Hill. Since its formation the primary laterite has been eroded and has been removed from the parts of the ACC where serpentinites now outcrop. Nickel and cobalt have concentrated in places in the primary laterite and it is these nickel rich parts which have been the subject of exploration.

Anthony (1967) subdivided the lateritic profile into six zones (Table 2).

Note that the complete lateritic profile does not occur at all locations where laterite is found. Similarly, the thicknesses of each zone in the profile vary from location to location. As a general guide, the maximum thickness of laterite, intersected in the February to March 1997 drilling programme, was 26 metres in hole in S018 (Appendix 3).

Nickel tends to be concentrated in the bleached to mottled zones of the laterite. A more detailed description of the nickel mineralisation is given below in section 5 THE LATERITE MINERALISATION.

Tertiary sands and gravels have been deposited over the laterite in places on the EL (Figure 2) sometimes with chromite enrichment.

3 PREVIOUS RESOURCE ESTIMATE

By 1969, King Island Scheelite Limited (KIS) had drilled 37 holes to test the nickel bearing laterite. The holes were spread over Scotts Hill, Mt Vulcan, Barnes Hill and Barnes Hill South. A resource was estimated using the following parameters (Anthony, 1969):

- an assumed bulk density of 1.8 tonnes per cubic metre (20 cubic feet per ton)
- a cutoff grade of 0.7% Ni

The KIS resource estimate was 6,110,000 tonnes at 1.04% Ni and 0.065 Co (Table 3). The approximate KIS resource outlines are shown on Plan 1.

4 THE 1997 DRILLING PROGRAMME

4.1 OBJECTIVES

In early 1996, Newnham reviewed the available existing data and concluded that there were four areas of significant nickel-cobalt concentration within the Andersons Creek laterite: Scotts Hill and Mt Vulcan in the north of the EL, Barnes Hill near the centre, and Barnes Hill South in the south (Newnham, 1996b). These areas were those identified by Anthony (1969) for his resource estimate.

Newnham concluded that potential existed for finding extensions to the resource outlined by Anthony and proposed a drilling programme. The objectives of the programme were summarised by Newnham (1996c):

> "Previous drilling at Andersons Creek inferred a resource of 6.1 Mt 1.04% Ni 0.06% Co.
>
> An assessment of existing data by this writer (Report dated 22 May 96) concluded:
>
> (a) this inferred estimate is reasonable
>
> (b) scope exists to define modest extensions to this resource

(c) the existing resource data base is somewhat deficient in that drill holes and other data points have not been surveyed and well presented on acceptable maps

(d) very little metallurgical work has been undertaken which reflects currently available extractive technology

In response to these principal conclusions, this proposed drilling program has three main objectives:

(i) Elevate the resource data base by better defining the inferred resource areas and checking several previous drill holes. To achieve this objective, all drill holes must be professionally surveyed and plotted.

(ii) Test for modest extensions of the four inferred resource areas

Whilst there exists a range of resource targets within E.L. 10/96, it is recommended at this early stage of the project that knowledge be acquired steadily by stepping out drill holes only modest distances from the inferred resource areas.

(iii) provide adequate samples for initial metallurgical test work. Because of the variable nature of the material in the four resource areas, at least one sample should be acquired from each area for testing."

4.2 THE DRILLING PROGRAMME

The drilling programme, which had been proposed by Newnham (1996c) commenced on the 25th of February and was completed on the 18th of March 1997 and was supervised by the author. The holes were drilled using a track mounted Scout 250 drill rig and track mounted compressor, both of which were supplied by Diamond Drilling Tasmania.

Fifty one holes were drilled for a total drilled length of 558 metres. Three different reverse circulation methods were employed: one hole was drilled using a down the hole hammer, five holes using a tricone rotary bit and 45 using an air core bit (Table 4). Samples returned by the rotary bit were small (see drill logs, Appendix 3) whereas the air core bit returned samples weighing up to about 10 kilograms per metre. The one hole completed with the down the hole hammer was drilled in serpentinite rock.

For each hole, the aim was to drill until fresh serpentinite was met and this was achieved with 44 holes, five holes bottoming in weathered serpentinite, one in clay and one in weathered rocks from the Cabbage Tree Formation . Drilling progress was reasonably rapid except in damp or wet ground which caused blockages in the bits, drill string, sampling hose and cyclone, and in rock, generally towards the bottom of each hole, which caused blockages in the bit.

4.3 RESULTS OF THE DRILLING PROGRAMME

A summary of the significant nickel bearing intersections is listed in Table 5. Note that a cutoff grade of 0.5% Ni was used when defining the significant intersections. The cutoff grade chosen is discussed in section 6.4 THE RESOURCE ASSESSMENT CRITERIA.

The results indicate that the nickel resource is more extensive than outlined by Anthony (1969) and shown on Plan 1. The new resource boundaries are shown on Plan 2 and the new resource estimate is described below in section 6 THE RESOURCE ESTIMATE.

5 THE LATERITE MINERALISATION

5.1 INTRODUCTION

The Andersons Creek laterite has developed from the weathering of serpentinites. During the weathering process the serpentinites have completely to partially altered to clay and the weathering products form the Andersons Creek laterite. In the laterite, nickel and, to a lesser extent, cobalt have, at least in places, concentrated to economically significant levels.

The profitable mining and processing of the nickel laterite depends not on the absolute nickel content of the laterite but on the recoverable nickel content. Consequently, eleven composited samples of nickel bearing laterite intersected during the February to March 1997 drilling programme were submitted for mineralogical evaluation. The results of that evaluation form the basis of this part of the report.

The eleven samples were chosen from the better grade nickel intersections in each of the four areas of laterite development.

5.2 MINERALOGY OF THE LATERITE

The eleven composite samples of nickel bearing laterite were sent to the mineralogical laboratories of AMDEL, Adelaide, for assessment. The samples which were submitted are listed in Table 6.

The lateritic profile which occurs over the Andersons Creek serpentinite is summarised in Table 2 and the original rocks from which the laterite has developed are listed in Table 1. As the serpentinites weather, the constituent silicate minerals tend to alter to clay, and any magnetite present tends to convert to haematite and goethite. The principal constituents of the eleven composite samples were clays, serpentinite and iron oxides (Bradke, 1997): see Table 7.

The snapshot of the laterite mineralogy depicted in Table 7 differs somewhat from that presented in a report of a mineralogical investigation undertaken for KIS in 1968 (Clayton et al, 1968). In that investigation, two distinct laterite mineralogies were reported: a dominantly talc-magnesite assemblage and a serpentine-chlorite assemblage. However, the criteria used when choosing the samples for the 1968 investigation are not known and the samples may have been taken from parts of the lateritic profile which were not considered for this report, that is from parts of the lateritic profile above the transition zone.

The eleven laterite samples were analysed by AMDEL on a whole rock basis (Bradke, 1997) and the average analyses are shown in Table 8 together with an average whole rock analyses quoted by Anthony (1969).

The data in Tables 7 and 8 suggest a mineralogy dominated by a few minerals. Bradke (1997) concluded:

"Mineralogically these samples consist mainly of phyllosilicates consisting of smectite and varying amounts of serpentine (variety lizardite). Some samples contain a clay mineral compositionally different from the more abundant smectite, but which could also be a smectite or possibly a highly degraded serpentine. The samples also generally contain goethite, magnetite, hematite and chromite. A manganese oxide mineral containing relatively high nickel and cobalt values was noted in most samples and could be present in all samples. Microcrystalline to cryptocrystalline quartz is also present in some samples and does contain low levels of nickel"

5.3 MINERALOGY OF THE NICKEL OCCURRENCE

Bradke (1997) undertook electron-probe microanalysis of the eleven composite samples and determined the nickel content of, and nickel distribution amongst, various mineral species (Tables 9 and 10).

The important conclusions which can be drawn from these tables are:

- in most samples, most of the nickel (usually >70%) occurs in smectite
- in all samples, most of the nickel (>90%) occurs in the silicate minerals: smectite, clay and serpentine
- in all samples, very little nickel (less than 9%) occurs in iron oxides
- in one sample only, a small proportion of nickel (4%) occurs in quartz

Bradke (1997) concluded:

"... the smectite has a relatively high nickel content ranging up to several percent. The other clay mineral, serpentine and goethite generally have somewhat lower nickel contents and the magnetite, hematite and chromite contain very low nickel values. The calculated mineralogical distributions of nickel in these samples ... show that in most samples the nickel occurs mainly in the smectite."

This conclusion is similar to that of Clayton et al (1967) who concluded that the bulk of the nickel is contained in smectite.

5.4 ORIGIN OF THE NICKEL

Outcrops of the serpentinites which underlie the laterite were sampled and analysed by CRAE, 72 rocks were analysed and the ranges of the abundances of some metallic elements are listed in Table 11.

The data in Tables 11 and 12 suggest that the serpentinites are the source of the nickel in the laterite. However, the following features of the occurrence of nickel in the serpentinites remain unknown:

- the spatial distribution of nickel throughout the intrusion
- the identities of the nickel bearing minerals
- the relative proportions of the different nickel bearing minerals
- the distribution of nickel bearing minerals by specific rock type

5.5 MINERALOGY OF THE COBALT OCCURRENCE

The cobalt content of the samples submitted to AMDEL for mineralogical investigations was low, ranging from 0.055% to 0.170% Co (Table 6). The low values were reflected in very low values in individual mineral species and, consequently, a calculation of the mineralogical distribution of cobalt was impossible (Bradke, 1997). However, a manganese oxide mineral with a very high cobalt content, ranging from 1.95% to 12.9% Co, was identified. Bradke (1997) concluded:

> "... most of the cobalt in these samples also occurs in smectite, although a greater proportion of cobalt compared to nickel would occur in the manganese oxide material"

5.6 METALLURGICAL ASSESSMENT

Nine laterite samples have been submitted to AMDEL, Adelaide, for metallurgical assessment (Table 13). The samples were chosen to represent the range of styles of nickel occurrence described in section 5.3 MINERALOGY OF THE NICKEL OCCURRENCE.

The testing will involve the extraction of nickel and cobalt from mineralised laterite by sulphuric acid leaching at elevated temperatures. The results of this testing should be available by the end of September.

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6 THE RESOURCE ESTIMATE

6.1 THE GEOLOGICAL INTERPRETATION

This resource estimate was based on the holes drilled during the February to March 1997 programme, that is holes S001 to S051. The intersections used to estimate the resource were those listed in Table 5. These intersections were defined by applying a 0.5% Ni cutoff grade to the assay data for each drill hole: see section 6.4 THE RESOURCE ASSESSMENT CRITERIA. Note that the high cobalt analyses do not coincide with the high nickel analyses and, consequently, the intersections defined for this resource estimate will optimise the average nickel grade but not the average cobalt grade.

Sections through each of the four main areas of laterite are shown in Figures 1 to 4.

The assumption of continuity of mineralisation between adjacent holes is reasonable based on

- the consistent occurrence of the defined nickel intersections in the transition and bleached zones of the laterite
- the apparent geological continuity of the mineralisation shown on the sections

6.2 THE MINERAL RESOURCE ESTIMATE

6.2.1 HOW THE MINERAL RESOURCE WAS ESTIMATED

Three key criteria for the resource estimate were that:

- a cutoff grade of 0.5% Ni was applied to each drill intersection
- a minimum mineralisation thickness of 2 metres was used
- a bulk density of 2.0 tonnes per cubic metre was assumed

The cutoff grade and bulk density are discussed in section 6.4 THE RESOURCE ASSESSMENT CRITERIA

In summary, the steps involved in the estimation of the resource tonnage were:

- the locations of the intersections were plotted in plan at 1:5000 scale
- each hole was annotated with the vertical thickness of the laterite intersection
- a square grid, 100m X 100m, was drawn over the area covered by the drill holes
- contours of the vertical thickness of the laterite were drawn

- mineralisation boundaries for the resource assessment were drawn:
  - where the vertical thickness of the mineralisation was greater than 2 metres, boundaries were drawn along block margins, generally, if there was an intersection within 100 metres of the block centroid then the block was included in the resource, and
  - where the vertical thickness of the mineralisation was less than 2 metres, the mineralisation was excluded from the resource estimate
- within the mineralisation boundaries, the area of laterite in each square was assessed
- within the mineralisation boundaries, the average vertical thickness of the laterite in each square was assessed
- for each square the tonnage of mineralisation was calculated by multiplying the area X the average vertical thickness X the mineralisation bulk density

The contoured thickness plans are attached (Appendix 4).

In practice, resources were estimated for separate areas:

- Scotts Hill
- Mt Vulcan
- Barnes Hill
- Barnes Hill South

The drill hole spacing is too wide for any geostatistical analysis of the assay data set, so the best grade estimate possible is a simple arithmetic estimate of regularly composited assay values. The nickel and cobalt assay data were composited to one metre lengths, and the average Ni and Co grades for each of the four areas were estimated by averaging all the composited assays of the mineralisation intersections of the drill holes, at a 0.5% Ni cutoff, which fell within the mineralisation boundary.

6.2.2 THE MINERAL RESOURCE

The estimate of the Inferred Mineral Resource is:

Scotts Hill	615,000 tonnes	0.77% Ni	0.072% Co
Mt Vulcan	1,866,000	0.87	0.058
Barnes Hill	6,099,000	0.97	0.051
Barnes Hill South	1,163,000	0.90	0.038

Total	**9,743,000 tonnes**	**0.93% Ni**	**0.052% Co**

6.3 THE RESOURCE ASSESSMENT CRITERIA

Data density: the drill hole spacing within mineralisation boundaries ranges from about 100 to 150 metres. Given the apparent continuity of the nickel bearing laterite evident from the sections (Figures 1 to 4), the consistency of the occurrence of the nickel bearing laterite in the mottled and transition zones of the laterite, and the regularity of the contours of the thickness of the nickel bearing laterite (Appendix 4), but admitting the current inadequacy of knowledge regarding grade continuity within the nickel bearing laterite, this drill hole data spacing is considered adequate to classify the resource as Inferred.

Accuracy of location of samples: all drill hole collar locations were surveyed in Australian Map Grid (AMG) co-ordinates by staff from Campbell-Smith, Phelps, Pedley Pty Ltd of Launceston. The survey of the Scotts Hill and Mt Vulcan area was extended from a point for which co-ordinates were established using a global positioning system (GPS) fix and, so, although the survey of this area is internally consistent, there may be some lateral and vertical shift to correct the survey to precise AMG co-ordinates. The survey of the Barnes Hill and Barnes Hill South area was tied in to existing AMG trig stations.

No down hole surveys were made. All drill holes were set up as vertical holes and, given the short length of the holes, it is reasonable to assume that all holes are vertical over their entire length.

Drilling technique: all holes used for the resource assessment were reverse circulation holes: refer to Table 4.

Sampling technique: all material which was baled from the hole passed through a cyclone and was collected in calico bags. Generally, samples were collected as one metre samples and weighed from 5 to 10 kilograms (Appendix 3). A very few samples were collected over two metre intervals (Appendix 3). For submission for analysis, a smaller sample weighing about one kilogram was taken from each one metre sample.

Sample recovery: the mass of sample recovered for each sample was recorded for each sample interval (Appendix 3). For the air core holes, masses of one metre samples generally ranged from 6 to 12 kilograms and, assuming a bulk density of 2.0 tonnes per cubic metre, this mass range represents recoveries ranging from 68% to 136%. The matter of sample recoveries depends upon the bulk density of the mineralisation which requires further consideration (see below).

Tonnage factors: In the only previous resource estimate, made by King Island Scheelite Limited (Anthony, 1969), a bulk density of 1.8 tonnes per cubic metre (20 cubic feet per ton) was assumed. This is at the low end of the density of clay cited by Gieck (1979) as 1.8 to 2.6 tonnes per cubic metre.

For the air core holes, masses of one metre samples generally ranged from 6 to 12 kilograms. The air core holes were nominally 75mm in diameter and masses of 6 to 12 kilograms per metre indicate a material density ranging from 1.4 to 2.7 tonnes per cubic metre.

For this resource estimate a bulk density of 2.0 tonnes per cubic metre was assumed. It is recommended that samples be collected for bulk density estimation during the next drilling programme , see section 7 FURTHER WORK.

Quality of assay data: all nickel and cobalt analyses were carried out at the Australian Mineral Development (AMDEL) laboratories at Thebarton, South Australia, using XRF methods.

Quality of data description: samples were logged by the author. For each sample interval, generally one metre, a brief description was made of the material recovered, particular attention being paid to the features which would enable classification of the material according to the scheme outlined by Anthony (1967) (Table 2.).

Geological interpretation: the method of geological interpretation which was used for this report is described in 6.1 GEOLOGICAL INTERPRETATION

Estimation technique: the estimation technique for both tonnage and grade is described in sections 6.2.1 HOW THE MINERAL RESOURCE WAS ESTIMATED.

Cutoff grade: a cutoff grade of 0.5% Ni was used. All the nickel analyses were used to construct both a frequency histogram and a cumulative distribution plot (Appendix 5). Both plots indicate that the distribution of nickel analyses is bimodal with a split at about 0.5% Ni. The application of the 0.5% Ni cutoff grade resulted in the series of intersections listed in

Table 5. All of these intersections occur in the mottled and transition zones of the laterite, and appear geologically consistent, see section 6.1 THE GEOLOGICAL INTERPRETATION.

Location of data: samples are held in a shed rented by Newnham Exploration and Mining Pty Ltd at Beaconsfield, Tasmania. Hard copies of drill hole logs, geological plans and sections, grade plans, and assay data used for this resource and reserve estimate are located at the offices of McKeown Mining Pty Ltd at Ridgley, Tasmania. Computer based plans are located at the office of Gillian Bennett Draughting Services at Burnie, Tasmania.

7 FUTURE WORK

Following the relative success of Allegiance Mining's first drilling programme, a second drilling programme is recommended. The proposed holes are designed as a step out programme based around the existing Inferrred Mineral Resource. 61 holes have been planned and total drilled length should be about 1500 metres (Plan 3).

In addition, six short diamond drill holes are recommended to obtain samples for bulk density testing, and to confirm the efficacy of the reverse circulation drilling in testing this laterite. The diamond holes should be drilled to replicate existing reverse circulation holes and six existing sites are recommended:

S009	Scotts Hill	479,881.4E	5,439,773.0N	55.3RL
S015	Mt Vulcan	479,876.1	5,439,655.1	57.4
S017	Mt Vulcan	480,047.9	5,439,077.1	71.7
S018	Barnes Hill	480,994.9	5,436,880.4	110.6
S026	Barnes Hill	481,445.5	5,437,033.3	106.9
S048	Barnes Hill South	481,553.9	5,435,791.4	93.8

TABLE 1

ROCK TYPES WITHIN THE ANDERSONS CREEK ULTRAMAFIC COMPLEX

serpentinite	antigorite with accessory magnetite, chromite and chrysotile constitutes the bulk of the ACC outcrop probably formed from peridotites and dunites
pyroxenite	pyroxenes with accessory olivine, magnetite and chromite and trace chalcopyrite and chalcocite occurs commonly along the western margin and as layers up to 40 metres wide throughout the serpentinite
gabbronorite	saussuritised plagioclase feldspar and pyroxene with accessory ilmenite, pyrrhotite and trace chalcopyrite and pentlandite occurs interlayered with pyroxenite in layers a few metres thick
rodingite	grossular garnet and pyroxene with accessory vesuvianite occurs in a north-north-west trending zone at the south of the ACC considered to have formed by the lime metasomatism of gabbro
diorite	pyroxene, amphibole and saussuritised plagioclase with accessory sericite occurs as small bodies 25 metres across associated with gabbro
gneiss hornfels?	quartz, biotite, plagioclase and orthoclase feldspar with accessory muscovite, chlorite and epidote occurs as a few large "septa" up to 500 metres by 100 metres considered to have formed by metamorphism of sedimentary rocks

Summarised from Gee and Legge (1979), Summons et al (1981) and Maher (1995)

TABLE 2

THE LATERITIC PROFILE OVER THE ANDERSONS CREEK SERPENTINITES

secondary laterite	**pisolitic zone**	hard ironstone with red clay matrix
primary laterite	**ferruginous red zone**	soft chocolate red clay with pisolitic and black ironstone
	limonitic yellow zone	soft yellow orange and minor red clay
	mottled zone	soft bright red, brown, yellow and purple clay with black and white specks
	transition zone	soft decomposed serpentinite with dark green to light green and minor red clay
	bleached zone	soft pale yellow to green serpentinite with some magnetite
original rock	**fresh zone**	moderately hard dark green serpentinite

Note: this table follows the scheme devised by Anthony (1967)

TABLE 3

KING ISLAND SCHEELITE LIMITED
1969 RESOURCE ESTIMATE

location	no of holes	tonnage tonnes	grade %Ni	grade %Co	average depth to mineralisation metres
Scotts Hill	3	510,000	0.98	0.06	15.5
Mt Vulcan	3	1,344,000	0.95	0.05	6.4
Barnes Hill	16	3,274,000	1.03	0.07	8.8
Barnes Hill South	2	982,000	1.25	0.07	3.0
total		**6,110,000**	**1.04**	**0.06**	**7.9**

Note: the information in this table is taken from Anthony (1969)

TABLE 4

DRILLING METHODS EMPLOYED DURING THE FEBRUARY TO MARCH 1997 DRILLING PROGRAMME

method	hole numbers	length drilled
rotary bit	S001, S002, S003, S006 & S009 to 11m	48m
down the hole hammer	S008	7m
air core	S009 11m to 15m, and all other holes	503m
total		**558m**

TABLE 5
SUMMARY OF RESULTS OF DRILLING PROGRAMME

hole no	location	collar east AMG	collar north AMG	collar level m	intersection from m	intersection to m	down hole length m	%Ni	%Co
S001	Scotts Hill	479,716.3	5,440,013.5	41.2	no assay >0.5%Ni				
S002	Scotts Hill	479,833.3	5,440,054.1	38.7	11	12	1	0.52	0.024
S003	Scotts Hill	479,955.9	5,440,031.0	41.1	5	8	3	0.94	0.048
S004	Scotts Hill	479,702.5	5,439,885.9	55.4	13	18	5	0.96	0.035
S005	Scotts Hill	479,837.3	5,439,899.2	50.9	21	23	2	0.55	0.032
S006	Scotts Hill	479,933.8	5,439,917.5	46.4	10	11	1	0.65	0.142
S007	Scotts Hill	479,709.6	5,439,769.5	63.7	18	20	2	0.71	0.064
S008	Scotts Hill	479,876.1	5,439,655.1	61.5	no assay >0.5%Ni				
S009	Scotts Hill	479,881.4	5,439,773.0	55.3	8	13	5	0.66	0.138
S010	Mt Vulcan	479,788.3	5,439,295.7	56.6	0	7	7	0.67	0.067
S011	Mt Vulcan	479,881.6	5,439,384.4	46.4	no assay >0.5%Ni				
S012	Mt Vulcan	480,027.9	5,439,335.8	40.6	1	4	3	0.65	0.041
S013	Mt Vulcan	479,894.5	5,439,300.3	49.9	6	8	2	0.52	0.022
S014	Mt Vulcan	480,050.0	5,439,296.8	42.1	8	13	5	0.75	0.049
S015	Mt Vulcan	479,846.8	5,439,247.5	57.4	6	13.5	7.5	0.84	0.045
S016	Mt Vulcan	479,976.0	5,439,097.3	72.8	7	18	11	0.98	0.064
S017	Mt Vulcan	480,047.9	5,439,077.1	71.7	5	17	12	1.08	0.070
S018	Barnes Hill	480,994.9	5,436,880.4	110.6	9	25	16	0.82	0.050
S019	Barnes Hill	481,097.4	5,436,961.5	107.6	8	12	4	0.74	0.056
S020	Barnes Hill	481,155.6	5,436,889.3	113.6	3	14	11	0.73	0.042
S021	Barnes Hill	481,279.0	5,436,942.9	113.0	11	21	10	0.89	0.043
S022	Barnes Hill	481,314.2	5,437,101.7	118.2	13	19	6	1.14	0.065
S023	Barnes Hill	481,120.2	5,437,126.0	105.8	4	14	10	1.17	0.070
S024	Barnes Hill	481,163.8	5,437,326.5	105.2	0	6.5	6.5	0.56	0.033
S025	Barnes Hill	481,352.3	5,437,392.2	93.4	no assay >0.5%Ni				
S026	Barnes Hill	481,441.5	5,437,033.3	106.9	16	27	11	1.75	0.081

TABLE 5
SUMMARY OF RESULTS OF DRILLING PROGRAMME

hole no	location	collar east AMG	collar north AMG	collar level m	intersection from m	intersection to m	down hole length m	%Ni	%Co
S027	Barnes Hill	481,528.0	5,437,150.2	96.9	13	20	7	1.00	0.051
S028	Barnes Hill	481,666.3	5,437,239.7	74.5	0	4	4	0.82	0.037
S029	Barnes Hill	481,737.9	5,437,448.5	73.2	no assay >0.5%Ni				
S030	Barnes Hill	481,508.2	5,437,358.2	81.0	2	4	2	0.53	0.025
S031	Barnes Hill	481,288.5	5,436,874.4	103.7	6	19	13	1.01	0.048
S032	Barnes Hill	481,569.5	5,436,903.8	80.5	5	11	6	1.34	0.033
S033	Barnes Hill	480,837.3	5,436,878.3	116.5	8	11	3	0.61	0.039
S034	Barnes Hill	480,871.5	5,436,979.3	98.0	5	15	10	0.70	0.049
S035	Barnes Hill South	481,328.4	5,435,656.7	92.1	0	2	2	0.76	0.022
S036	Barnes Hill South	481,468.6	5,435,577.8	87.2	0	3	3	0.76	0.027
S037	Barnes Hill South	481,575.1	5,435,457.5	82.5	0	3	3	0.86	0.025
S038	Barnes Hill South	481,664.4	5,435,348.5	81.7	2	6	4	0.94	0.035
S039	Barnes Hill South	481,680.7	5,435,752.4	92.7	0	9	9	0.90	0.046
S040	Barnes Hill South	481,657.6	5,436,012.4	93.6	0	2	2	0.88	0.029
S041	Barnes Hill South	481,447.5	5,435,941.4	90.8	0	2	2	1.14	0.017
S042	Barnes Hill South	481,295.4	5,435,914.6	94.5	no assay >0.5%Ni				
S043	Barnes Hill South	481,400.9	5,436,078.0	84.6	no assay >0.5%Ni				
S044	Barnes Hill South	481,323.9	5,436,142.8	88.0	no assay >0.5%Ni				
S045	Barnes Hill South	481,624.8	5,435,920.4	93.7	0	2	2	0.79	0.031
S046	Barnes Hill South	481,629.6	5,436,165.6	86.6	2	3	1	0.52	0.020
S047	Barnes Hill South	481,692.2	5,436,144.9	92.3	4	9	5	0.80	0.032
S048	Barnes Hill South	481,553.9	5,435,791.4	93.8	0	6	6	1.03	0.073
S049	Barnes Hill South	481,742.4	5,435,991.6	107.0	no assay >0.5%Ni				
S050	Barnes Hill South	481,578.5	5,435,955.1	92.7	0	3	3	1.10	0.027
S051	Barnes Hill South	481,576.7	5,435,633.1	88.2	no assay >0.5%Ni				

23108

TABLE 6

SAMPLES SUBMITTED FOR MINERALOGICAL ASSESSMENT

Scotts Hill	S004	13m to	18m	0.92%Ni	0.075%Co
	S009	8	13	0.59	0.170
Mt Vulcan	S015	6	13	0.86	0.070
	S017	5	11	1.07	0.105
	S017	11	17	0.97	0.085
Barnes Hill	S018	9	17	0.74	0.085
	S018	17	25	0.78	0.065
	S026	16	21	1.45	0.115
	S026	21	26	1.23	0.055
Barnes Hill South	S047	5	9	0.75	0.070
	S048	0	6	0.95	0.115

The analyses are taken from Bradke (1997)

TABLE 7

PRINCIPAL MINERAL SPECIES IDENTIFIED IN SAMPLES SUBMITTED FOR MINERALOGICAL ASSESSMENT[1]

mineral category	mineral	mineral abundance	occurrence
serpentine	lizardite	accessory, occasionally dominant	most samples
clays	smectite[2]	generally dominant	all samples
	kaolinite	trace	some samples
hydrated mica	vermiculite	accessory	few samples
iron oxides	magnetite	trace to accessory	most samples
	haematite	trace to accessory	most samples
	goethite	trace to accessory	most samples
		dominant	one sample
other silicates	talc	trace	few samples
	quartz	trace	many sample
	dolomite?	trace	few samples

Notes:

1 information in this table summarised from Table 2 in Bradke (1997)

2 an unidentified clay mineral has also been identified but it is probably a variety of smectite

TABLE 8

WHOLE ROCK ANALYSES OF LATERITE

	BRADKE 1997	ITS 1969[1]
SiO_2	38.14	34.6
TiO_2	0.11	not quoted
Al_2O_3	4.81	4.9
Fe_2O_3	28.05	29.5
MgO	12.37	12.3
MnO	0.35	not quoted
CaO	0.14	0.9
Na_2O	0.05	not quoted
K_2O	0.03	not quoted
P_2O_5	0.02	not quoted
LOI	12.59	not quoted

Notes:

1 ITS = International Technical Services Limited, ITS data quoted in Anthony (1969)

TABLE 9

MINERALOGICAL DISTRIBUTION OF NICKEL IN LATERITE - PROPORTION OF TOTAL NICKEL IN EACH MINERAL SPECIES

		smectite	**clay**	***serpentine***	**goethite**	**magnetite/ haematite**	**quartz**	**total**
S004	13m to 18m	73%	27%					100%
S009	8m to 13m	77		14	9			100
S015	6m to 13m	38		60	2			100
S017	5m to 11m	93		6	1			100
S017	11m to 17m	73		26		1		100
S018	9m to 17m	90		1	4	1	4	100
S018	17m to 25m	93		5	2			100
S026	16m to 21m	90	3		6	1		100
S026	21m to 26m	90		8	2			100
S047	5m to 9m	77	11	10	1	1		100
S048	0m to 6m	62	32	2	4			100

Note: this table is taken from Bradke (1997)

TABLE 10

MINERALOGICAL DISTRIBUTION OF NICKEL IN LATERITE - %NICKEL CONTENT OF EACH MINERAL SPECIES

sample	smectite	clay	serpentine	goethite	magnetite/ haematite	quartz	total
S004 13m to 18m	0.76	0.28					1.05
S009 8m to 13m	0.29		0.05	0.03			0.48
S015 6m to 13m	0.39		0.60	0.02			1.28
S017 5m to 11m	0.99		0.06	0.01			1.05
S017 11m to 17m	0.68		0.24		0.01		0.94
S018 9m to 17m	0.50		0.01	0.02	0.01	0.02	0.56
S018 17m to 25m	0.65		0.04	0.01			0.70
S026 16m to 21m	1.36	0.04		0.09	0.01		1.51
S026 21m to 26m	1.20		0.10	0.09	0.01		1.33
S047 5m to 9m	0.72	0.10	0.09	0.01	0.01		0.93
S048 0m to 6m	0.58	0.31	0.02	0.04			0.94

Note: this table is taken from Bradke (1997)

TABLE 11

ABUNDANCES OF SOME METALLIC ELEMENTS IN THE ANDERSONS CREEK SERPENTINITES

element	low	high
Ni	<3ppM	4116ppM
Co	<3ppM	779ppM
Au	0.038ppM	0.1ppM
S	424ppM	5320ppM
Cu	2ppM	1520ppM
Cr	329ppM	1.53%
Fe	0.96%	36.01%

Notes: not all 72 samples were analysed for all the elements listed,
these data were summarised from data in Maher, 1994 and Maher, 1995.

TABLE 12

REPORTED OCCURRENCE OF SOME METALLIC MINERALS IN ANDERSONS CREEK SERPENTINITES

mineral	occurrence	type of description	reference
magnetite	accessory in serpentinite	general description	Gee and Legge
	accessory in pyroxenite	general description	Gee and Legge
chromite	accessory in serpentinite	general description	Gee and Legge
	accessory in pyroxenite	general description	Gee and Legge
iron oxides	accessory in gabbro	general description	Gee and Legge
marcasite	sparse in mafic to ultramafic rock	specimen description	Mason
pyrrhotite	trace in mafic to ultramafic rock	specimen description	Mason
	accessory (1%) in gabbronorite	specimen description	Mason
	minor in gabbroic rock	specimen description	Mason
chalcopyrite	trace in mafic to ultramafic rock	specimen description	Mason
	trace in gabbronorite	specimen description	Mason
	sparse in gabbroic rock	specimen description	Mason
chalcocite	rare in pyroxenite	general description	Maher

Notes:
References are to Gee and Legge (1979), Mason (1994) and Maher (1995)

TABLE 13

SAMPLES SUBMITTED FOR METALLURGICAL TESTING

S004	13m	to	18m
S009	8m	to	13m
S015	6m	to	13m
S017	5m	to	11m
S017	11m	to	17m
S018	9m	to	25m
S026	16m	to	26m
S047	5m	to	9m
S048	0m	to	6m

231047

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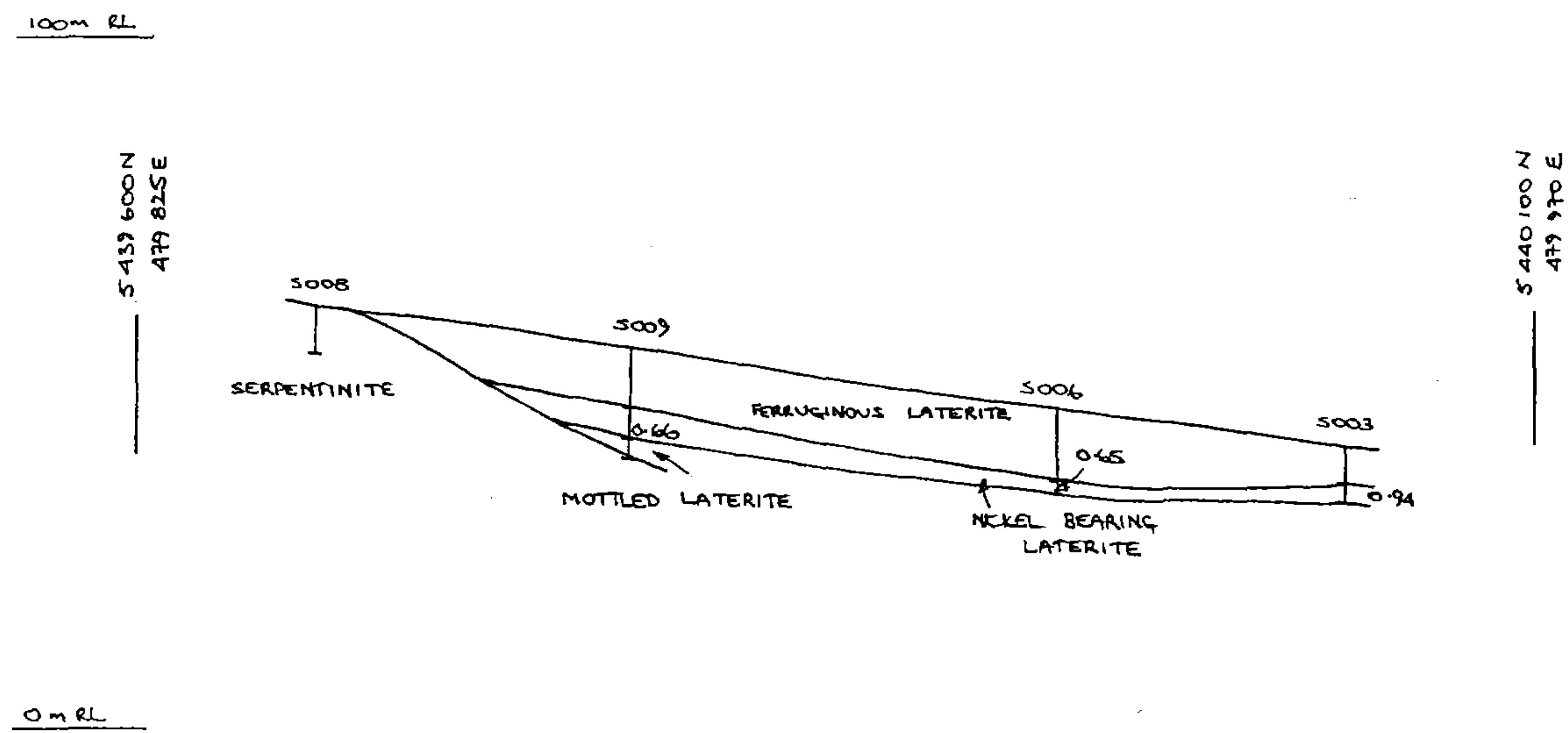
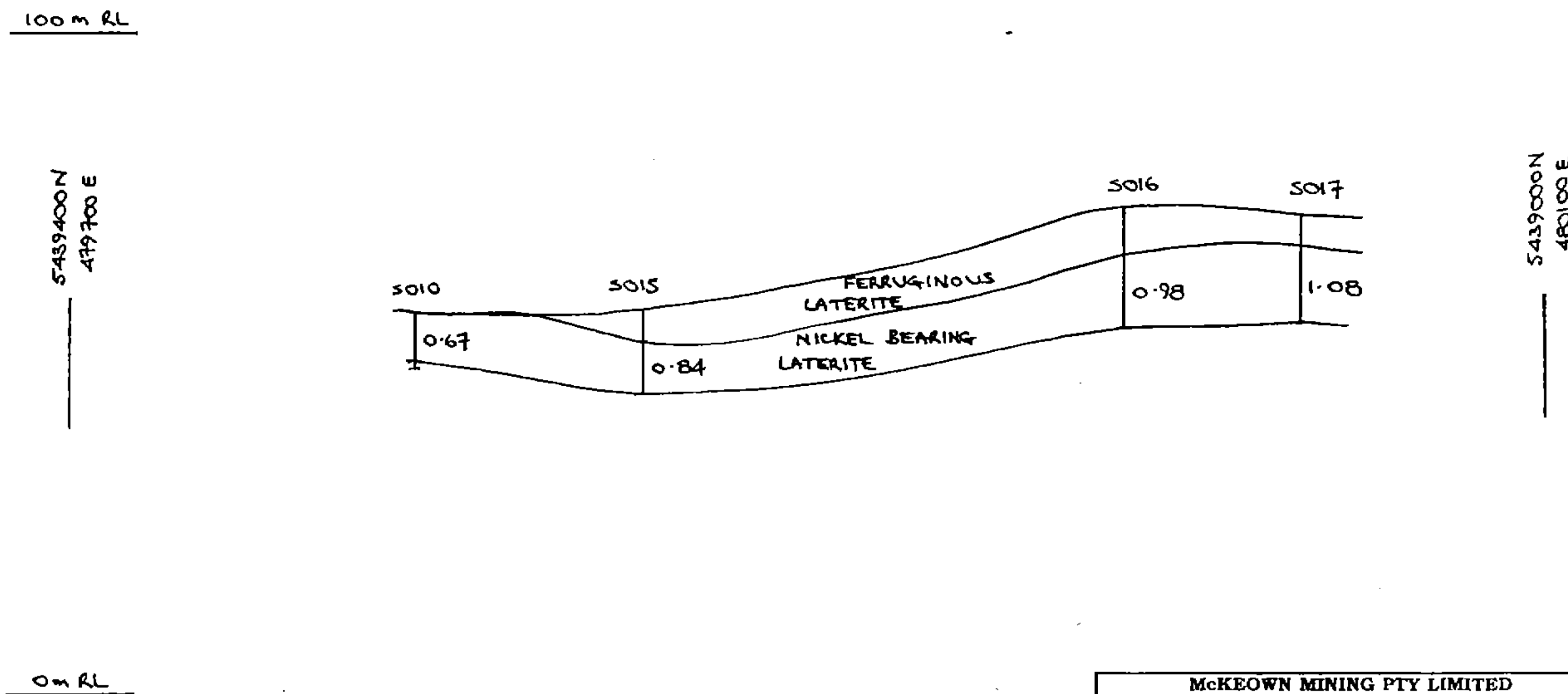


McKEOWN MINING PTY LIMITED
ALLEGIANCE MINING N.L. **EL 10/96 ANDERSONS CREEK** **SECTION AT SCOTTS HILL**

		Scale:
Drawn: M V McK	Date 31 Aug 97	Fig:

NOTE: VERTICAL EXAGGERATION
Horizontal scale 1: 2500
Vertical scale 1: 1000
Grades shown are % Ni

231052



NOTE: VERTICAL EXAGGERATION
Horizontal scale 1: 2500
Vertical scale 1: 1000
Grades shown are % Ni

McKEOWN MINING PTY LIMITED		
ALLEGIANCE MINING N.L. EL 10/96 ANDERSONS CREEK SECTION AT MOUNT VULCAN		
		Scale: see note
Drawn:M V McK	Date 31 Aug 97	Fig:

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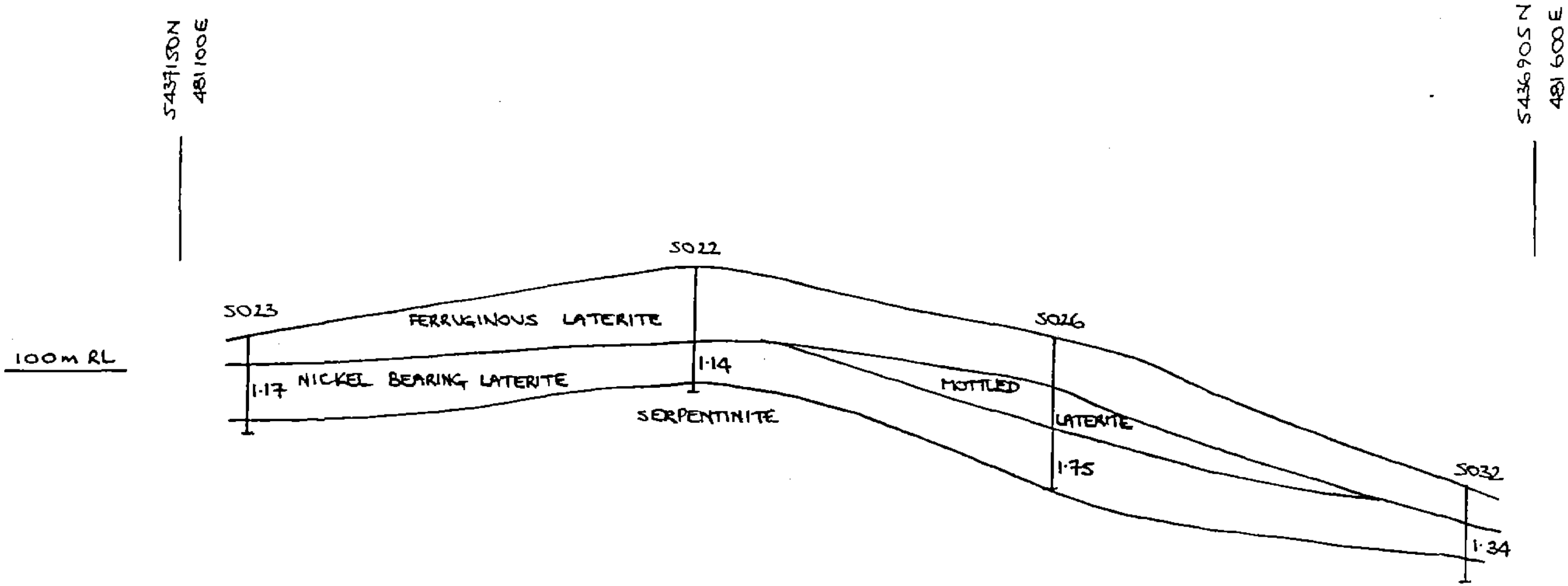


NOTE: VERTICAL EXAGGERATION
Horizontal scale 1: 2500
Vertical scale 1: 1000
Grades shown are % Ni

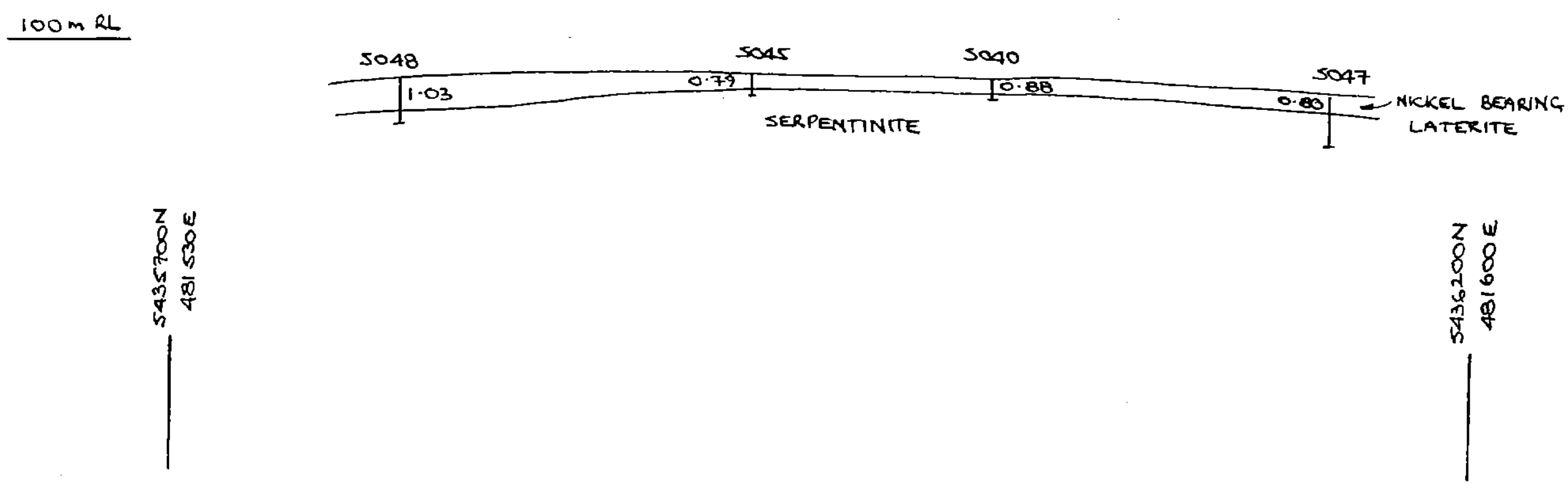
McKEOWN MINING PTY LIMITED

ALLEGIANCE MINING N.L.
EL 10/96 ANDERSONS CREEK

SECTION AT BARNES HILL

	Scale: see note
Drawn:M V McK	Date 31 Aug 97	Fig:

23105 4



NOTE: VERTICAL EXAGGERATION
Horizontal scale 1: 2500
Vertical scale 1: 1000
Grades shown are % Ni

McKEOWN MINING PTY LIMITED		
ALLEGIANCE MINING N.L. **EL 10/96 ANDERSONS CREEK** **SECTION BARNES HILL SOUTH**		
		Scale: see note
Drawn:M V McK	Date 31 Aug 97	Fig:

Appendix 1

Summary of exploration prior to the acquisition by Allegiance Mining N.L.
of Exploration Licence 10/96

SUMMARY OF EXPLORATION PRIOR TO THE ACQUISITION BY ALLEGIANCE MINING N.L. OF EXPLORATION LICENCE 10/96

The summaries are arranged in chronological order.

Abbreviations used below:

DDH diamond drill hole
TDM Tasmania Department of Mines
BHP The Broken Hill Proprietary Company
KIS King Island Scheelite (1947) Limited
CRA CRA Exploration Pty Ltd

Gould, 1866	iron ore and asbestos occurrences reported
Twelvetrees, 1900 TDM	report on asbestos production by the Australian Asbestos Company
Twelvetrees, 1903 TDM	report describing the serpentinite rocks in the area
Twelvetrees, 1917 TDM	report describing the failure of asbestos production by the Australian Asbestos Company
Reid, 1919 TDM	report describing the failure of the Australian Asbestos Company
Hills, 1923 TDM	report describing the geology of the Beaconsfield area
Nye, 1930 TDM	report describing the results of drilling of the iron ore deposits at Mt Scott, Mt Vulcan and Barnes Hill; the iron ore described as an iron laterite developed on serpentinite with relatively high nickel and chromium content
Taylor, 1955 TDM	report on the asbestos potential of Tasmania; commented that sufficient medium grade asbestos ore was available to satisfy Tasmania's needs
Hughes, 1957 TDM	reported on the occurrence of nickel in the Beaconsfield district and recommended drilling to test it
Ben Lomond Mining 1956-1957	the Ben Lomond Mining Company prospected the areas of serpentinite outcrop and brown clay over serpentinite and the prospect was then taken over by Consolidated Zinc Pty Ltd
Knight, 1957 Consolidated Zinc	report for Consolidated Zinc recommended that, because the nickel grade in the laterite was below 2.5%, the project be dropped; an

	exposed triangular area of ultrabasic outcrop was tested by hand augering on ten lines, total line length being 6,309m.
Enterprise Exploration 1957-1958	Enterprise Exploration, in association with Ben Lomond Mining, completed 147 auger holes, 57 in an area of garnierite bearing serpentinite being the most nickeliferous with assays ranging up to 1.83% Ni; estimated that reserves of nickel in the soil over the serpentinite contained less than 0.5 million tonnes at 1% Ni
Hughes, 1958 TDM	commented that Consolidated Zinc had not tested areas of laterite over serpentinite; Pitulej sampled trenches in laterite and nickel assays up to 1.25% were reported
Stefanski, 1959 TDM	reported on further sampling of trenches in clay and laterite over serpentinite and recommended drilling if further information was required
Hughes, 1962 TDM	reported on DDH Andersons Creek 1 drilled into weathered serpentinite to a depth of 45.7m; nickel assays ranged from >0.5% in clay, to >0.4% in decomposed serpentinite, to about 0.3% in serpentinite at the bottom of the hole
Noldart, 1963 TDM	reported on the chromite occurrences in the Beaconsfield area and the results of auger holes; he concluded that chromiferous sands occur in Tertiary gravels overlying the serpentinite
Gebert, 1967 BHP	reported on one year's exploration for limestone, chromite, nickel, iron ore and base metals using geological mapping, air and ground magnetics, geochemical sampling, pitting, trenching, auger drilling and one DDH; prospect abandoned due to poor prospectivity; the DDH Scotts Hill 1 was drilled at Scotts Hill but was not assayed
Anthony, 1967 KIS	presented a summary of exploration to that time and outlined the KIS target of 50 million tonnes of 1% Ni as a target; 17 DDHs suggested*** the presence of 7 to 11 million tonnes of ore at 1.05% (Ni + Co); he described the lateritic profile over the serpentinite and related nickel grades to laterite development
Anthony, 1969 KIS	20 more DDHs had been drilled and resources, at 0.7% Ni cutoff grade, were estimated at 6 million tonnes at 1.04% Ni + 0.06% Co; he recommended that work on the prospect be stopped due to the small size of the deposit
Allstate 1971-1972	15 diamond drill holes completed in a search for an asbestos deposit
Summons, 1980 TDM	reported on the chromite occurrences in the Beaconsfield area

Fox, 1980 Northern Chromite	described mining of Tertiary chromite sands by the Northern Chromite Pty Ltd for use as foundry sand, reserves of 250,000 tonnes to be mined at 80,000 tonnes per year
Summons et al, 1981 TDM	reported that the Andersons Creek iron ores are secondary laterites containing 3.5 to 5.5% Cr and that chromite ore reserves in sands at Barnes Hill and the Rifle Range Prospects total 667, 000 tonnes at about 12% chromite, using a 6.5% chromite cutoff
Maher, 1994 CRA	CRA took up EL 35/92 as a nickel target; an historical review, rock geological mapping and rock chip sampling were reported
Maher, 1995 CRA	relogged and assayed some existing drill core, completed rock chip and soil sampling, IP survey; identified gold occurrence in DDH Scotts Hill 1, 3m down hole length at about 1g/t Au; recommended diamond drilling of IP anomalies in nickeliferous laterite

Appendix 2

Co-ordinates and lengths of holes drilled during the drilling programme
from February to March 1997

hole no	location	east	north	RL	depth
S001	Scotts Hill	479,716.3	5,440,013.5	41.2	6.0
S002	Scotts Hill	479,833.3	5,440,054.1	38.7	12.0
S003	Scotts Hill	479,955.9	5,440,031.0	41.1	8.0
S004	Scotts Hill	479,702.5	5,439,885.9	55.4	20.0
S005	Scotts Hill	479,837.3	5,439,899.2	50.9	27.0
S006	Scotts Hill	479,933.8	5,439,917.5	46.4	11.0
S007	Scotts Hill	479,709.6	5,439,769.5	63.7	20.0
S008	Scotts Hill	479,876.1	5,439,655.1	61.5	7.0
S009	Scotts Hill	479,881.4	5,439,773.0	55.3	15.0
S010	Mt Vulcan	479,788.3	5,439,295.7	56.6	8.5
S011	Mt Vulcan	479,881.6	5,439,384.4	46.4	3.0
S012	Mt Vulcan	480,027.9	5,439,335.8	40.6	9.0
S013	Mt Vulcan	479,894.5	5,439,300.3	49.9	8.0
S014	Mt Vulcan	480,050.0	5,439,296.8	42.1	13.0
S015	Mt Vulcan	479,846.8	5,439,247.5	57.4	13.5
S016	Mt Vulcan	479,976.0	5,439,097.3	72.8	18.0
S017	Mt Vulcan	480,047.9	5,439,077.1	71.7	17.0
S018	Barnes Hill	480,994.9	5,436,880.4	110.6	28.0
S019	Barnes Hill	481,097.4	5,436,961.5	107.6	13.0
S020	Barnes Hill	481,155.6	5,436,889.3	113.6	18.0
S021	Barnes Hill	481,279.0	5,436,942.9	113.0	22.0
S022	Barnes Hill	481,314.2	5,437,101.7	118.2	21.0
S023	Barnes Hill	481,120.2	5,437,126.0	105.8	16.0
S024	Barnes Hill	481,163.8	5,437,326.5	105.2	6.5
S025	Barnes Hill	481,352.3	5,437,392.2	93.4	7.0
S026	Barnes Hill	481,441.5	5,437,033.3	106.9	26.0
S027	Barnes Hill	481,528.0	5,437,150.2	96.9	20.0
S028	Barnes Hill	481,666.3	5,437,239.7	74.5	8.0
S029	Barnes Hill	481,737.9	5,437,448.5	73.2	3.0
S030	Barnes Hill	481,508.2	5,437,358.2	81.0	9.0
S031	Barnes Hill	481,288.5	5,436,874.4	103.7	20.0
S032	Barnes Hill	481,569.5	5,436,903.8	80.5	15.0
S033	Barnes Hill	480,837.3	5,436,878.3	116.5	12.3
S034	Barnes Hill	480,871.5	5,436,979.3	98.0	15.0

S035	Barnes Hill South	481,328.4	5,435,656.7	92.1	3.0
S036	Barnes Hill South	481,468.6	5,435,577.8	87.2	5.0
S037	Barnes Hill South	481,575.1	5,435,457.5	82.5	4.0
S038	Barnes Hill South	481,664.4	5,435,348.5	81.7	6.0
S039	Barnes Hill South	481,680.7	5,435,752.4	92.7	9.0
S040	Barnes Hill South	481,657.6	5,436,012.4	93.6	3.0
S041	Barnes Hill South	481,447.5	5,435,941.4	90.8	3.0
S042	Barnes Hill South	481,295.4	5,435,914.6	94.5	4.0
S043	Barnes Hill South	481,400.9	5,436,078.0	84.6	3.0
S044	Barnes Hill South	481,323.9	5,436,142.8	88.0	3.0
S045	Barnes Hill South	481,624.8	5,435,920.4	93.7	3.0
S046	Barnes Hill South	481,629.6	5,436,165.6	86.6	4.0
S047	Barnes Hill South	481,692.2	5,436,144.9	92.3	9.0
S048	Barnes Hill South	481,553.9	5,435,791.4	93.8	7.0
S049	Barnes Hill South	481,742.4	5,435,991.6	107.0	9.0
S050	Barnes Hill South	481,578.5	5,435,955.1	92.7	4.0
S051	Barnes Hill South	481,576.7	5,435,633.1	88.2	3.0
total					**557.8**

231063

Appendix 3

Logs of holes drilled during the drilling programme
from February to March 1997

COMPANY Allegiance Mining NL

PROJECT Anderson's Creek Exploration Licence

HOLE NUMBER S001

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	no sample	-		
1	2	brown clay	1.68	0.248	0.026
2	3	brown clay and minor green and black hard serpentinite	1.32	0.166	0.020
3	4	black to green hard serpentinite	2.90	0.110	0.010
4	5	black hard serpentinite and sparse brown clay	9.16	0.088	0.010
5	6	black to green hard serpentinite	16.24	0.086	0.010
		END OF HOLE AT 6m			
		hole dry to 6m			

231064

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S002

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	red brown clay	2.92	0.354	0.022
2	3	red brown clay	2.64	0.196	0.010
3	4	red brown clay	0.84	0.328	0.022
4	5	red clay	0.92	0.264	0.124
5	6	red and brown clay	1.68	0.324	0.112
6	7	red clay	0.26	0.246	0.170
7	8	red clay	0.24	0.336	0.148
8	9	red and green clay	1.32	0.396	0.090
9	10	light brown clay	3.98	0.184	0.042
10	11	light brown clay and very weathered white to green serpentinite	3.80	0.256	0.022
11	12	red and brown clay	7.08	0.516	0.024
		END OF HOLE AT 12m			
		hole damp to 10m then wet			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S003

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	light brown gravel and topsoil	6.08	0.060	0.004						
1	2	mid brown clay and sparse ironstone pebbles and sparse ironstone pebbles	1.92	0.090	0.010						
2	3	mid brown clay	0.16	0.102	0.006						
3	4	ditto	0.16	0.070	0.004						
4	5	mid brown clay with minor white serpentinite chips	0.08	0.156	0.028						
5	6	no sample	-	-	-						
6	8	soft decomposed dark green serpentinite	0.08	0.936	0.048						
		END OF HOLE AT 8m									
		hole dry to 5m then damp to 6m then wet									

231066

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S004

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	no sample	-		
1	2	red clay with trace ironstone pebbles with trace serpentinite (contamination from previous hole)	1.24	0.210	0.028
2	3	red brown clay with trace serpentinite (contamination from previous hole)	2.56	0.086	0.010
3	4	mid to light brown clay	2.44	0.202	0.246
4	5	mid brown clay	4.00	0.290	0.310
5	6	tan silty clay	4.24	0.064	0.050
6	7	mid brown clay	4.90	0.092	0.036
7	8	mid brown silty clay	5.52	0.072	0.044
8	9	ditto	6.42	0.110	0.024
9	10	mid brown clay	9.80	0.100	0.048
10	11	light brown clay with sparse light green serpentinite	5.96	0.110	0.036
11	12	light brown clay with minor light green serpentinite	11.90	0.128	0.016
12	13	weathered green serpentinite = green brown clay	6.72	0.192	0.016
13	14	weathered dark green serpentinite with minor brown clay	4.44	0.634	0.032
14	15	weathered dark green serpentinite with sparse red clay	4.16	1.37	0.056
15	16	weathered dark green serpentinite with sparse red clay	4.28	1.34	0.044
16	17	weathered olive green serpentinite	4.24	0.866	0.028
17	18	weathered olive green serpentinite	4.24	0.596	0.016
18	19	weathered olive green serpentinite with sparse red clay	5.28	0.494	0.016
19	20	weathered dark green serpentinite with sparse red clay	1.44	0.248	0.040
		END OF HOLE AT 20m			
		hole dry to 9m then damp to 20m then wet			

231067

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S005

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	no sample	-		
1	2	mid brown to reddish brown clay with sparse specular iron oxide fragments	1.76	0.092	0.010
2	3	mid brown to reddish brown clay	2.88	0.090	0.008
3	4	ditto	3.10	0.140	0.016
4	5	ditto	1.84	0.134	0.020
5	6	ditto	5.96	0.124	0.018
6	7	ditto	3.72	0.092	0.034
7	8	mid brown >> red > yellow clay with trace specular iron oxide fragments	5.86	0.226	0.320
8	9	mid brown > yellow clay with trace specular iron oxide fragments	2.96	0.168	0.116
9	10	red brown clay	2.80	0.148	0.054
10	11	ditto	3.56	0.118	0.040
11	12	red brown to mid brown clay	3.54	0.156	0.054
12	13	brown > yellow clay	5.92	0.228	0.078
13	14	mid brown clay	4.40	0.196	0.066
14	15	red brown clay with trace serpentinite	3.84	0.292	0.088
15	16	red brown >> yellow clay with trace serpentinite	2.40	0.230	0.036
16	17	mid brown >> red = yellow clay	4.04	0.458	0.064
17	18	red brown >> yellow clay with trace serpentinite	4.00	0.282	0.072
18	19	mid brown > red brown > yellow clay with trace dark green serpentinite	0.58	0.364	0.134
19	20	ditto	2.70	0.358	0.086
20	21	mid brown >>> red clay	1.90	0.390	0.076
21	23	mid brown clay grading to light green serpentinite	6.24	0.550	0.032
23	24	dirty green decomposed serpentinite with sparse serpentinite rock chips	14.08	0.240	0.014
24	25	mid green to light green decomposed serpentinite with sparse serpentinite rock chips	14.94	0.238	0.014
25	26	mid green to brown green decomposed serpentinite with sparse serpentinite rock chips	16.34	0.284	0.018
26	27	ditto	17.56	0.294	0.018
		END OF HOLE AT 27m			
		hole dry to 12m then damp			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S006

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	topsoil and dark brown clay	1.08	0.080	0.008
1	2	dark brown clay	3.52	0.170	0.012
2	3	mid brown clay	3.90	0.238	0.016
3	4	ditto	1.88	0.294	0.020
4	5	dark brown > yellow clay with trace specular iron oxide fragments	2.14	0.202	0.158
5	6	mid brown clay with trace specular iron oxide fragments	3.80	0.256	0.296
6	7	dark brown > yellow clay with trace specular iron oxide fragments	6.36	0.248	0.092
7	8	mid brown clay with trace specular iron oxide fragments	5.00	0.266	0.066
8	9	mid brown to dark brown clay	4.72	0.396	0.104
9	10	mid brown clay with trace green serpentinite rock chips	1.10	0.452	0.136
10	11	ditto	1.38	0.652	0.142
		END OF HOLE AT 11m			
		hole dry to 10m then wet			

231069

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S007

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	dark brown clay	2.36	0.188	0.018						
2	3	mid brown >> dark brown clay	4.50	0.064	0.004						
3	4	light brown to tan clay with sparse ironstone fragments	3.34	0.064	0.004						
4	5	mid brown to tan clay	6.20	0.156	0.016						
5	6	tan clay	6.56	0.166	0.020						
6	7	mid brown >> red brown clay	5.24	0.234	0.028						
7	8	red brown clay	4.64	0.198	0.024						
8	9	mid brown = dark brown clay	4.16	0.328	0.116						
9	10	dark brown >> red = yellow clay and sparse green serpentinite fragments	3.82	0.220	0.094						
10	11	dark brown >> red = yellow clay	4.28	0.220	0.140						
11	12	dark brown >> red = yellow clay with sparse very weathered green to black serpentinite	6.16	0.328	0.094						
12	13	mid brown = yellow >> red clay with minor weathered green to black serpentinite	4.90	0.468	0.064						
13	14	ditto	1.92	0.440	0.152						
14	15	dark brown clay with minor weathered green to black serpentinite and sparse specular iron oxide fragments	0.80	0.336	0.520						
15	16	dark brown clay	4.48	0.212	0.158						
16	17	green brown >> yellow = red clay	3.32	0.330	0.190						
17	18	ditto	2.24	0.432	0.116						
18	19	olive green >> yellow = red brown clay	3.16	0.834	0.104						
19	20	light and dark green hard serpentinite	0.44	0.580	0.024						
		END OF HOLE AT 20m									
		hole dry to 15m then wet									

231070

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S008

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	light green serpentinite flour and rock chips	4.24	0.066	0.014
2	3	light green serpentinite flour and rock chips	1.20	0.096	0.020
3	4	light green serpentinite flour and rock chips	11.60	0.046	0.012
4	5	light green serpentinite flour and rock chips	12.04	0.024	0.006
5	6	light green serpentinite flour and rock chips	9.90	0.016	0.004
6	7	light green serpentinite flour and rock chips	8.60	0.014	0.006
		END OF HOLE AT 7m			
		hole dry to 7m			

231071

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S009

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	red brown topsoil and clay and an occasional ironstone pebble	1.12	0.060	0.008
1	2	mid brown >> yellow clay with sparse ironstone pebble chips	2.60	0.126	0.022
2	3	mid brown clay	2.56	0.176	0.018
3	4	tan clay	3.20	0.126	0.018
4	5	mid brown = tan clay	4.84	0.152	0.026
5	6	red brown clay	14.32	0.172	0.060
6	7	ditto	7.16	0.334	0.194
7	8	red brown clay with trace specular iron oxide fragments	2.52	0.448	0.498
8	9	red to mid brown clay with minor weathered green serpentinite	6.24	0.538	0.252
9	10	mid brown clay with minor weathered green serpentinite	6.10	0.862	0.174
10	11	mid brown clay with weathered green serpentinite grading to light and dark green weathered serpentinite becoming hard towards end of run	4.38	0.790	0.174
11	12	mid brown clay and weathered green serpentinite	10.20	0.556	0.064
12	13	green brown clay and moderately hard green serpentinite	8.32	0.538	0.026
13	14	brown green very weathered serpentinite	8.40	0.382	0.016
14	15	ditto	6.64	0.454	0.014
		END OF HOLE AT 15m			
		hole dry to 3m then damp			

231072

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S010

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	green brown to tan clay with trace soft decomposed very weathered light green serpentinite	7.04	0.900	0.098						
2	3	green brown to mid brown clay with sparse decomposed very weathered light green serpentinite	3.84	0.638	0.078						
3	4	brown to green clay and serpentinite rock flour with common to abundant relatively hard dark green serpentinite rock chips	6.50	0.444	0.062						
4	5	brown to green clay and serpentinite rock flour with minor relatively hard dark green serpentinite rock chips	6.00	0.718	0.066						
5	6	green brown to green clay with minor relatively hard dark green serpentinite rock chips	4.86	0.612	0.038						
6	7	decomposed dirty green serpentinite with trace to sparse light green to dark green serpentinite rock chips	6.04	0.502	0.026						
7	8	decomposed dirty green serpentinite with sparse to minor light green to dark green serpentinite rock chips	4.44	0.358	0.016						
8	8.5	light green to dark green serpentinite rock flour and chips	0.56	0.334	0.014						
		END OF HOLE AT 8.5m									
		hole dry to 2m then damp to 7m then wet									

231073

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S011

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	slightly weathered light green serpentinite	4.84	0.232	0.014						
2	3	slightly weathered light green serpentinite	6.00	0.238	0.012						
		END OF HOLE AT 3m									
		hole dry to 3m									

231074

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S012

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	no sample	-								
1	2	mid brown clay	2.24	0.582	0.052						
2	3	mid brown clay with trace ironstone fragments and trace light green serpentinite	4.38	0.852	0.054						
3	4	soft very weathered light green serpentinite with minor mid brown clay with trace ironstone fragments	5.40	0.510	0.018						
4	5	soft very weathered light green serpentinite with sparse light to dark green serpentinite rock chips	8.04	0.296	0.010						
5	6	moderately weathered light green serpentinite rock flour and chips	9.40	0.272	0.014						
6	7	ditto	12.02	0.238	0.014						
7	8	moderately weathered light and dark green serpentinite rock flour and chips	11.18	0.228	0.012						
8	9	ditto	10.96	0.230	0.010						
		END OF HOLE AT 9m									
		hole dry to 9m									

231075

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S013

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	topsoil and red brown clay with sparse specular ironstone pebbles	1.56	0.136	0.020
1	2	red brown clay	5.52	0.086	0.012
2	3	red brown clay with trace specular ironstone fragments	5.22	0.112	0.022
3	4	ditto	7.72	0.294	0.110
4	5	dark brown clay	3.32	0.356	0.190
5	6	dark brown to green brown clay with minor soft to medium hard weathered serpentinite rock chips	7.72	0.494	0.036
6	7	moderately weathered light green serpentinite rock flour and chips	8.60	0.502	0.024
7	8	ditto	6.06	0.546	0.020
		END OF HOLE AT 8m			
		hole dry to 8m			

231076

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S014

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	red brown clay with trace light green serpentinite (contamination from previous hole)	1.92	0.164	0.036
1	2	red brown = tan clay	5.40	0.388	0.276
2	3	light brown clay with common weathered olive green serpentinite	6.16	0.672	0.044
3	4	mid brown to light brown clay with minor weathered olive green serpentinite	5.36	0.404	0.268
4	5	light brown clay with sparse weathered white and green serpentinite	4.44	0.196	0.068
5	6	mid brown to red brown clay with trace weathered white and green serpentinite	6.08	0.218	0.066
6	7	light brown clay with trace weathered white and green serpentinite	6.32	0.236	0.036
7	8	ditto	9.02	0.248	0.042
8	9	mid brown clay with common to abundant weathered bright green to dark green serpentinite	5.60	0.600	0.062
9	10	green brown clay with abundant weathered light green to dark green serpentinite including occasional relatively hard rock chips	6.12	1.09	0.070
10	11	green brown clay with abundant weathered light green to dark green serpentinite including occasional relatively hard rock chips grading to soft decomposed light green serpentine	7.08	0.822	0.034
11	12	soft decomposed light green serpentinite with sparse relatively hard serpentinite rock chips	7.96	0.694	0.034
12	13	ditto	2.16	0.548	0.046
		END OF HOLE AT 13m			
		hole dry to 13m, hit water at 13m			

231077

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S015

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	red clay with common ironstone pebbles	3.76	0.088	0.008
2	3	red clay with minor ironstone pebbles	9.84	0.052	0.006
3	4	red to mid brown clay	7.50	0.132	0.022
4	5	mid brown clay	6.80	0.144	0.040
5	6	red brown clay with sparse very weathered green serpentinite	6.84	0.414	0.140
6	7	red brown clay with sparse to minor very weathered green serpentinite	5.88	0.722	0.116
7	8	red brown clay with minor very weathered green serpentinite	5.04	1.15	0.080
8	9	red brown clay with minor very weathered green serpentinite	9.84	0.626	0.036
9	10	red brown clay with common very weathered green serpentinite	10.72	0.868	0.038
10	11	very weathered green serpentinite with light green to dark green serpentine rock chips and minor red clay	1.46	0.704	0.020
11	12	very weathered green serpentinite with light green to dark green serpentine rock chips and sparse to minor red clay	6.40	1.02	0.014
12	13	very weathered dirty green serpentinite with relatively hard light green to dark green serpentinite rock chips	9.94	0.830	0.022
13	13.5	ditto	0.76	0.726	0.028
		END OF HOLE AT 13.5m			
		hole dry to 4m then damp to 9m then wet			

231078

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S016

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	red brown clay with sparse ironstone pebbles and sparse serpentinite	3.56	0.304	0.014						
		(contamination from previous hole)									
2	3	red brown clay with minor ironstone pebbles	3.96	0.062	0.004						
3	4	dark brown clay with sparse ironstone pebbles	5.60	0.054	0.006						
4	5	dark brown clay with minor ironstone pebbles	5.28	0.072	0.004						
5	6	light brown clay	3.32	0.094	0.006						
6	7	light brown to dark brown clay	6.56	0.180	0.016						
7	8	decomposed green brown serpentinite	6.44	0.514	0.042						
8	9	mid brown clay = decomposed green brown serpentinite	5.84	0.528	0.080						
9	10	decomposed green brown serpentinite > brown clay	6.08	0.800	0.154						
10	11	decomposed dark green serpentinite	6.68	0.936	0.128						
11	12	decomposed dark green serpentinite	6.00	0.992	0.064						
12	13	decomposed dark green serpentinite	6.08	1.17	0.066						
13	14	decomposed dark green serpentinite	5.02	1.81	0.062						
14	15	decomposed green and brown serpentinite	6.04	0.864	0.024						
15	16	decomposed dark green >> white serpentinite	7.70	1.20	0.042						
16	17	light green serpentinite rock flour and chips	7.68	1.24	0.022						
17	18	light green serpentinite rock flour and chips	9.16	0.672	0.020						
		END OF HOLE AT 18m									
		hole dry to 18m									

23107 9

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S017

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	topsoil and red brown clay with sparse ironstone pebbles	1.00	0.120	0.010
1	2	red brown clay with trace green serpentinite (contamination from previous hole)	2.92	0.074	0.006
2	3	mid brown clay	3.90	0.080	0.006
3	4	dark brown clay	4.44	0.106	0.016
4	5	dark brown to red brown clay with trace soft weathered light green to dark green serpentinite	6.66	0.370	0.042
5	6	red brown clay with sparse soft weathered light green to dark green serpentinite	6.60	0.906	0.068
6	7	red brown to mid brown and green brown clay with sparse light green to dark green serpentinite rock chips	5.52	1.10	0.200
7	8	very weathered slightly mottled olive >> light green serpentinite with sparse to minor red clay	4.96	1.02	0.124
8	9	ditto	5.80	1.09	0.082
9	10	ditto	5.62	1.50	0.074
10	11	ditto	5.68	1.09	0.036
11	12	very weathered slightly mottled olive >> light green serpentinite with sparse to minor red brown clay	5.52	1.21	0.058
12	13	green brown clay with minor very weathered olive green serpentinite	6.08	1.58	0.070
13	14	very weathered soft decomposed serpentinite with minor red brown clay	4.56	1.01	0.036
14	15	soft decomposed light green serpentinite	8.02	0.790	0.024
15	16	ditto	5.80	0.902	0.028
16	17	soft decomposed light green serpentinite with sparse to minor hard dark green serpentinite rock fragments	8.44	0.722	0.040
		END OF HOLE AT 17m			
		hole dry to 4m then damp			

231080

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S018

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	grey quartz gravel and topsoils and minor brown sandy clay	3.88	0.065	<0.002						
1	2	red brown clay	4.68	0.043	0.017						
2	3	mid brown to red brown clay with trace ironstone pebbles	4.84	0.070	0.043						
3	4	mid brown clay	7.12	0.080	0.025						
4	5	mid brown >> light brown clay	6.24	0.120	0.020						
5	6	dark brown clay	6.84	0.120	0.017						
6	7	mid brown to dark brown clay with trace weathered light green to dark green serpentinite	7.24	0.425	0.033						
7	8	mid brown clay with trace weathered light green serpentinite	3.16	0.305	0.024						
8	9	mid brown clay with sparse weathered light green serpentinite	6.12	0.130	0.032						
9	10	mid brown >> red clay	3.20	0.715	0.055						
10	11	mid brown >> red = yellow clay with trace hard dark green serpentinite rock chip	1.96	0.750	0.085						
11	12	mid brown clay with trace hard dark green serpentinite rock chips	0.40	0.745	0.130						
12	13	mid brown >> yellow clay with trace weathered light green serpentinite rock chip	4.96	0.835	0.090						
13	14	mid brown >> yellow clay with sparse soft decomposed dark green serpentinite	6.00	0.665	0.045						
14	15	ditto	2.26	0.700	0.044						
15	16	mid brown to green brown clay with sparse to minor soft decomposed yellow green serpentinite	2.84	0.630	0.030						
16	17	green brown >> orange brown clay with trace soft decomposed light green serpentinite	3.84	0.655	0.036						
17	18	green brown clay with trace decomposed light green serpentinite	6.08	0.750	0.032						
18	19	green brown clay with sparse to minor decomposed light green serpentinite	14.82	0.760	0.027						
19	20	green brown clay with light green serpentinite as rock flour and chips	6.44	0.695	0.016						
20	21	soft decomposed dark green serpentinite with common green brown clay	2.44	0.720	0.025						
21	22	decomposed dark green brown serpentinite >> orange brown clay	2.32	0.840	0.041						
22	23	ditto	11.56	1.610	0.050						
23	24	dark green brown clay with minor hard light green serpentinite rock chips	6.44	0.885	0.044						
24	25	dark brown clay with abundant hard light green serpentinite rock chips	5.92	0.725	0.027						
25	26	ditto	14.44	0.440	0.020						
26	27	olive green serpentinite rock flour and chips	7.88	0.320	0.015						
27	28	green brown serpentinite rock flour and chips	5.52	0.435	0.029						
		END OF HOLE AT 28m									
		hole dry to 3m then damp to 17m then wet									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S019

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	no sample	-								
2	3	mid brown clay with trace serpentinite (contamination from previous hole)	6.82	0.060	0.008						
3	4	mid brown to green brown and red clay	9.24	0.215	0.014						
4	5	ditto	7.16	0.400	0.039						
5	6	mid brown to green brown clay	7.62	0.595	0.140						
6	7	red brown > green brown clay with soft weathered decomposed serpentinite	7.64	0.475	0.215						
7	8	ditto	7.12	0.365	0.125						
8	9	red brown > green brown clay with soft weathered decomposed serpentinite and trace dark green serpentinite rock chips	8.96	0.585	0.080						
9	10	red brown = green brown clay	6.08	0.940	0.075						
10	11	soft very weathered decomposed light green to olive green serpentinite with minor light brown clay	14.06	0.840	0.043						
11	12	light green to dark green serpentinite rock flour and chips contaminated with red clay from line clean out	7.40	0.060	0.025						
12	13	dirty green to dark green serpentine rock chips and flour with sparse fibrous white mineral	9.30								
		END OF HOLE AT 13m									
		hole dry to 2m then damp to 11m then wet									

231082

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S020

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	mid brown to light brown clay with trace ironstone pebbles	6.88	0.060	0.007
2	3	mid brown to red brown clay	2.62	0.155	0.026
3	4	red to green brown clay with trace light green to dark green serpentinite rock chip	3.56	0.640	0.105
4	5	dark green >> red brown clay	3.84	0.650	0.050
5	6	decomposed dirty green serpentinite with trace white to green serpentinite rock chips	4.44	0.780	0.033
6	7	ditto	4.84	0.840	0.035
7	8	ditto	4.92	0.685	0.029
8	9	decomposed light green serpentinite with sparse light green serpentinite rock chips	3.64	0.680	0.019
9	10	ditto	2.60	0.740	0.027
10	11	decomposed dirty green serpentinite with sparse light green to dark green serpentinite rock chips	4.76	0.765	0.039
11	12	ditto	7.38	0.805	0.050
12	13	ditto	2.92	0.745	0.037
13	14	ditto	5.00	0.730	0.034
14	15	light green serpentinite rock flour and chips with trace fibrous white mineral	8.56		
15	16	ditto	4.92		
16	17	ditto	8.32		
17	18	ditto	6.48		
		END OF HOLE AT 18m			
		hole dry to 11m then wet			

231083

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S021

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	red brown clay with sparse green serpentinite (contamination from previous hole)	3.04	0.110	0.090
1	2	dark brown clay	5.08	0.024	<.002
2	3	dark brown clay with sparse to minor ironstone pebbles	8.04	0.038	0.008
3	4	mid brown to light brown clay with trace ironstone pebbles and trace soft weathered dark green serpentinite	7.24	0.050	0.005
4	5	mid brown to light brown clay with trace soft weathered light green serpentinite	7.96	0.130	0.010
5	6	ditto	7.80	0.315	0.022
6	7	mid brown to green brown clay	8.04	0.520	0.038
7	8	mid brown >> light brown clay	7.34	0.250	0.022
8	9	light brown to dark brown clay with trace soft very weathered pale serpentinite	7.32	0.265	0.022
9	10	light brown = mid brown > red brown clay	8.08	0.410	0.060
10	11	red brown clay with sparse to minor soft very weathered decomposed olive green serpentinite	10.44	0.360	0.055
11	12	red brown clay with sparse to minor soft very weathered decomposed olive green serpentinite and trace soft white serpentinite	8.04	0.965	0.046
12	13	red brown clay = soft very weathered decomposed olive green serpentinite with sparse soft to medium hard light green to dark green serpentinite rock chips	5.60	0.985	0.080
13	14	ditto	6.00	0.925	0.050
14	15	hard fragments of dark green serpentinite in red clay	9.20		
15	16	hard fragments of dark green serpentinite in brown to red brown clay	5.80	0.805	0.030
16	17	green brown clay with sparse dark green serpentinite fragments	5.68	0.945	0.046
17	18	green brown clay with common dark green serpentinite fragments	4.64	1.05	0.045
18	19	very weathered dirty green serpentinite with minor green to red brown clay and common light green to dark green serpentinite fragments	7.76	0.950	0.037
19	20	soft very weathered decomposed dirty green serpentinite with minor light t green to dark green serpentinite fragments	3.64	0.855	0.035
20	21	ditto	10.36	0.590	0.021
21	22	hard light green to dark green serpentinite fragments with trace fibrous white mineral	9.04		
		END OF HOLE AT 22m			
		hole dry to 14m then wet			

231084

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S022

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	no sample									
1	2	mid brown clay with sparse serpentinite (contamination from previous hole)	7.84	0.280	0.013						
2	3	mid brown to red brown clay with sparse ironstone pebbles	9.08	0.050	0.005						
3	4	ditto	11.20	0.026	0.005						
4	5	mid brown to red brown clay with common ironstone pebbles	10.80	0.023	<.002						
5	6	mid brown to red brown clay with sparse to minor ironstone pebbles	9.00	0.040	0.005						
6	7	light brown to mid brown clay with sparse to minor ironstone pebbles	8.64	0.060	0.006						
7	8	mid brown clay with trace ironstone pebbles and trace green serpentinite rock fragments	7.04	0.130	0.014						
8	9	mid brown >> light brown clay with trace ironstone pebbles and trace green serpentinite rock fragments	7.20	0.120	0.006						
9	10	light brown >> mid brown clay	6.94	0.220	0.011						
10	11	light brown clay	7.76	0.255	0.010						
11	12	light brown >> red brown clay	7.50	0.105	0.006						
12	13	red >> light brown clay	8.36	0.160	0.048						
13	14	red to red brown clay with trace soft light green to dark green serpentinite	5.92	0.695	0.075						
14	15	red to red brown clay with minor soft light green to dark green serpentinite	5.92	1.30	0.105						
15	16	soft very weathered decomposed dirty light green to dirty dark green serpentinite with sparse red clay	6.80	0.855	0.080						
16	17	soft very weathered decomposed dirty light green to dirty dark green serpentinite with minor serpentinite rock chips and sparse red clay	6.76	1.22	0.055						
17	18	soft very weathered decomposed dirty light green to dirty dark green serpentinite with common serpentinite rock chips and trace red clay	3.68	1.48	0.040						
18	19	ditto	5.32	1.26	0.035						
19	20	dirty green serpentinite rock flour and light green to dark green serpentinite rock chips with trace fibrous white mineral	12.84								
20	21	ditto	2.20								
		END OF HOLE AT 21m									
		hole dry to 11m then damp									

231085

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S023

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	topsoil and mid brown clay with sparse to minor serpentinite (contamination from previous hole)	1.64	0.585	0.024
2	3	mid brown clay	5.26	0.205	0.024
3	4	light brown clay	9.08	0.335	0.020
4	5	mid brown >> light brown clay	8.88	0.760	0.055
5	6	dark brown clay with trace to sparse soft very weathered decomposed light green serpentinite and trace red clay	6.40	1.11	0.210
6	7	green brown clay with sparse soft very weathered decomposed light green to dark green serpentinite	3.88	1.58	0.140
7	8	light brown clay with sparse soft dark green serpentinite and light green to dark green serpentinite rock chips	5.12	1.60	0.044
8	9	light brown clay with sparse to minor hard light green to white serpentinite rock chips	4.80	1.22	0.050
9	10	light brown clay with sparse to minor hard light green to white serpentinite rock chips and trace red clay	5.04	1.09	0.048
10	11	mid brown to red brown clay with sparse to minor soft dark green serpentinite	8.94	0.835	0.050
11	12	green brown clay with minor soft light green to dark green serpentinite rock chips	4.72	1.31	0.055
12	13	green brown >> red clay with minor soft light green to dark green serpentinite rock chips	8.48	1.07	0.020
13	14	green brown clay with minor soft light green to dark green serpentinite rock chips	7.00	1.12	0.032
14	15	dirty green serpentinite rock flour and chips with trace red brown clay and trace fibrous white mineral	7.32		
15	16	crushed hard light green serpentinite	4.80		
		END OF HOLE AT 16m			
		hole dry to 4m then damp			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S024

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	dark brown clay with trace soft white serpentinite	4.12	0.595	0.050						
2	3	decomposed light green to dark green serpentinite	9.28	0.540	0.027						
3	4	decomposed dirty green serpentinite	8.64	0.650	0.035						
4	5	light green serpentinite rock flour and chips	8.84	0.320	0.013						
5	6	decomposed dark green serpentinite	5.80	0.650	0.028						
6	6.5	light brown green serpentinite rock flour and chips	1.84	0.570	0.021						
		END OF HOLE AT 6.5m									
		hole dry to 6.5m									

231087

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S025

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	light brown topsoil and gravel	6.56	0.030	0.004
2	3	soft decomposed olive green serpentinite	8.50	0.425	0.021
3	4	ditto	5.72	0.470	0.019
4	5	decomposed white and dirty green serpentinite	1.96	0.225	0.016
5	6	ditto	0.72	0.195	0.011
6	7	ditto	0.56	0.275	0.016
		END OF HOLE AT 7m			
		hole dry to 7m			

231088

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S026

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	mid brown clay	6.64	0.225	0.013						
2	3	ditto	7.20	0.060	0.003						
3	4	light brown clay	6.48	0.034	0.004						
4	5	ditto	7.52	0.039	0.003						
5	6	ditto	5.36	0.035	0.004						
6	7	ditto	6.08	0.026	0.002						
7	8	tan clay	6.94	0.024	<.002						
8	9	ditto	7.54	0.027	<.002						
9	10	mid brown to dark brown clay	8.14	0.095	0.014						
10	11	mauve brown clay	7.88	0.105	0.035						
11	12	mid brown to green brown clay	8.80	0.365	0.100						
12	13	ditto	8.76	0.410	0.075						
13	14	mid brown clay	8.26	0.385	0.095						
14	15	green brown clay	9.40	0.370	0.100						
15	16	mid brown >> yellow clay	7.34	0.420	0.115						
16	17	mid brown >> red clay	5.12	0.845	0.130						
17	18	mid brown to green brown clay	8.16	1.40	0.090						
18	19	green brown clay with sparse dark green serpentinite rock chips	6.44	1.58	0.065						
19	20	decomposed dirty green serpentinite with sparse to minor dark green serpentinite rock chips	4.88	2.09	0.065						
20	21	decomposed dirty green serpentinite with sparse dark green serpentinite rock chips	5.40	2.09	0.075						
21	22	ditto	7.64	1.87	0.060						
22	23	decomposed dirty green serpentinite with sparse white serpentinite rock chips	4.66	2.28	0.060						
23	24	ditto	3.94	1.76	0.045						
24	25	light green serpentinite rock flour and chips	8.96	0.935	0.014						
25	26	ditto	5.68	0.445	0.012						
		END OF HOLE AT 25m									
		hole dry to 15m then damp to 25m then hit water									

231089

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S027

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	mid brown clay with trace serpentinite (contamination from previous hole)	6.08	0.160	0.009
2	3	mid brown to red brown clay with trace serpentinite (contamination from previous hole)	8.24	0.080	0.008
3	4	mid brown to red brown clay	7.08	0.095	0.006
4	5	light brown to mid brown clay	6.76	0.295	0.021
5	6	light brown = red clay	7.76	0.160	0.013
6	7	light brown = red clay with trace soft very weathered bright green serpentinite	7.68	0.125	0.008
7	8	red clay with trace soft white serpentinite	6.98	0.095	0.005
8	9	ditto	6.24	0.170	0.010
9	10	mid brown to red clay	6.56	0.185	0.028
10	11	mid brown to red brown clay with trace soft green serpentinite	6.20	0.145	0.040
11	12	ditto	7.28	0.120	0.034
12	13	mid brown to red brown clay with trace soft white to green serpentinite	7.64	0.310	0.065
13	14	mid brown clay with sparse to minor soft light green to dark green serpentinite	8.00	1.02	0.075
14	15	soft very weathered dirty olive green serpentinite with minor red clay	5.20	1.81	0.140
15	16	soft weathered light green to olive green serpentinite with minor red clay	10.70	1.16	0.055
16	17	green >> red clay with sparse soft light green to dark green serpentinite	5.84	0.825	0.019
17	18	light green to dark green serpentinite rock flour and chips	5.68	0.780	0.024
18	19	ditto	6.84	0.780	0.026
19	20	light green to dark green serpentinite rock flour and chips with trace fibrous white mineral	5.72	0.655	0.020
		END OF HOLE AT 20m			
		hole dry to 12m then damp then hit water at 19m			

231090

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S028

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	red brown to dark brown clay	6.24	0.675	0.050						
2	3	soft dirty green and white serpentinite	7.96	1.06	0.032						
3	4	ditto	5.62	0.860	0.014						
4	5	ditto	8.48								
5	6	dirty green serpentinite and common fibrous white mineral	6.72								
6	7	brown green serpentinite rock flour and chips	8.32								
7	8	brown green serpentinite rock flour and chips	8.48								
		END OF HOLE AT 8m									
		hole dry to 8m									

231091

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S029

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	light green serpentinite rock flour and chips		0.420	0.014						
2	3	light green serpentinite rock flour and chips		0.270	0.012						
		END OF HOLE AT 3m									
		hole dry to 3m									

231092

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S030

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	dark brown clay	4.12	0.200	0.006						
2	3	decomposed dirty brown green serpentinite with trace white serpentinite	8.92	0.535	0.022						
3	4	ditto	7.64	0.520	0.028						
4	5	light green serpentinite rock flour and chips with common fibrous white mineral	5.48								
5	6	ditto	7.36								
6	7	medium green serpentinite rock flour and chips	7.92								
7	8	light green serpentinite rock flour and chips with sparse fibrous white mineral	8.96								
8	9	light green serpentinite rock flour and chips with common fibrous white mineral	8.42								
		END OF HOLE AT 9m									
		hole dry to 9m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S031

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	red brown clay with sparse serpentinite (contamination from previous hole)	5.86	0.200	0.014
2	3	red brown and mid brown clay	5.76	0.200	0.020
3	4	mid brown clay	4.98	0.385	0.035
4	5	light brown clay	7.96	0.315	0.028
5	6	ditto	6.36	0.275	0.125
6	7	dark brown clay	5.76	0.600	0.095
7	8	mid brown clay = decomposed dark brown green serpentinite	3.04	0.700	0.065
8	9	red brown clay = decomposed dark brown green serpentinite	5.02	1.12	0.060
9	10	decomposed dirty green serpentinite	4.72	1.17	0.048
10	11	decomposed dirty green serpentinite with sparse brown clay	4.26	1.07	0.055
11	12	decomposed dirty green >> white serpentinite	4.68	1.44	0.065
12	13	decomposed brown green serpentinite	4.94	1.71	0.055
13	14	ditto	4.00	1.53	0.055
14	15	decomposed olive green > white serpentinite	5.24	1.33	0.040
15	16	ditto	5.60	1.07	0.033
16	17	ditto	8.68	0.325	0.017
17	19	decomposed brown green serpentinite	5.40	0.580	0.016
19	20	light green serpentinite rock flour and chips	7.54	0.455	0.015
		HOLE ENDS AT 20m			
		hole dry to 15m then wet			

231094

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S032

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	red brown clay	4.32	0.150	0.013						
2	3	ditto	5.48	0.090	0.011						
3	4	red brown clay with minor ironstone pebbles	8.68	0.080	<0.002						
4	5	ditto	9.20	0.220	0.014						
5	6	light brown clay with sparse olive green soft very weathered serpentinite	6.96	1.03	0.024						
6	7	ditto	5.96	1.23	0.045						
7	8	white to olive green very weathered decomposed serpentinite with minor chips of serpentinite rock	5.48	1.50	0.039						
8	9	ditto	5.66	1.72	0.033						
9	10	ditto	6.40	1.47	0.032						
10	11	olive green and minor white decomposed serpentinite and minor serpentinite rock chips	4.80	1.08	0.024						
11	12	olive green to dirty green decomposed serpentinite and minor serpentinite rock chips	9.50	0.290	0.007						
12	13	dirty green decomposed serpentinite and minor white serpentinite rock chips	8.24	0.295	0.005						
13	14	ditto	7.76	0.360	0.006						
14	15	dirty green serpentinite rock flour and chips	10.92	0.215	0.006						
		END OF HOLE AT 15M									
		hole dry to 15m									

231095

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S033

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	white quartz gravel grading to mid brown clay with trace light green serpentinite rock flour (contamination from the end of the previous hole)	9.78	0.075	0.005						
2	3	light brown clay	7.58	0.060	0.003						
3	4	ditto	5.96	0.090	0.005						
4	5	mid brown clay with sparse light green serpentinite rock chips	3.20	0.115	0.007						
5	6	ditto	5.60	0.200	0.036						
6	7	ditto	6.40	0.265	0.145						
7	8	mid to green brown clay	5.44	0.445	0.130						
8	9	olive green soft very weathered decomposed serpentinite	5.90	0.610	0.050						
9	10	olive green >> light green soft weathered very decomposed serpentinite	5.64	0.675	0.033						
10	11	olive green soft weathered very decomposed serpentinite with common hard dark green serpentinite rock chips	6.58	0.550	0.034						
11	12	olive green soft weathered very decomposed serpentinite grading to light green weathered serpentinite	4.60	0.450	0.030						
12	12.25	light to dark green serpentinite rock chips	0.92	0.230	0.015						
		END OF HOLE AT 12.25									
		hole dry to 4m, then damp									

23109 6

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S034

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	ironstained quartz gravel grading to green brown clay	10.10	0.125	0.016
2	3	red brown >> green brown clay	6.36	0.090	0.017
3	4	green brown > red brown clay	10.08	0.115	0.017
4	5	green brown very decomposed serpentinite grading to clay	7.12	0.160	0.017
5	6	olive and dirty green very decomposed serpentinite with trace to sparse dark	6.30	0.765	0.105
		green serpentinite rock chips			
6	7	dark green >> olive green very decomposed serpentinite with trace to sparse	6.16	0.855	0.075
		dark green serpentinite rock chips			
7	8	ditto	4.48	0.775	0.055
8	9	ditto	5.66	0.555	0.037
9	10	olive green very decomposed serpentinite with sparse to minor dark green	9.08	0.655	0.038
		serpentinite rock chips; traces of a mineral with metallic lustre			
10	11	olive green > dirty green very decomposed serpentinite with sparse to minor	6.36	0.730	0.031
		dark green serpentinite rock chips	5.64	0.670	0.030
11	12	olive green to dirty green very decomposed serpentinite with common dark green			
		serpentinite rock chips			
12	13	ditto but wet	8.78	0.635	0.033
13	14	very wet dark green very decomposed serpentinite with common dark green	2.80	0.690	0.043
		serpentinite rock chips			
14	15	ditto	5.86	0.710	0.043
		END OF HOLE AT 15m			
		hole dry to 12m then wet			

231097

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S035

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	green and white serpentinite rock flour and chips	5.48	0.760	0.022						
2	3	dark green serpentinite rock flour and chips	10.56	0.305	0.012						
		END OF HOLE AT 3m									
		hole dry to 3m									

231098

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S037

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	brown clay and minor soft white serpentinite	2.80	0.915	0.027						
2	3	green serpentinite rock flour and chips	5.34	0.755	0.021						
3	4	ditto	8.20	0.350	0.014						
		END OF HOLE AT 4m									
		hole dry to 4m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S038

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	light brown to mid brown clay	2.16	0.350	0.014						
2	3	mid brown clay	1.94	0.615	0.027						
3	4	green brown clay	8.00	0.880	0.037						
4	5	decomposed green brown >> white serpentinite	6.44	1.14	0.037						
5	6	ditto	11.28	1.13	0.037						
		END OF HOLE AT 6m									
		hole dry to 3m then wet									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S039

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	decomposed olive green serpentinite with minor light brown clay	10.16	0.555	0.029
2	3	decomposed olive green serpentinite with sparse white to dark green serpentinite rock chips and sparse red brown clay	7.24	1.43	0.085
3	4	weathered light green to olive green serpentinite and sparse light green to dark green serpentinite rock chips and sparse red brown clay	6.36	1.59	0.095
4	5	weathered light green to olive green serpentinite and sparse light green to dark green serpentinite rock chips and sparse to minor red brown clay	7.50	0.535	0.029
5	6	weathered light green to olive green serpentinite and sparse light green to dark green serpentinite rock chips and sparse to minor red brown clay	5.88	1.19	0.055
6	7	decomposed dirty green >> light green serpentinite with trace dark green serpentinite rock chips	6.32	1.34	0.060
7	8	light green serpentinite rock flour and chips with sparse brown clay	5.06	0.935	0.030
8	9	light green serpentinite rock flour and chips	5.98	0.935	0.020
		END OF HOLE AT 9m			
		hole dry to 9m			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S040

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	decomposed brown and white serpentinite	5.20	0.875	0.029						
2	3	light green serpentinite rock flour and chips	6.20								
		END OF HOLE AT 3m									

231102

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S041

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	decomposed green and white serpentinite	7.18	1.14	0.017						
2	3	dirty white serpentinite rock flour	7.10	0.280	0.011						
		END OF HOLE AT 3m									
		hole dry to 3m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S042

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	red brown clay	3.40	0.155	0.011
2	3	dirty light green serpentinite rock flour and chips	6.50	0.340	0.017
3	4	light green serpentinite rock flour and chips	6.76	0.275	0.011
		END OF HOLE AT 4m			

231104

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S043

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	dirty green serpentinite rock flour and chips	2.80	0.320	0.043						
2	3	dark green serpentinite rock flour and chips	6.56	0.335	0.015						
		END OF HOLE AT 3m									
		hole dry to 3m									

231105

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S044

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	light green serpentinite rock flour and chips	6.46	0.330	0.011
2	3	light green serpentinite rock flour and chips with sparse fibrous white mineral	8.80		
		END OF HOLE AT 3m			

231106

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S045

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	light green serpentinite rock flour and chips	6.60	0.790	0.031						
2	3	ditto	4.74								
		END OF HOLE AT 3m									
		hole dry to 3m									

231107

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S046

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	no sample	-								
2	3	dirty green serpentinite rock flour and chips	5.24	0.520	0.020						
3	4	green and white serpentinite rock flour and chips	7.20	0.460	0.019						
		END OF HOLE AT 4m									
		hole dry to 4m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S047

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	mid brown clay	7.56	0.110	0.009						
2	3	dark brown clay	8.26	0.220	0.019						
3	4	red brown clay	6.20	0.495	0.070						
4	5	dark brown clay and decomposed dark green serpentinite	4.58	1.03	0.090						
5	6	decomposed dirty green and white serpentinite	5.28	0.565	0.039						
6	7	decomposed dirty green and white serpentinite	7.42	0.510	0.018						
7	8	decomposed dark green and white serpentinite	5.24	1.21	0.035						
8	9	light green serpentinite rock flour and chips	11.82	0.685	0.034						
		END OF HOLE AT 4m									
		hole dry to 9m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S048

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	mid brown clay with trace decomposed white serpentinite	5.92	1.51	0.140
2	3	red brown clay with sparse decomposed white serpentinite	7.12	0.640	0.049
3	4	ditto	6.96	0.875	0.049
4	5	ditto	7.74	0.720	0.027
5	6	brown clay with white serpentinite rock flour and chips	6.70	0.905	0.031
6	7	light green serpentinite rock flour and chips with trace fibrous white mineral	9.84		
		END OF HOLE AT 7m			
		hole dry to 7m			

231110

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S049

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	tan silty clay	8.44	0.055	0.002
2	3	light brown silty clay	6.78	0.028	<0.002
3	4	ditto	7.54	0.030	0.004
4	5	ditto	7.76	0.050	<0.002
5	6	pale brown silty clay	8.32	0.042	<0.002
6	7	ditto	9.56	0.036	0.006
7	8	light grey silty clay	5.32	0.019	0.003
8	9	ditto	7.60	0.018	<0.002
		END OF HOLE AT 9m			
		hole dry to 9m			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S050

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	2	green brown clay	7.04	1.06	0.029						
2	3	green brown clay and decomposed mid green serpentinite	7.70	1.19	0.024						
3	4	light green serpentinite rock flour and chips with trace white fibrous mineral	8.88								
		END OF HOLE AT 4m									
		hole dry to 4m									

231112

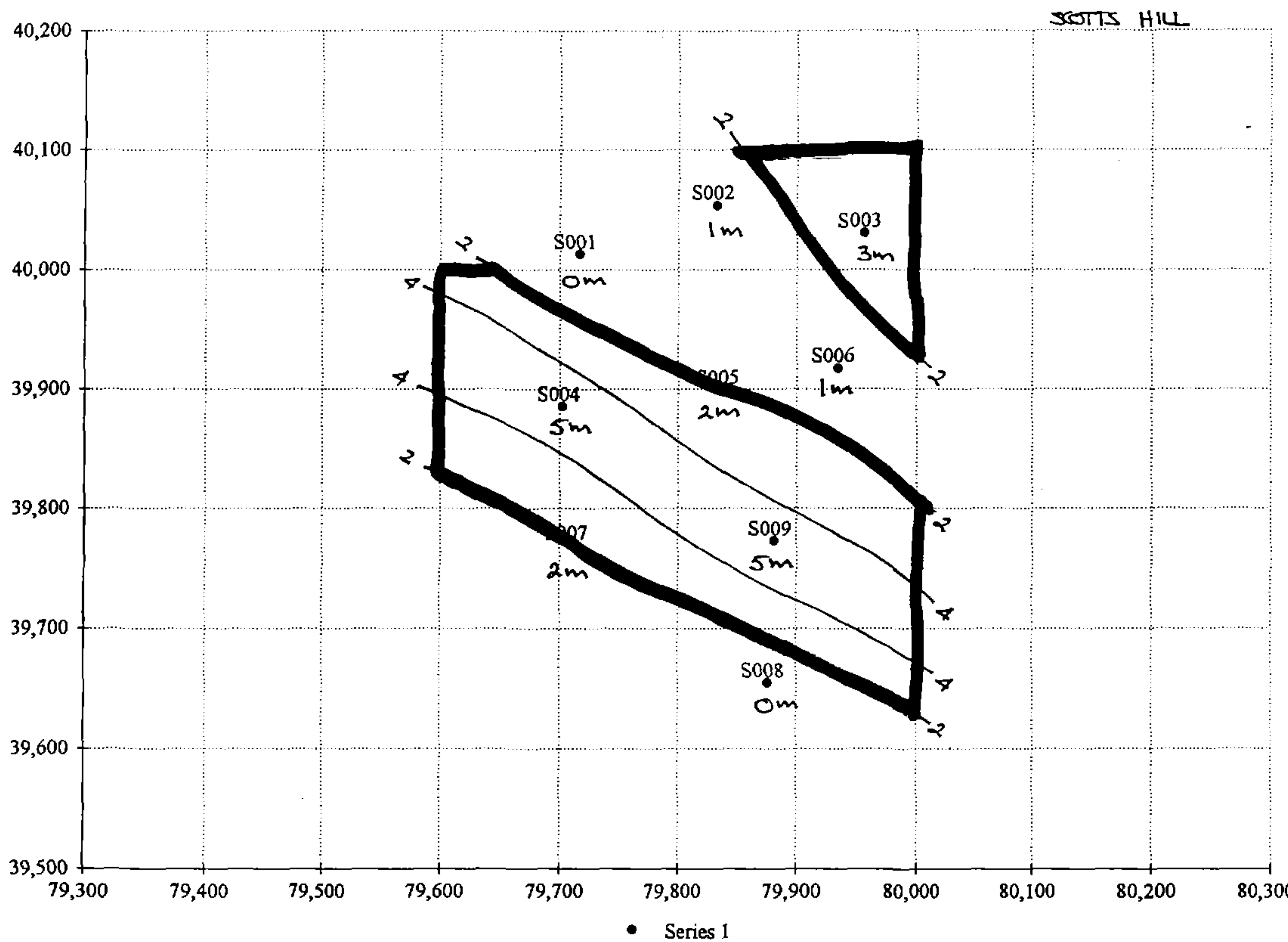
COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S051

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	light green serpentinite rock powder and chips with sparse brown clay and sparse fibrous white mineral	6.20								
2	3	light green serpentinite rock powder and chips with sparse to minor fibrous white mineral	8.10								
		END OF HOLE AT 3m									
		hole dry to 3m									

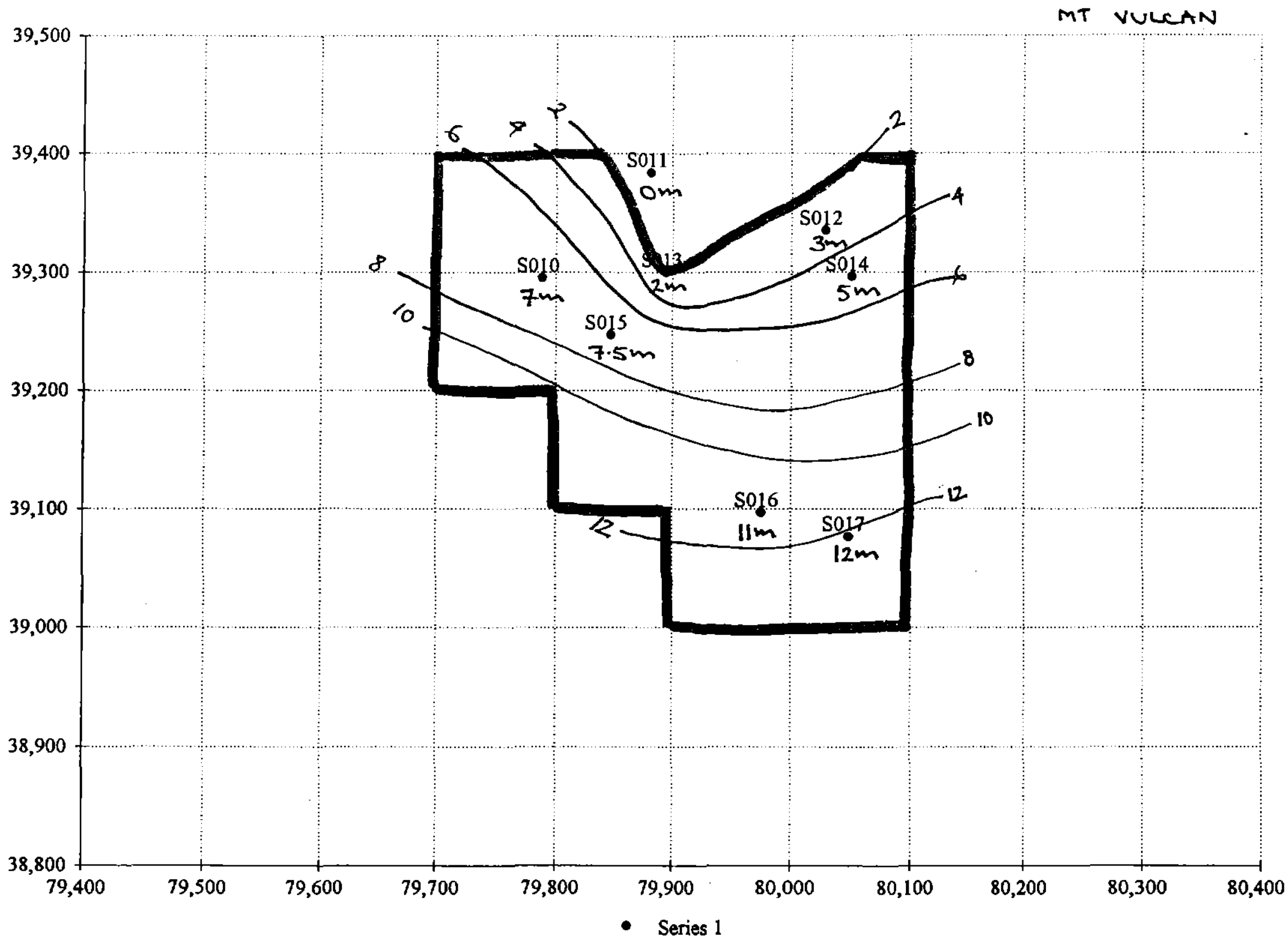
231113

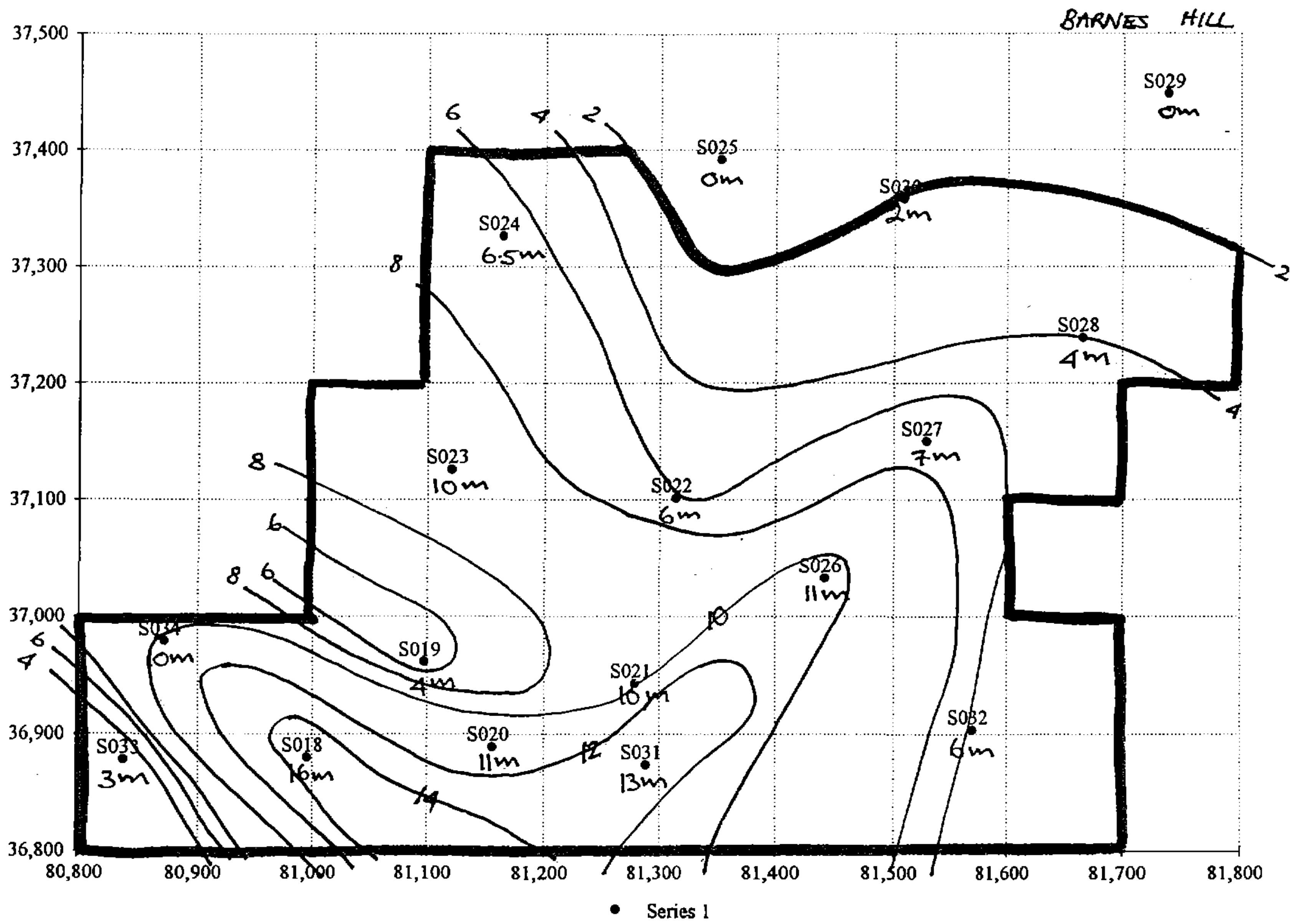
Appendix 4

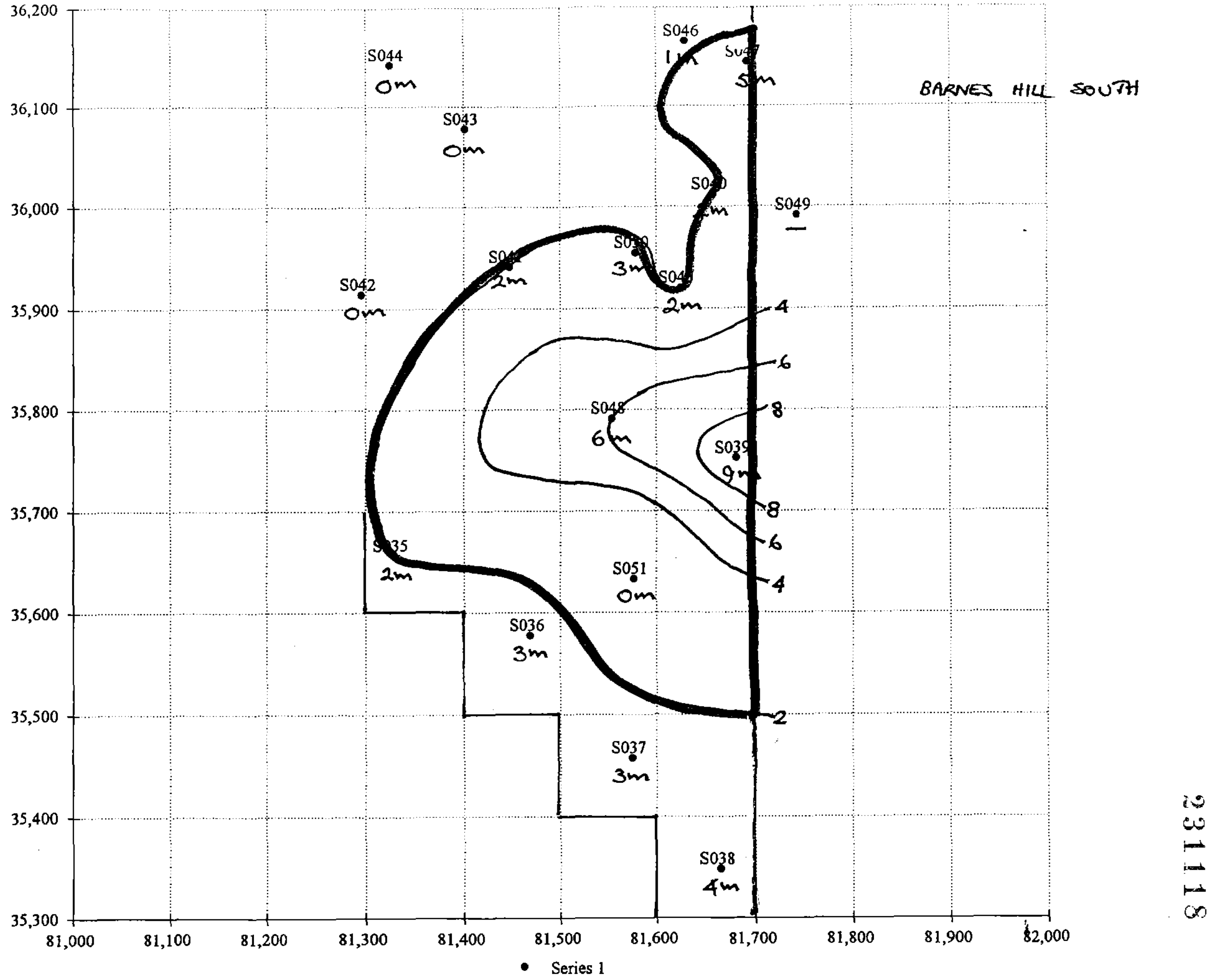
Resource outlines and thickness contours for the resource estimate


SCOTTS HILL
40,200
40,100
40,000
39,900
39,800
39,700
39,600
39,500
79,300
79,400
79,500
79,600
79,700
79,800
79,900
80,000
80,100
80,200
80,300
S001
0m
S002
1m
S003
3m
S004
5m
S005
2m
S006
1m
S007
2m
S008
0m
S009
5m
Series 1

231115


MT VULCAN
39,500
39,400
39,300
39,200
39,100
39,000
38,900
38,800
79,400
79,500
79,600
79,700
79,800
79,900
80,000
80,100
80,200
80,300
80,400
S011
0m
S012
3m
S013
2m
S010
7m
S014
5m
S015
7.5m
S016
11m
S017
12m
2
4
6
8
10
12
Series 1

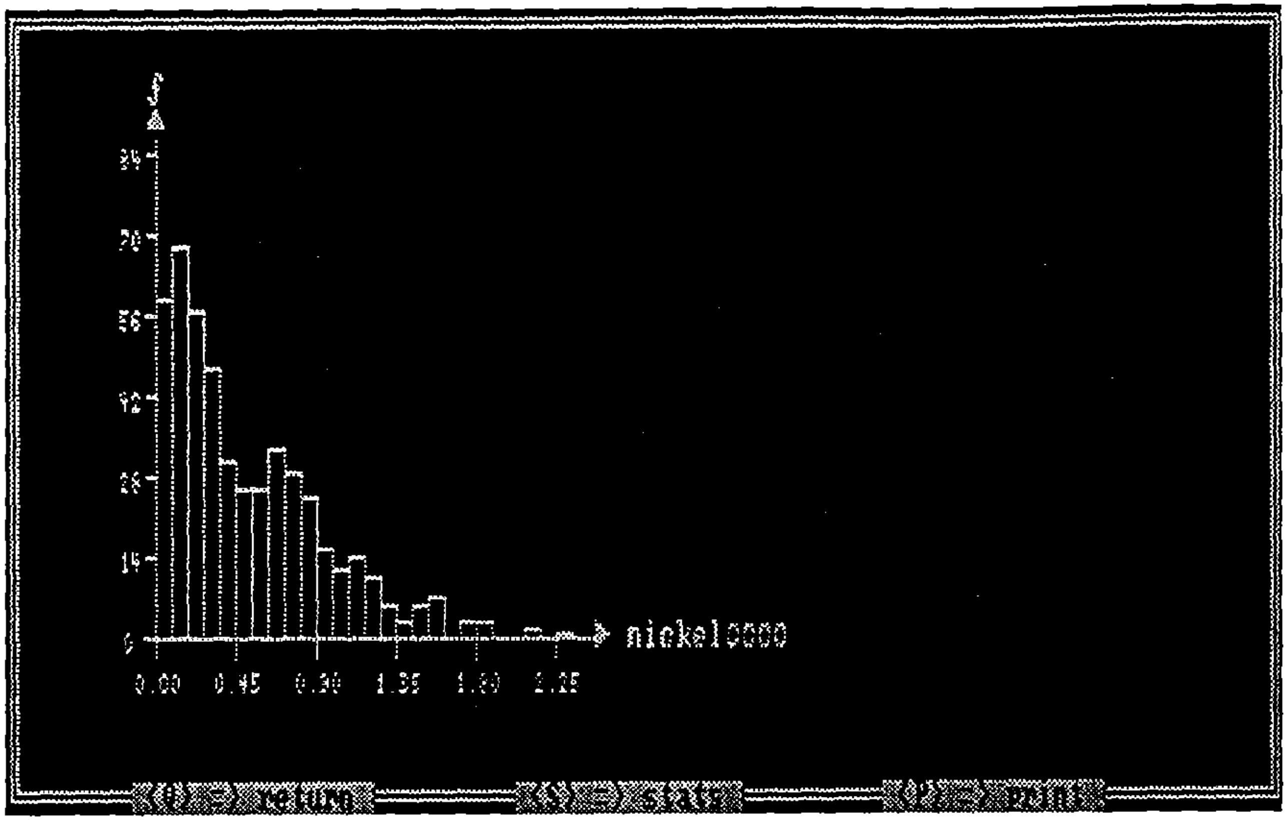

BARNES HILL
37,500
37,400
37,300
37,200
37,100
37,000
36,900
36,800
80,800
80,900
81,000
81,100
81,200
81,300
81,400
81,500
81,600
81,700
81,800
S029
0m
S025
0m
S030
2m
S024
6.5m
S028
4m
S027
7m
S023
10m
S022
6m
S026
11m
S034
0m
S019
4m
S021
10m
S032
6m
S020
11m
S031
13m
S033
3m
S018
16m
Series 1


BARNES HILL SOUTH
S044
0m
S043
0m
S046
S042
0m
S049
S048
6m
S039
9m
S035
2m
S051
0m
S036
3m
S037
3m
S038
4m
2
4
6
8
8
6
4
36,200
36,100
36,000
35,900
35,800
35,700
35,600
35,500
35,400
35,300
81,000
81,100
81,200
81,300
81,400
81,500
81,600
81,700
81,800
81,900
82,000
Series 1

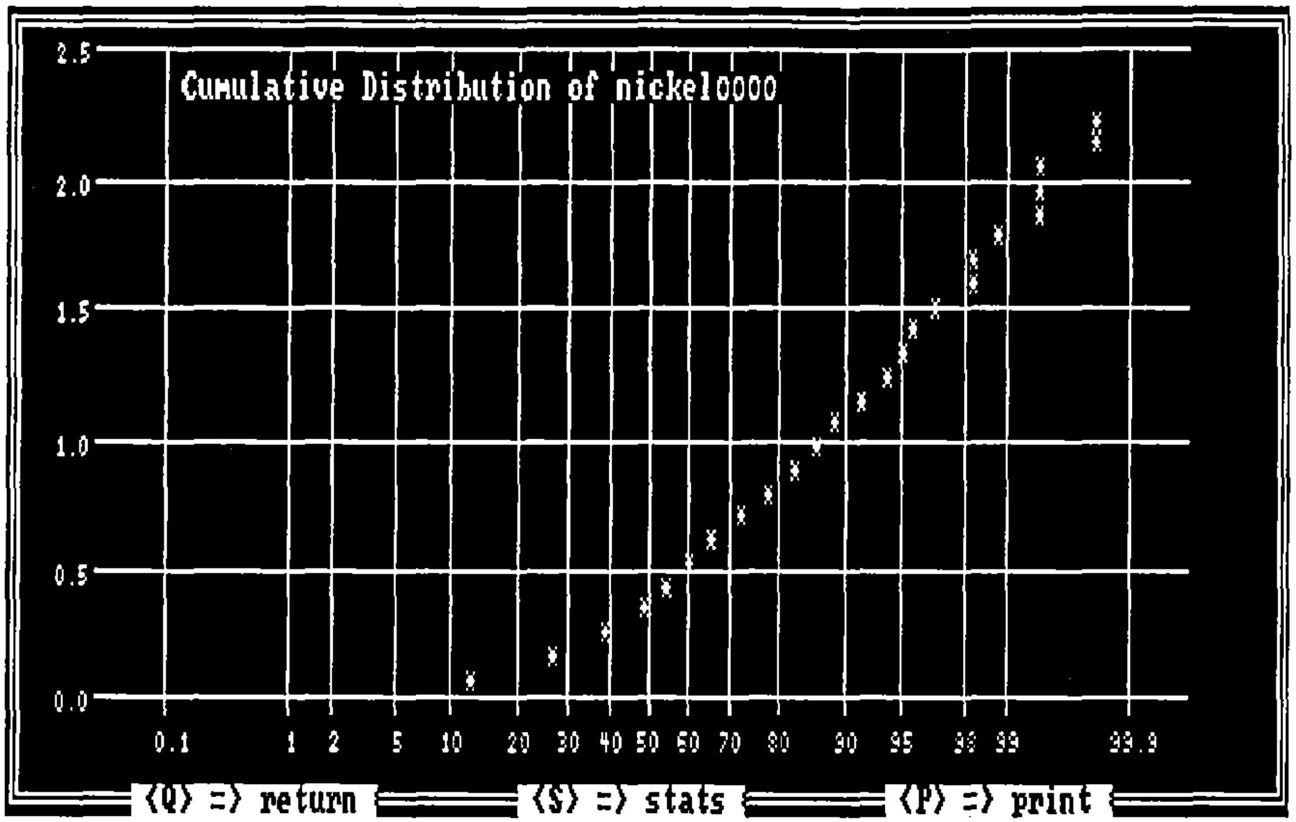
23118

Appendix 5

Frequency plots for the nickel analyses from samples from holes drilled during the drilling programme from February to March



231120


Cumulative Distribution of nickel0000
2.5
2.0
1.5
1.0
0.5
0.0
0.1 1 2 5 10 20 30 40 50 60 70 80 90 95 98 99 99.9
⟨Q⟩ => return
⟨S⟩ => stats
⟨P⟩ => print

231121

SCOTTS HILL RESOURCE
0.5 MT
0.98 Ni
0.06 Co
MT VULCAN RESOURCE
1.3 MT
0.95 Ni
0.06 Co
BARNES HILL RESOURCE
3.3 MT
1.03 Ni
0.07 Co
BARNES HILL SOUTH RESOURCE
1.0 MT
1.25 Ni
0.07 Co
Tattersalls Road
Greens Beach Road
Holwell Road
Hinds Road
E.L. 10/96 BOUNDARY
Scotts Hill
Mt. Vulcan
Dans Hill
Barnes Hill
Simmonds Hill
Beetree Area
5 440 000mN
5 439 000mN
5 438 000mN
5 437 000mN
5 436 000mN
5 435 000mN
480 000mE
481 000mE
482 000mE
483 000mE
LEGEND
Geology
Qa Quaternary alluvium and marsh
Qa Gravel talus
Young secondary cover rocks
Cc Tertiary poorly consolidated conglomerate
Ts Tertiary sand, clay, gravels
Weathered Cpy ?
TPl Pisolitic Ironstone
Older cover rocks
P Permian sandstone, mudstone, siltstone
Oct Ordovician Cabbage Tree Formation
Єs Cambrian Slate
pЄ Precambrian sandstone, slate, phyllite
Cpy Andersons Creek Ultramafic Complex Serpentinite, localised pyroxenite gabbron norite
ms included septa of metamorphic rocks
Geological Boundary
Fault
Drilling—Testing
Proposed borehole
BHP Boreholes (1967)
King Island Scheelite DDH (1967–68)
Allstate DDH (1970)
BHP DDH (1966)
Enterprise Exploration borehole
DOM DDH (1960)
DOM DDH (1970)
DOM DDH (1980)
BHP test pits (1967)
BHP excavations (1967)
Pre resource Ni Co mineralisation boundaries
? – indicates directions for possible extension of mineralisation
New resource
231122
98-4171
ANNUAL REPORT-ANDERSONS CK.
EL 10/96-ALLEGIANCE MINING
LA NEWNHAM VOL 1 OF 2
NEWNHAM EXPLORATION AND MINING SERVICES
Serving the Minerals Industry
ALLEGIANCE METALS N.L.
E.L. 10/96
ANDERSONS CREEK AREA
GEOLOGY, OLD DRILL HOLES AND OLD RESOURCE BOUNDARIES
DRAWN: L.A. Newnham
DATE : June 1996
DRAWN :
REVISIONS :
FILE No.
FIGURE No. 1
SCALE 1:5000

231123

98-4171

ANNUAL REPORT-ANDERSONS CK.
EL 10/96-ALLEGIANCE MINING
LA NEWNHAM VOL 1 OF 2

231124

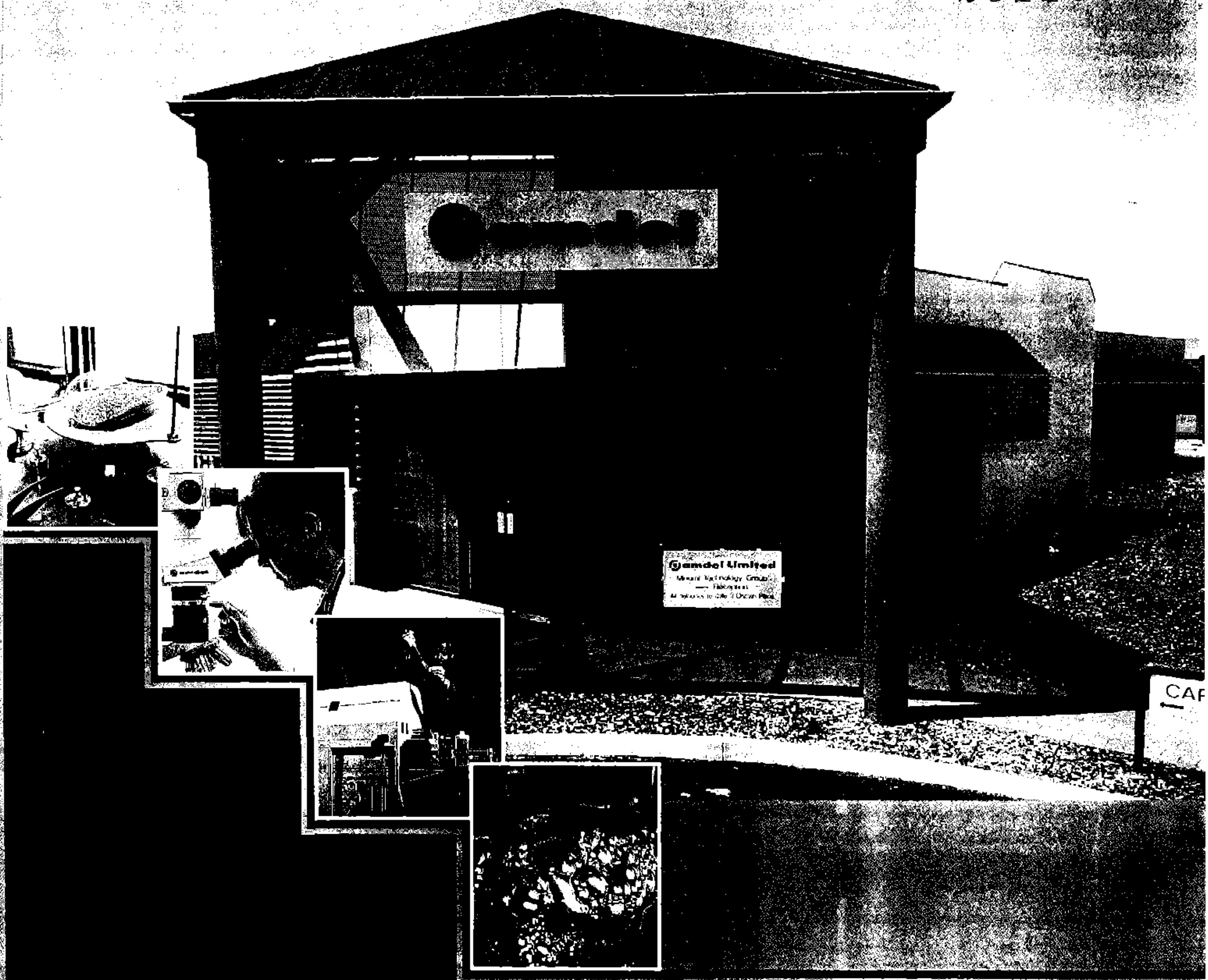
98-4171

ANNUAL REPORT-ANDERSONS CK.
EL 10/96-ALLEGIANCE MINING
LA NEWNHAM VOL 1 OF 2

NEWNHAM EXPLORATION AND MINING SERVICES *Serving the Minerals Industry*	
ALLEGIANCE METALS N.L. E.L. 10/96 ANDERSONS CREEK AREA GEOLOGY, EXISTING DRILL HOLES, PROPOSED DRILL HOLES AND NEW RESOURCE BOUNDARIES	DRAWN: L.A.Newnham
	DATE : June 1996
	DRAWN :
	REVISIONS :
	FILE No.
SCALE 1:5000	FIGURE No. 3

APPENDIX B

231126



REPORT G686300G/97

MINERALOGY OF ELEVEN LATERITE SAMPLES

231127

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Mineral Services Laboratory

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QUALITY MANAGEMENT SYSTEM

28 August 1997

McKeown Mining Pty Ltd
PO Box 50
RIDGLEY TAS 7321

Attn: Mr Mick McKeown

REPORT G686300G/97

MINERALOGY OF ELEVEN LATERITE SAMPLES

YOUR REFERENCE:	Fax of 7 July 1997
SAMPLE IDENTIFICATION:	S004 13-18, S009 8-13, S015 6-13, S017 5-11 and 11-17, S018 9-17 and 17-25, S026 16-21 and 21-26, S047 5-9 and S048 0-6.
MATERIAL:	11 nickel laterite samples
DATE SAMPLES RECEIVED:	8 July 1997
DATE AUTHORISATION RECEIVED:	8 July 1997
WORK REQUIRED:	Mineralogical analysis
INVESTIGATION AND REPORT BY:	Frank Radke
ELECTRON-PROBE MICROANALYSIS BY:	Dr Peter K Schultz
X-RAY DIFFRACTION BY:	Michael Till

Keith Henley

Dr Keith J Henley
Manager, Mineralogical Services

ck/cjc

McKeown Mining Pty Ltd

MINERALOGY OF ELEVEN LATERITE SAMPLES

CONTENTS

TABLES

MINERALOGY OF ELEVEN LATERITE SAMPLES

SUMMARY

Eleven nickel laterite samples submitted by McKeown Mining Pty Limited for mineralogical analysis have nickel contents ranging from 0.6 to 1.45% cobalt contents ranging from 600 to 1700 ppm. There is no correlation between the nickel and cobalt values.

Mineralogically these samples consist mainly of phyllosilicates, consisting of smectite and varying amounts of serpentine (variety lizardite). Some samples contain a clay mineral compositionally different from the more abundant smectite, but which could also be a smectite or possibly a highly degraded serpentine. The samples also generally contain goethite, magnetite, hematite and chromite. A manganese oxide mineral containing relatively high nickel and cobalt values was noted in most samples and could be present in all samples. Microcrystalline to cryptocrystalline quartz is also present in some samples and does contain low levels of nickel.

Electron-probe microanalysis of these samples shows that the smectite has relatively high nickel contents, ranging up to several percent. The other clay mineral, serpentine and goethite generally have somewhat lower nickel contents and the magnetite, hematite and chromite contain very low nickel values. The calculated mineralogical distributions of nickel in these samples are given in Table 17 and show that in most samples the nickel occurs mainly in smectite. Sample S015 6-13 has about equal proportions of nickel in serpentine smectite. Virtually all of the samples have low levels of nickel in goethite. Sample S018 9-17 has a small proportion of nickel in microcrystalline to cryptocrystalline silica. It is also thought that a small proportion of nickel occurs in a manganese oxide mineral, but this could not be quantified.

The mineralogical distribution of cobalt could not be calculated due to the low levels of cobalt in the samples and the low levels of cobalt in most of the minerals which are below the detection limit of the electron-probe microanalyses. It is thought that most of the cobalt in these samples also occurs in smectite, although a higher proportion of cobalt compared to nickel would occur in the manganese oxide mineral.

MINERALOGY OF ELEVEN LATERITE SAMPLES

1. INTRODUCTION

Eleven composite samples of nickel laterite were submitted by McKeown Mining Pty Limited for mineralogical analysis. A quotation for this work (Amdel quotation no. G9705-34) was sent to Mick McKeown of McKeown Mining Pty Limited on 26 May 1997. Preliminary results were sent to McKeown Mining Pty Limited and Lindsey Newnham at Newnham Exploration on 31 July 1997 and 13 August 1997 respectively and this report completes the investigation.

2. PROCEDURE

Each sample weighed approximately 2-3 kg and was received in a damp state. Each sample was dried and crushed to -1 cm. A riffled 1 kg portion of each -1 cm sample was crushed to -5 mm, and a riffled 500 g portion of each -5 mm sample was crushed to -1 mm. A riffled ¼ split of -1 mm material of each sample was pulverised.

Each pulverised sample was analysed for major elements (Amdel analytical code IC4) and for nickel and cobalt (Amdel analytical code MET 1). A portion of each pulverised sample was also examined by X-ray diffraction to identify the major minerals present.

Subsamples of pulverised material were taken and dispersed in water with the aid of deflocculants and a mechanical shaker, and allowed to sediment to produce -2 μm e.s.d. size fractions by the pipette method. The resulting dispersions were examined by plummet balance to determine their solids contents, and were then used to prepare oriented clay preparations on ceramic plates. Two plates were prepared per sample, both being saturated with Mg^{++} ions, and one in addition being treated with glycerol. When air-dry these were examined in the X-ray diffractometer.

Polished thin sections (TS C68455 - C68465) were made of riffled -1 mm portions of each sample and examined by transmitted and reflected light microscopy. Due to the fine intergrowth of most of the phyllosilicates and goethite, the relative proportions of these minerals could not be determined optically. Point counting was carried out to determine the proportions of chromite, magnetite, hematite and phyllosilicate/goethite present in each sample. A minimum of 300 points was counted on each sample. The point count data (volume %) were adjusted to weight percents using specific gravities of 4.5 for chromite, 5.18 for magnetite and 5.26 for hematite. For the fine intergrowths of phyllosilicates and goethite which were not further differentiated a specific gravity of 2.6 was used, except for the two goethite-rich samples (S009 8-13 and S026 16-21) for which this material was assumed to have a specific gravity of 3.0.

During optical examination, various areas were selected for electron-probe microanalysis of minerals. These areas were photographed in reflected light and minerals selected for analysis.

The electron-probe microanalysis was done with a Cameca SX-51 electron-microprobe in wavelength-dispersive mode. Minerals selected for analysis were analysed for nickel, cobalt, iron, manganese, chromium, silicon, titanium, aluminum, magnesium, calcium, sodium and potassium. Operating conditions were 15 kV accelerating voltage and 20 nA beam current with counting times of 10 seconds on the peak and 5 seconds on the background on both sides of the peak for most elements, and 20 seconds on the peak with 10 seconds on the background on both sides of the peak for cobalt and nickel. These operating conditions give detection limits of 0.1% for most elements and 0.05% for cobalt and nickel. For magnetite and hematite, only nickel and cobalt contents are reported. The electron-probe microanalyses were sorted by mineral, and within each mineral, by increasing nickel content, and average compositions were calculated for minerals in each sample which had several point analyses.

The mineralogy of each sample was determined using the absolute proportions for chromite, magnetite and hematite determined by point counting. The amount of iron in these minerals was determined assuming the magnetite and hematite were stoichiometric and that the chromite contained the average iron content determined by electron-probe microanalysis. The amount of iron in these minerals was subtracted from the iron analysis and a best-fit least-squares programme was used to calculate the remaining mineralogy. In calculating the remaining mineralogy, most samples were assumed to consist of smectite, serpentine and goethite although in a small number of samples another clay mineral compositionally different from the typical smectite, or quartz (microcrystalline silica), was also included in this calculation. In calculating mineral compositions, only silicon, aluminum, magnesium and residual iron (iron not in chromite, magnetite or hematite) were used. Mineral compositions used in these calculations were the average values determined by electron-probe microanalysis.

The calculated mineral proportions and average nickel contents of the minerals determined by electron-probe microanalysis were used to calculate the overall mineralogical distribution of nickel in each sample.

3. CHEMICAL ANALYSES

The chemical analyses of the eleven laterite samples are given in Table 1. The samples consist mainly of silicon, aluminum, iron, magnesium and LOI (loss on ignition at 1000°C). Only minor amounts of titanium, manganese, calcium, sodium, potassium and phosphorus are present in these samples. The nickel contents of these samples range from 0.6 to 1.45% nickel and the cobalt contents from 600 to 1700 ppm cobalt. There is no correlation between the nickel and cobalt contents of these samples, indicating that the nickel and cobalt have different mineralogical sites, at least in part.

4. MINERALOGY

The bulk mineralogies of these samples as determined by X-ray diffraction analysis are given in Table 2 using the listed semi-quantitative abbreviations. Both the bulk sample and a -2 µm sedimented sample were examined by X-ray diffraction. The -2 µm fraction was used to assist in the identification of the clay mineral, which in all cases turned out to be mainly a smectite.

Also given in Table 2 is the % solids in the dispersion used to prepare oriented plates as determined with a plummet balance. This figure would depend largely on the pretreatment conditions.

Optical examination of the samples does not permit identification of most of the minerals due to the fine intergrowths of clay minerals and goethite although the presence of magnetite and hematite in these samples was confirmed optically. In addition to the minerals listed in Table 2, other minerals were noted in these samples during optical examination. Chromite is present in all of the samples at levels of 1% or less. Microcrystalline to cryptocrystalline quartz occurs in samples S018 17-25, S026 16-21 and S026 21-26. Small amounts of enstatite were noted in samples S009 8-13 and S004 13-18.

The samples also contain some minerals which were only identified after electron-probe microanalysis. These minerals include a manganese oxide mineral with variable and high nickel and cobalt contents which optically cannot be distinguished from goethite. This mineral was found in most samples during electron-probe microanalysis of possible goethite grains and could occur in all of the samples. Two samples (S017 5-11 and S017 11-17) contain a mineral optically identified as goethite but which also has a significant chromium content, suggesting it could be a chrome goethite or possibly an intergrowth of goethite and bracewellite.

5. MINERAL COMPOSITIONS

The phyllosilicate (serpentine, smectite and clay) and goethite compositions as determined by electron-probe microanalysis are given in Tables 3-13 for samples S004 13-18 to S048 0-6 respectively. In addition, analyses of enstatite in sample S009 8-13 are given in Table 4. Analyses of microcrystalline silica (termed quartz) in samples S018 9-17, S018 17-25 and S026 21-26 are given in Tables 8, 9, and 11 respectively. The analyses in these tables have been arranged in order of increasing nickel content.

Chromite compositions in all eleven samples are given in Table 14 and compositions of the manganese oxide mineral are given in Table 15. The chromite analyses have been arranged by increasing chromium content. It is worth noting that the manganese oxide mineral has quite high nickel and cobalt contents. The nickel contents of this mineral are quite variable, ranging from about 2.5% NiO up to 16% NiO while the cobalt contents are much less variable, ranging from 3.6 to 7.1% CoO.

The nickel and cobalt contents of magnetite and hematite in these samples are given in Table 16. Sample S004 13-18 does not contain magnetite or hematite and some samples contain only very low levels of hematite as intergrowths with magnetite so separate hematite analyses were not carried out.

In general, the magnetite and hematite have low nickel contents although the magnetite in sample S047 5-9 has a moderate nickel content. Cobalt is not present to any degree in the magnetite/hematite in any samples.

6. CALCULATED MINERAL PROPORTIONS

The mineralogy of these samples are given in Table 17. As stated in Section 2 (Procedure), the amounts of magnetite, hematite and chromite were determined by point counting and the proportions of other minerals determined by a best-fit least-squares calculation using the chemical analyses and average mineral compositions for smectite, clay, serpentine, goethite and quartz. The mineral called clay in this list of minerals is compositionally different from the more common smectite but could be a somewhat different smectite or related to the degraded serpentine.

It can be seen from Table 17 that smectite, clay, serpentine, goethite and magnetite are the dominant minerals in most samples, although the relative proportions vary.

7. MINERALOGICAL DISTRIBUTION OF NICKEL

The mineralogical distributions of nickel in these samples given in Table 18 were calculated using the mineral proportions given in Table 17 and average nickel contents of the different minerals given in Tables 3 to 16.

Also given in Table 18 are the calculated absolute amount of nickel (as nickel oxide) in each mineral and a calculated total nickel content of the sample (Total) to be compared with the nickel content determined by chemical analysis (% NiO in sample). In general, the calculated nickel contents of these samples agree quite well with the nickel assays. The major discrepancies are for samples S009 8-13 and S018 9-17 which have somewhat lower calculated nickel contents compared to the nickel assays. Some samples, including S004 13-18, S026 16-21, S026 21-26 and S047 5-9, have slightly higher calculated nickel contents compared to the nickel assays, but these discrepancies are not large and are probably caused by experimental errors in either determination of mineral proportions or the average nickel contents of the various minerals.

From Table 18, it can be seen that for most samples the nickel occurs mainly in smectite. This is particularly true if the mineral termed clay is also assumed to be a smectite. Only sample S015 6-13 contains significant nickel in serpentine although minor nickel occurs in serpentine in many of the samples. Only a small proportion of the nickel occurs in goethite even in the goethite-rich samples and magnetite/hematite generally contains negligible nickel. Sample S018 9-17 had a high calculated microcrystalline silica content with moderate nickel values and a small proportion of nickel occurs in quartz in this sample. It is considered likely that minor nickel also occurs in microcrystalline to cryptocrystalline silica in some of the other samples. Some nickel would also occur in the manganese oxide mineral but the amount of nickel in manganese oxide could not be calculated. Sample S009 8-13 which has the worst agreement between the calculated and actual nickel contents also has the highest manganese content suggesting that its low calculated nickel content could be due to the presence of nickel in manganese oxides which were not included in the calcuation of the mineralogical distribution of nickel. The good agreement between the calculated and actual assays for most other samples indicate that they contain only minor nickel in the manganese oxide minerals.

8. MINERALOGICAL DISTRIBUTION OF COBALT

Due to the low cobalt values in the sample as well as the low levels of cobalt in most of the minerals which are at or below the detection limit for cobalt, a calculated mineralogical distribution of cobalt similar to that carried out for nickel could not be done. A much higher proportion of cobalt is thought to occur in the manganese oxide mineral since the cobalt levels of these samples are significantly lower than the nickel contents. It is likely that significant cobalt also occurs in the smectite with minor cobalt occurring in serpentine and goethite.

TABLES

TABLE 1: CHEMICAL ANALYSES OF ELEVEN LATERITE SAMPLES

Element	Unit	Sample No					
		S004	S009	S015	S017	S017	S018
		13 to 18	8 to 13	6 to 13	5 to 11	11 to 17	9 to 17
SiO2	%	44.6	23.6	34.8	32.0	37.2	46.7
TiO2	%	0.11	0.09	0.30	0.04	0.03	0.08
Al2O3	%	5.34	4.24	7.84	5.21	3.29	2.88
Fe2O3	%	20.5	46.8	23.5	38.9	23.1	29.3
MgO	%	8.83	10.4	17.1	7.84	20.3	3.83
MnO	%	0.36	0.78	0.32	0.46	0.32	0.24
CaO	%	0.38	0.31	0.14	0.14	0.10	0.09
Na2O	%	0.09	0.04	0.04	0.06	0.04	0.05
K2O	%	0.06	0.02	0.05	<0.01	0.01	0.02
P2O5	%	0.01	0.03	0.03	0.02	0.02	0.02
LOI	%	15.8	8.62	13.4	12.1	13.6	10.5
NiO	%	1.17	0.75	1.09	1.36	1.23	0.94
Co	ppm	750	1700	700	1050	600	850
Total		97.2	95.7	98.6	98.1	99.2	94.6

Element	Unit	Sample No				
		S018	S026	S026	S047	S048
		17 to 25	16 to 21	21 to 26	5 to 9	0-6
SiO2	%	55.2	31.4	42.3	38.8	32.9
TiO2	%	0.02	0.07	0.04	0.16	0.28
Al2O3	%	1.02	1.89	1.40	6.69	13.1
Fe2O3	%	17.2	45.2	19.4	19.4	25.3
MgO	%	12.6	3.61	21.5	19.9	10.2
MnO	%	0.22	0.51	0.20	0.22	0.20
CaO	%	0.04	0.10	0.09	0.08	0.08
Na2O	%	0.04	0.06	0.04	0.06	0.06
K2O	%	0.01	0.03	0.02	0.05	0.08
P2O5	%	0.01	0.01	0.02	0.02	0.03
LOI	%	11.7	11.7	12.2	13.5	15.4
NiO	%	0.99	1.84	1.56	0.95	1.20
Co	ppm	650	1150	550	700	1150
Total		99.1	96.4	98.8	99.8	98.8

TABLE 2 : MINERALOGY BY X-RAY DIFFRACTION OF ELEVEN LATERITE SAMPLES

Mineral	S004 13-18	S009 8-13	S015 6-13	S017 5-11	S017 11-17	S018 9-17	S018 17-25	S026 16-21	S026 21-26	S047 5-9	S048 0-6
Bulk Sample											
Unidentified clay	D	A	A	D	A	D	D	SD	A	A	D
Lizardite	-	A	D	A	D	Tr	A	Tr	D	D	A
Goethite	-	D	Tr-A	-	-	A	Tr	D	Tr	Tr	A
Magnetite	-	A	A	A	A	A	Tr-A	A	Tr-A	Tr-A	Tr
Hematite	-	-	-	A	Tr-A	Tr	-	A	Tr	-	Tr
Chlorite	-	-	-	-	-	-	-	-	-	A	A
Vermiculite	A	-	A	-	-	-	-	-	-	-	(?)Tr
Kaolinite	Tr	-	-	Tr	Tr	-	-	Tr	-	Tr	(?)Tr
Talc	Tr	Tr	-	-	-	-	-	-	-	-	-
Quartz	-	Tr	Tr	-	Tr	Tr	-	-	Tr	Tr	Tr
(?)Dolomite	Tr	Tr	-	-	-	-	-	-	-	-	-
-2 μm Fraction											
Smectite	D	D	D	D	D	D	D	D	D	D	D
Lizardite	-	Tr	Tr-A	Tr-A	A	Tr	Tr	Tr	A	A	Tr-A
Goethite	-	A	Tr	-	-	A	-	A	Tr-A	-	Tr
Chlorite	-	-	-	-	-	-	-	-	-	-	Tr-A
Vermiculite	Tr	-	-	-	-	-	-	-	-	-	-
Kaolinite	Tr	Tr	Tr	Tr	Tr	(?)Tr	-	Tr	-	Tr-A	(?)Tr
Talc	Tr	Tr	-	-	-	-	-	-	-	-	-
% Solids*	14	15	17	19	19	19	19	31	21	18	30

* % Solids in -2 μm fraction

Semi-quantitative abbreviations

D = Dominant. Used for the component apparently most abundant, regardless of its probable percentage level.

SD = Sub-dominant. The next most abundant component(s) providing its percentage level is judged above about 20.

A = Accessory. Components judged to be present between the levels of roughly 5 and 20%.

Tr = Trace. Components judged to be below about 5%.

TABLE 3: ELECTRON PROBE MICROANALYSES (WT%) OF MINERALS IN SAMPLE S004 13-18

Smectite

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	Fe2O3 *	Na2O	NiO	Total
1	55.1	0.00	2.04	3.27	5.23	0.22	26.4	0.00	1.06	93.3
2	55.6	0.18	9.19	1.00	11.60	0.21	20.4	0.00	1.08	99.3
3	53.0	0.10	2.81	1.59	5.55	0.26	27.6	0.00	1.09	92.0
4	52.7	0.00	2.78	1.61	6.12	0.17	24.8	0.00	1.18	89.4
5	56.5	0.00	2.48	1.43	6.46	0.25	27.0	0.10	1.25	95.5
6	54.5	0.00	1.33	0.68	6.97	0.22	26.5	0.00	1.28	91.5
7	56.4	0.12	3.17	2.28	5.27	0.20	26.1	0.00	1.40	94.9
8	58.1	0.00	2.46	2.58	4.51	0.26	27.4	0.00	1.42	96.7
9	52.6	0.00	0.17	2.94	4.77	0.22	26.9	0.10	1.67	89.4
10	55.5	0.00	0.44	1.71	6.51	0.22	28.9	0.00	1.75	95.1
11	54.6	0.00	0.17	2.25	5.84	0.18	25.7	0.00	1.94	90.6
12	54.6	0.00	0.37	3.74	4.70	0.20	24.9	0.00	2.04	90.5
13	56.5	0.00	0.49	2.96	5.00	0.17	26.6	0.00	2.05	93.8
14	54.6	0.00	0.24	2.62	5.54	0.17	23.4	0.12	2.20	88.8
15	55.1	0.00	0.22	3.74	5.04	0.18	25.2	0.00	2.39	91.9
Average	55.0	0.03	1.89	2.29	5.94	0.21	25.9	0.02	1.59	92.8

Clay

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	Fe2O3 *	K2O	NiO	Total
1	42.3	0.00	12.7	0.48	18.4	0.11	9.99	0.00	0.33	84.3
2	40.5	0.00	3.50	1.31	3.85	0.10	45.2	0.00	0.72	95.2
3	44.6	0.13	15.8	0.16	19.8	0.10	10.7	0.00	0.78	92.0
4	42.7	0.49	15.9	0.00	19.6	0.10	12.3	0.13	1.19	92.4
5	40.3	0.53	14.0	0.15	23.0	0.08	9.14	0.17	1.76	89.1
Average	42.1	0.23	12.4	0.42	16.9	0.10	17.5	0.06	0.96	90.6

Goethite

Analysis No.	SiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	CoO	NiO	Total
1	18.3	0.29	4.50	0.87	0.33	66.9	0.08	0.87	92.2

* Total Fe as Fe2O3

TABLE 4: ELECTRON PROBE MICROANALYSES (WT%) OF MINERALS IN SAMPLE S009 8-13

Serpentine

Analysis No.	SiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	NiO	Total
1	44.5	0.57	0.49	37.3	0.30	9.54	0.18	92.9
2	38.6	10.31	1.28	33.9	0.00	5.98	0.34	90.4
3	37.1	4.51	0.50	32.2	0.00	4.88	0.44	79.6
4	33.7	2.83	0.25	32.3	0.00	4.28	0.44	73.8
5	40.1	1.48	0.14	30.4	0.00	4.71	0.45	77.3
6	36.7	2.09	0.08	33.6	0.00	4.01	0.60	77.1
7	39.2	1.98	0.28	37.1	0.00	3.74	0.65	83.0
8	39.3	1.98	0.06	32.2	0.00	4.89	0.75	79.1
Average	38.6	3.22	0.38	33.6	0.04	5.25	0.48	81.6

Smectite

Analysis No.	SiO2	Al2O3	Cr2O3	MgO	CaO	Fe2O3 *	NiO	Total
1	61.3	0.34	0.36	31.2	0.00	4.00	0.07	97.2
2	61.0	0.22	0.29	29.9	0.00	4.88	0.07	96.4
3	61.4	0.48	0.47	30.7	0.00	4.31	0.11	97.5
4	59.2	0.59	0.71	27.4	0.00	5.64	0.14	93.7
5	58.5	0.33	0.46	28.6	0.22	4.44	0.21	92.8
6	60.0	0.58	0.69	27.2	0.00	5.97	0.26	94.6
7	46.2	2.07	2.90	4.77	0.23	21.8	1.87	79.8
8	57.2	1.91	4.62	4.56	0.28	25.0	2.50	96.0
9	56.1	1.57	4.44	5.09	0.25	22.9	3.77	94.1
Average	57.9	0.90	1.66	21.05	0.11	11.0	1.00	93.6

Goethite

Analysis No.	SiO2	Al2O3	Cr2O3	MnO	Fe2O3 *	NiO	Total
1	2.01	7.70	1.80	0.00	80.6	0.00	92.1
2	0.91	6.78	1.28	0.00	83.4	0.07	92.5
3	2.53	3.72	2.25	0.00	76.0	0.14	84.6
4	3.96	5.91	0.57	0.11	78.3	0.19	89.0
5	2.08	6.47	1.86	0.00	57.3	0.23	68.0
6	7.00	8.32	1.26	0.58	60.3	0.23	77.7
Average	3.08	6.48	1.50	0.12	72.6	0.14	84.0

Enstatite

Analysis No	SiO2	Al2O3	Cr2O3	MgO	CaO	MnO	Fe2O3 *	NiO	Total
1	59.0	0.52	0.25	33.7	0.40	0.10	6.73	0.00	100.6
2	57.1	0.49	0.40	38.3	0.40	0.24	7.15	0.05	104.1
3	57.4	0.45	0.29	38.3	0.42	0.16	7.37	0.08	104.4
4	57.3	0.64	0.45	38.4	0.52	0.16	7.43	0.10	105.0
5	57.3	0.52	0.33	38.6	0.43	0.16	7.17	0.14	104.6
Average	57.6	0.52	0.35	37.4	0.43	0.16	7.17	0.07	103.7

* Total Fe as Fe2O3

TABLE 5: ELECTRON PROBE MICROANALYSES (WT%) OF MINERALS IN SAMPLE S015 6-13

Serpentine

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	Fe2O3 *	NiO	Total
1	35.7	0.12	2.94	0.14	30.8	0.00	0.00	4.93	0.18	74.8
2	33.6	0.00	16.77	0.00	32.1	0.00	0.29	2.01	0.21	85.0
3	37.1	0.00	8.85	0.00	32.4	0.00	0.08	3.00	0.29	81.7
4	40.5	0.00	10.55	0.09	24.0	0.10	0.00	3.92	0.59	79.7
5	38.7	0.00	2.05	0.24	23.0	0.00	0.09	10.24	0.68	75.1
6	38.8	0.00	10.49	0.00	29.5	0.00	0.10	2.83	0.83	82.6
7	41.8	0.00	1.48	1.46	22.8	0.00	0.00	9.42	0.98	77.9
8	38.0	0.02	7.59	0.27	27.8	0.01	0.08	5.19	0.54	79.6
9	32.1	3.96	11.80	0.00	28.8	0.00	0.56	7.45	1.28	85.9
10	41.8	0.10	9.31	0.49	11.7	0.00	0.17	12.33	1.56	77.5
11	36.4	0.00	12.00	0.19	27.6	0.12	0.00	7.36	1.77	85.4
12	37.2	1.22	14.55	0.09	22.9	0.00	0.00	8.80	1.93	86.6
Average	37.6	0.45	9.03	0.25	26.1	0.02	0.11	6.46	0.90	81.0

Smectite

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	Fe2O3 *	NiO	Total
1	55.2	0.12	4.72	1.90	3.65	22.4	2.51	90.5

Goethite

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	NiO	Total
1	2.62	0.00	5.55	6.88	0.09	0.00	63.2	0.19	78.5
2	5.80	0.16	10.22	1.40	0.14	0.10	59.6	0.24	77.7
3	6.22	0.18	8.95	1.05	0.16	0.10	73.6	0.29	90.5
4	12.01	0.15	12.41	2.54	0.29	0.22	63.0	0.36	90.9
Average	6.66	0.12	9.28	2.97	0.17	0.11	64.8	0.27	84.4

* Total Fe as Fe2O3

TABLE 6: ELECTRON PROBE MICROANALYSES (WT%) OF MINERALS IN SAMPLE S017 5-11

Serpentine

Analysis No.	SiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	NiO	Total
1	32.2	17.5	0.39	32.5	0.00	3.05	0.12	85.7
2	40.9	12.5	0.15	33.1	0.00	5.74	0.59	92.9
3	39.4	3.25	0.15	34.7	0.00	3.94	0.62	82.0
4	37.7	2.51	0.21	32.4	0.00	3.96	0.77	77.5
5	34.1	1.97	0.20	28.3	0.00	4.46	0.89	69.9
6	34.9	2.60	0.67	25.5	0.00	4.98	1.11	69.8
7	32.9	5.92	0.26	26.5	0.12	7.60	1.19	74.4
Average	36.0	6.60	0.29	30.4	0.02	4.82	0.76	78.9

Smectite

Analysis No.	SiO2	Al2O3	Cr2O3	MgO	CaO	Fe2O3 *	NiO	Total
1	59.7	8.53	1.67	4.20	0.35	24.9	1.56	100.9
2	49.4	7.93	2.73	2.61	0.17	18.6	1.88	83.4
3	51.0	5.20	2.66	3.21	0.28	25.1	2.44	89.9
4	56.8	5.87	1.65	3.82	0.16	25.9	2.65	96.9
Average	54.2	6.88	2.18	3.46	0.24	23.6	2.13	92.8

Goethite

Analysis No.	SiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	NiO	Total
1	1.86	0.73	28.1	0.85	1.09	54.34	0.10	87.0
2	3.26	0.96	26.9	1.36	0.97	51.68	0.10	85.2
3	3.95	2.88	18.9	0.67	0.71	49.55	0.11	76.7
4	4.21	1.28	26.9	3.31	0.85	58.73	0.19	95.5
Average	3.32	1.46	25.2	1.55	0.91	53.6	0.12	86.1

* Total Fe as Fe2O3

TABLE 7: ELECTRON PROBE MICROANALYSES (WT%) OF MINERALS IN SAMPLE S017 11-17

Serpentine

Analysis No.	SiO2	Al2O3	Cr2O3	MgO	Fe2O3 *	NiO	Total
1	42.6	2.00	0.33	42.3	3.42	0.26	90.9
2	31.1	1.41	0.23	28.5	3.64	0.57	65.5
3	38.2	1.60	0.39	33.2	4.12	0.59	78.0
4	37.1	1.43	0.14	34.8	3.39	0.63	77.5
5	39.8	1.90	0.29	38.7	3.53	0.64	84.9
6	27.2	2.39	0.42	24.5	5.17	1.44	61.1
Average	36.0	1.79	0.30	33.6	3.88	0.69	76.3

Smectite

Analysis No.	SiO2	Al2O3	Cr2O3	MgO	CaO	Fe2O3 *	NiO	Total
1	47.3	4.97	0.87	4.25	0.19	21.8	1.85	81.2
2	55.9	4.04	3.93	4.97	0.21	22.5	2.66	94.2
3	53.6	3.69	0.88	6.59	0.13	24.5	2.71	92.0
4	62.1	2.76	1.18	9.23	0.20	22.5	2.89	100.9
Average	54.7	3.86	1.71	6.26	0.18	22.8	2.53	92.1

Goethite

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	NiO	Total
1	10.40	0.00	2.88	25.2	13.1	1.70	42.0	0.00	95.3
2	9.48	0.00	2.52	27.8	10.8	1.35	44.3	0.05	96.3
3	7.72	0.09	3.31	26.6	10.2	1.69	47.3	0.06	97.0
4	8.83	0.00	2.37	27.1	12.1	1.56	44.0	0.06	96.0
5	16.15	0.12	3.63	18.8	19.3	1.22	35.3	0.09	94.6
Average	10.52	0.04	2.94	25.1	13.1	1.50	42.6	0.05	95.8

* Total Fe as Fe2O3

TABLE 8: ELECTRON PROBE MICROANALYSES (WT%) OF MINERALS IN SAMPLE S018 9-17

Serpentine						
Analysis No.	SiO2	Al2O3	MgO	Fe2O3 *	NiO	Total
1	37.9	13.9	34.7	3.24	0.45	90.2
2	34.8	8.0	35.9	4.31	0.22	83.3
3	37.9	12.5	25.7	6.27	0.28	82.6
Average	36.9	11.5	32.1	4.61	0.32	85.4

Smectite										
Analysis No.	SiO2	Al2O3	Cr2O3	MgO	CaO	MnO	Fe2O3 *	CoO	NiO	Total
1	47.1	3.24	0.17	2.69	0.00	0.00	12.7	0.00	0.83	66.7
2	52.5	3.97	0.41	3.98	0.16	0.00	29.2	0.05	1.01	91.2
3	59.6	0.00	0.11	3.01	0.00	0.00	24.9	0.00	1.15	88.7
4	52.2	3.31	0.17	6.89	0.15	0.00	27.9	0.06	1.16	91.8
5	49.5	1.07	0.10	8.96	0.11	0.12	20.6	0.00	1.18	81.6
6	53.7	0.57	0.04	15.1	0.00	0.00	16.1	0.00	1.23	86.6
Average	52.4	2.03	0.17	6.76	0.07	0.02	21.9	0.02	1.09	84.5

Goethite										
Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	K2O	NiO	Total
1	9.8	0.50	14.4	0.87	0.18	0.02	45.1	0.00	0.08	70.9
2	4.6	0.00	2.15	1.10	0.00	0.00	80.1	0.00	0.15	88.1
3	12.6	0.52	12.1	1.15	0.22	0.00	38.6	0.10	0.15	65.5
4	23.5	0.65	19.6	0.98	0.28	0.04	40.2	0.13	0.18	85.6
5	4.6	0.04	5.59	1.52	0.09	0.12	72.3	0.00	0.20	84.5
6	20.6	0.58	8.30	0.70	1.19	0.00	42.8	0.00	0.48	74.6
Average	12.6	0.38	10.4	1.05	0.3	0.0	53.2	0.04	0.20	78.2

Quartz					
Analysis No.	SiO2	MgO	Fe2O3 *	NiO	Total
1	80.2	0.61	1.86	0.13	82.8
2	82.3	0.73	1.96	0.24	85.3
Average	81.3	0.67	1.91	0.19	84.0

* Total Fe as Fe2O3

TABLE 9: ELECTRON PROBE MICROANALYSES (WT%) OF MINERALS IN SAMPLE S018 17-25

Serpentine

Analysis No.	SiO2	MgO	Fe2O3 *	NiO	Total
1	45.5	43.1	2.82	0.25	91.7
2	45.1	42.7	2.70	0.32	90.8
3	44.6	43.1	2.64	0.36	90.7
4	34.2	30.4	3.10	0.46	68.1
5	43.9	33.1	4.71	0.81	82.5
Average	42.7	38.5	3.19	0.44	84.8

Smectite

Analysis No.	SiO2	Al2O3	Cr2O3	MgO	Fe2O3 *	NiO	Total
1	44.9	11.8	0.00	18.7	11.7	0.16	87.1
2	62.2	0.04	0.00	0.62	2.58	0.19	65.7
3	78.1	0.00	0.00	6.18	2.53	0.35	87.1
4	73.6	0.00	0.00	2.18	9.37	0.59	85.7
5	49.3	0.00	0.00	35.6	4.36	0.72	90.0
6	53.1	0.00	0.00	30.9	4.88	0.74	89.6
7	49.0	0.62	0.00	4.86	24.1	0.85	79.5
8	40.3	4.10	0.30	5.02	43.0	0.87	93.6
9	46.7	0.00	0.00	26.9	6.92	0.99	81.5
10	52.1	3.01	0.20	2.91	31.6	1.15	91.0
11	44.4	0.18	0.00	13.4	14.1	1.19	73.2
12	44.2	0.00	0.00	11.0	7.84	1.39	64.4
13	53.3	0.00	0.00	10.7	20.4	1.55	86.0
14	57.2	0.73	0.17	5.85	27.3	2.08	93.4
15	49.3	0.00	0.14	9.09	14.5	3.18	76.2
Average	53.2	1.36	0.05	12.3	15.0	1.07	82.9

Goethite

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	Fe2O3 *	NiO	Total
1	8.66	0.08	4.54	0.00	0.37	74.5	0.14	88.3
2	5.00	0.00	2.06	0.77	0.02	76.7	0.16	84.7
3	28.7	0.00	3.60	0.13	2.04	58.9	0.27	93.6
4	1.62	0.28	8.65	4.83	0.12	73.0	0.29	88.8
5	30.6	0.00	0.41	0.14	4.17	59.2	0.68	95.2
Average	14.9	0.07	3.85	1.17	1.34	68.4	0.31	90.1

Quartz

Analysis No.	SiO2	MgO	Fe2O3 *	NiO	Total
1	99.2	0.03	0.02	0.00	99.2
2	91.6	0.72	0.45	0.10	92.9
3	87.9	0.37	1.52	0.11	89.9
4	85.6	0.93	1.85	0.18	88.6
Average	91.1	0.51	0.96	0.10	92.6

* Total Fe as Fe2O3

TABLE 10: ELECTRON PROBE MICROANALYSES (WT%) OF MINERALS IN SAMPLE S026 16-21

Smectite

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	Fe2O3 *	Na2O	NiO	Total
1	53.7	0.00	0.14	1.76	4.80	0.11	23.5	0.00	2.47	86.5
2	55.6	0.00	0.42	0.59	8.77	0.10	24.2	0.09	3.01	92.9
3	53.2	0.00	2.15	0.60	5.05	0.17	32.1	0.00	3.09	96.4
4	48.2	0.00	0.83	0.57	7.12	0.00	22.7	0.00	3.16	82.5
5	55.7	0.00	0.40	1.51	7.46	0.15	23.4	0.00	3.43	92.1
6	54.0	0.13	2.57	0.26	7.88	0.20	23.2	0.17	3.68	92.1
7	49.5	0.00	0.42	1.42	6.39	0.16	22.4	0.00	3.93	84.2
8	55.4	0.00	1.45	0.80	5.60	0.21	26.3	0.10	4.01	93.9
9	54.6	0.12	2.62	1.56	4.32	0.17	25.1	0.10	4.06	92.6
10	54.8	0.00	0.14	1.82	5.65	0.17	26.2	0.10	4.18	93.0
11	54.6	0.00	0.13	0.57	7.64	0.15	25.3	0.00	4.24	92.6
12	54.8	0.00	0.59	1.37	6.07	0.24	22.5	0.00	4.72	90.3
13	57.0	0.00	0.44	2.91	6.00	0.13	24.0	0.10	4.78	95.4
14	47.5	0.00	0.00	1.38	4.09	0.00	19.5	0.00	7.76	80.2
Average	53.5	0.02	0.88	1.22	6.20	0.14	24.3	0.05	4.04	90.3

Goethite

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	NiO	Total
1	2.16	0.00	0.87	1.01	0.00	0.35	71.8	0.40	76.6
2	2.37	0.00	1.03	1.01	0.00	0.36	73.5	0.42	78.6
3	3.32	0.00	0.97	1.73	0.10	0.26	82.8	0.55	89.7
4	3.46	0.00	1.10	2.62	0.37	0.28	82.7	0.57	91.1
5	8.81	0.18	3.18	0.71	1.85	0.84	68.1	0.60	84.2
6	2.97	0.00	0.63	1.00	0.00	0.84	82.0	0.69	88.2
7	2.86	0.00	2.11	1.52	0.00	0.10	81.8	0.74	89.2
8	3.77	0.00	1.13	1.41	0.35	0.88	83.2	0.76	91.4
9	3.36	0.21	1.88	1.31	0.00	0.00	82.8	0.83	90.3
10	14.74	0.00	2.01	1.26	1.49	0.33	68.8	1.48	90.2
Average	4.78	0.04	1.49	1.36	0.42	0.42	77.7	0.70	87.0

Clay

Analysis No.	SiO2	Al2O3	MgO	MnO	Fe2O3 *	CoO	NiO	Total
1	85.6	0.01	0.04	0.01	0.13	0.00	0.00	85.8
2	89.8	0.00	0.09	0.01	0.24	0.02	0.09	90.3
3	79.4	0.23	1.03	0.00	2.91	0.00	0.16	83.8
4	77.2	0.26	0.68	0.00	1.90	0.00	0.22	80.3
5	79.8	0.17	1.11	0.00	2.42	0.00	0.31	83.8
6	75.8	0.11	0.26	3.06	0.79	0.60	0.92	81.5
Average	81.3	0.13	0.53	0.51	1.40	0.10	0.28	84.2

* Total Fe as Fe2O3

TABLE 11: ELECTRON PROBE MICROANALYSES (WT%) OF MINERALS IN SAMPLE S026 21-26

	Serpentine						
Analysis No.	SiO2	Al2O3	Cr2O3	MgO	Fe2O3 *	NiO	Total
1	44.5	0.11	0.00	42.8	4.29	0.00	91.7
2	44.9	0.16	0.00	43.7	4.29	0.05	93.2
3	44.4	0.11	0.39	45.6	2.79	0.09	93.4
4	44.5	0.00	0.00	44.0	1.69	0.19	90.4
5	43.7	0.00	0.00	44.7	2.46	0.20	91.0
6	45.6	0.00	0.00	44.0	2.21	0.26	92.0
7	43.6	0.00	0.00	43.7	3.21	0.28	90.8
8	46.2	0.00	0.00	42.6	2.49	0.29	91.6
9	45.8	0.00	0.00	43.8	2.40	0.29	92.2
10	45.6	0.16	0.14	43.5	2.68	0.30	92.4
11	44.7	0.00	0.00	45.7	2.36	0.31	93.0
12	44.8	0.00	0.00	45.4	2.76	0.32	93.3
13	45.7	0.00	0.00	43.7	2.18	0.38	91.9
14	47.6	0.00	0.00	42.4	2.30	0.67	93.0
15	44.6	0.11	0.41	41.7	2.80	1.18	90.8
Average	45.1	0.04	0.06	43.8	2.73	0.32	92.1

				Smectite					
Analysis No.	SiO2	Al2O3	Cr2O3	MgO	CaO	Fe2O3 *	Na2O	K2O	NiO	Total
1	59.2	0.00	0.13	31.0	0.00	2.33	0.00	0.00	0.92	93.6
2	40.5	0.46	0.44	8.34	0.10	20.3	0.00	0.00	2.16	72.3
3	47.2	0.13	0.98	6.95	0.16	25.4	0.00	0.00	3.39	84.2
4	58.7	0.30	1.43	6.74	0.23	25.4	0.21	0.28	4.07	97.3
5	56.3	0.00	1.67	5.48	0.19	26.2	0.00	0.00	5.21	95.0
Average	52.4	0.18	0.93	11.70	0.14	19.9	0.04	0.06	3.15	88.5

				Goethite				
Analysis No.	SiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	NiO	Total
1	2.96	1.18	0.78	0.09	0.31	63.9	0.45	69.7
2	2.87	2.05	0.59	0.13	0.44	71.3	0.49	77.8
3	4.65	1.32	1.07	0.28	0.06	83.7	0.65	91.7
4	20.3	2.57	0.85	3.11	0.29	51.8	1.43	80.4
Average	7.70	1.78	0.82	0.90	0.28	67.7	0.76	79.9

	Quartz		
Analysis No.	SiO2	Fe2O3 *	Total
1	98.9	0.14	99.0

* Total Fe as Fe2O3

TABLE 12: ELECTRON PROBE MICROANALYSES (WT%) OF MINERALS IN SAMPLE S047 5-9

Serpentine

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	Fe2O3 *	NiO	Total
1	33.2	0.00	0.46	0.00	33.9	0.00	0.00	4.09	0.24	71.9
2	31.8	0.23	15.1	0.00	35.5	0.19	0.18	7.19	0.27	90.5
3	44.4	0.00	0.15	0.00	44.4	0.00	0.00	2.85	0.29	92.1
4	34.1	0.00	0.30	0.00	35.8	0.00	0.00	3.06	0.31	73.6
5	39.2	0.00	0.54	0.10	37.7	0.00	0.00	4.26	0.31	82.1
6	39.8	0.00	0.30	0.17	38.8	0.00	0.00	3.97	0.41	83.5
7	38.3	0.00	0.81	0.00	36.5	0.00	0.00	4.31	0.57	80.5
8	33.8	0.00	0.78	0.17	34.6	0.00	0.00	4.77	0.59	74.7
9	35.0	0.00	0.48	0.00	33.5	0.00	0.00	4.14	0.61	73.8
Average	36.6	0.03	2.10	0.05	36.8	0.02	0.02	4.29	0.40	80.3

Smectite

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	Fe2O3 *	NiO	Total
1	59.3	0.00	6.40	0.61	4.93	27.5	2.01	100.8
2	49.1	0.12	4.87	0.38	16.4	21.4	2.11	94.3
3	54.3	0.00	3.66	0.69	4.35	27.9	2.66	93.5
4	58.3	0.00	2.48	1.43	8.58	21.6	3.42	95.9
Average	55.3	0.03	4.35	0.78	8.56	24.6	2.55	96.1

Goethite

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	K2O	NiO	Total
1	13.0	0.45	13.9	0.46	0.31	0.37	58.2	0.10	0.17	87.0
2	25.5	0.41	18.7	0.40	0.72	0.00	46.6	0.28	0.26	92.8
3	4.24	0.00	6.80	3.22	0.10	0.00	73.6	0.00	0.27	88.2
Average	14.3	0.29	13.1	1.36	0.38	0.12	59.4	0.13	0.23	89.3

Clay

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	Fe2O3 *	K2O	NiO	Total
1	31.9	0.17	15.3	0.00	35.1	6.11	0.00	0.26	88.9
2	34.6	0.09	12.7	1.11	37.2	5.11	0.21	0.50	91.4
3	32.3	0.80	21.6	0.41	1.32	25.4	0.24	0.55	82.6
4	31.9	0.47	14.8	0.36	7.32	17.4	0.23	0.76	73.2
Average	32.7	0.38	16.1	0.47	20.2	13.5	0.17	0.52	84.0

* Total Fe as Fe2O3

TABLE 13: ELECTRON PROBE MICROANALYSES (WT%) OF MINERALS IN SAMPLE S048 0-6

Serpentine

Analysis No.	SiO2	Al2O3	MgO	Fe2O3 *	NiO	Total
1	43.7	0.10	43.7	2.98	0.18	90.7
2	43.0	0.28	40.5	3.28	0.66	87.7
Average	43.4	0.19	42.1	3.13	0.42	89.2

Smectite

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	CaO	MnO	Fe2O3 *	CoO	NiO	Total
1	45.2	0.00	0.16	0.00	42.3	0.00	0.00	3.17	0.00	0.78	91.7
2	49.9	0.58	27.0	0.31	2.72	0.09	0.00	8.38	0.00	0.85	89.8
3	51.3	0.00	6.77	0.00	4.23	0.09	0.00	22.3	0.05	1.66	86.4
4	35.3	0.00	16.7	0.15	25.5	0.00	0.19	9.88	0.05	1.78	89.5
5	47.6	0.00	9.43	0.30	4.23	0.10	0.00	29.7	0.00	1.84	93.1
6	42.6	0.00	7.04	0.24	2.80	0.11	0.00	36.1	0.00	1.84	90.7
7	31.7	0.21	17.8	0.10	20.4	0.00	0.57	17.3	0.05	2.51	90.6
8	52.9	0.00	3.52	0.56	3.56	0.08	0.00	25.9	0.00	2.99	89.5
Average	44.6	0.10	11.0	0.21	13.2	0.06	0.10	19.1	0.02	1.78	90.2

Goethite

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	CoO	NiO	Total
1	9.42	0.09	2.55	25.7	11.9	1.66	43.5	0.00	0.00	94.8
2	6.0	0.00	7.10	0.17	0.30	0.00	73.4	0.00	0.38	87.3
3	21.7	0.26	13.7	0.45	0.98	0.00	56.1	0.00	0.38	93.6
4	19.1	0.30	18.1	0.66	0.59	0.00	53.3	0.00	0.40	92.4
5	13.0	0.23	14.5	0.78	0.57	0.00	62.8	0.00	0.46	92.2
6	14.7	0.11	10.6	0.94	0.49	0.18	63.8	0.06	0.48	91.3
7	14.8	0.00	11.2	0.46	0.48	0.00	64.2	0.00	0.63	91.8
8	12.4	0.00	5.67	0.58	0.46	0.00	68.6	0.00	0.75	88.5
9	9.64	0.00	11.0	0.54	4.28	0.00	66.0	0.00	1.75	93.2
Average	13.4	0.11	10.5	3.36	2.23	0.20	61.3	0.01	0.58	91.7

Clay

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	NiO	Total
1	28.3	0.00	18.6	0.00	24.2	1.30	15.5	0.13	88.0
2	29.5	0.00	19.0	0.00	28.5	0.48	12.5	0.19	90.2
3	38.9	0.00	17.1	0.00	30.5	0.21	4.58	0.35	91.7
4	36.8	0.33	25.5	0.22	1.26	0.00	17.5	0.49	82.1
5	48.2	0.11	9.91	0.46	3.70	0.00	15.5	1.64	79.5
6	39.8	0.00	20.4	0.00	11.9	0.00	17.0	3.39	92.6
Average	36.9	0.07	18.4	0.11	16.7	0.33	13.8	1.03	87.3

* Total Fe as Fe2O3

TABLE 14: ELECTRON-PROBE MICROANALYSES (WT%) OF CHROMITE IN ELEVEN LATERITE SAMPLES

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	CoO	NiO	Total
Sample S004 13-18										
1	0.00	0.17	7.30	60.8	10.8	0.00	19.7	0.00	0.00	98.7
2	0.00	0.20	7.30	61.8	10.9	0.00	19.2	0.05	0.00	99.5
3	0.00	0.17	8.30	61.9	12.3	0.00	17.0	0.00	0.11	99.7
4	0.00	0.21	8.52	62.2	11.3	0.00	17.1	0.10	0.07	99.5
5	0.00	0.21	7.30	62.4	11.5	0.00	18.5	0.00	0.00	99.9
6	0.00	0.19	7.74	62.8	11.0	0.00	17.2	0.00	0.00	98.9
Average	0.00	0.19	7.74	62.0	11.3	0.00	18.1	0.02	0.03	99.4
Sample S009 8-13										
1	0.00	0.12	10.8	58.4	9.21	0.00	19.2	0.00	0.00	97.7
2	0.00	0.10	9.76	59.7	8.67	0.00	19.7	0.00	0.00	98.0
3	0.00	0.15	9.86	60.5	8.01	0.00	19.8	0.00	0.00	98.4
4	0.00	0.00	8.25	60.9	8.50	0.00	20.3	0.00	0.00	97.9
5	0.00	0.12	8.09	61.3	7.59	0.00	20.6	0.00	0.00	97.7
Average	0.00	0.10	9.35	60.2	8.40	0.00	19.9	0.00	0.00	97.9
Sample S015 6-13										
1	0.00	0.24	6.76	55.9	4.83	0.00	28.5	0.00	0.00	96.2
2	0.00	0.31	5.23	56.1	3.44	0.00	29.4	0.00	0.00	94.5
3	0.00	0.12	6.44	57.1	7.40	0.00	24.0	0.00	0.00	95.0
4	0.00	0.00	6.30	59.5	7.20	0.00	22.6	0.00	0.00	95.7
Average	0.00	0.17	6.18	57.2	5.72	0.00	26.1	0.00	0.00	95.3
Sample S017 5-11										
1	5.44	0.00	0.95	20.7	5.79	1.32	58.3	0.00	0.00	92.5
2	1.77	0.00	1.15	28.5	2.92	1.48	58.6	0.00	0.05	94.5
3	0.00	0.00	25.2	39.4	11.7	0.00	19.9	0.00	0.11	96.4
4	0.00	0.00	23.3	41.0	11.5	0.00	19.9	0.00	0.10	95.8
5	0.00	0.00	25.0	41.2	13.3	0.00	17.1	0.00	0.16	96.9
6	0.10	0.00	13.9	51.1	9.12	0.00	19.6	0.00	0.00	93.7
Average	1.22	0.00	14.9	37.0	9.07	0.47	32.2	0.00	0.07	95.0
Sample S017 11-17										
1	3.64	0.00	0.43	23.3	4.10	1.19	66.3	0.00	0.06	99.0
2	2.95	0.00	0.54	26.1	4.41	1.43	64.2	0.00	0.04	99.6
3	0.00	0.12	12.9	54.8	10.3	0.00	21.9	0.00	0.00	100.0
4	0.00	0.16	11.9	55.3	9.65	0.00	23.5	0.00	0.00	100.5
5	0.00	0.15	12.1	55.6	7.14	0.00	21.9	0.00	0.07	97.0
6	0.00	0.29	9.84	58.5	7.40	0.00	21.7	0.00	0.04	97.8
Average	1.10	0.12	7.93	45.6	7.17	0.44	36.6	0.00	0.04	99.0
Sample S018 9-17										
1	0.11	0.21	6.04	61.3	8.50	0.00	23.1	0.00	0.06	99.3
2	0.00	0.00	5.78	63.9	11.8	0.00	18.2	0.00	0.00	99.7
3	0.00	0.11	5.87	65.9	8.43	0.00	17.5	0.00	0.00	97.8
Average	0.04	0.11	5.90	63.7	9.58	0.00	19.6	0.00	0.02	98.9

* Total Fe as Fe2O3

TABLE 14: ELECTRON-PROBE MICROANALYSES (WT%) OF CHROMITE IN ELEVEN LATERITE SAMPLES

Analysis No.	SiO2	TiO2	Al2O3	Cr2O3	MgO	MnO	Fe2O3 *	CoO	NiO	Total
				Sample S018 17-25						
1	0.00	0.15	6.59	62.2	13.1	0.00	16.3	0.00	0.00	98.4
2	0.00	0.18	6.47	62.6	11.6	0.00	19.1	0.00	0.07	100.0
3	0.00	0.10	5.35	63.3	11.7	0.00	19.2	0.00	0.00	99.7
4	0.00	0.11	5.65	64.4	10.7	0.00	17.9	0.00	0.00	98.7
5	0.00	0.11	5.38	64.8	12.0	0.00	17.8	0.00	0.05	100.1
6	0.00	0.00	5.18	65.3	11.7	0.00	18.7	0.00	0.00	100.8
7	0.00	0.13	5.61	65.5	12.3	0.00	16.5	0.00	0.07	100.0
Average	0.00	0.11	5.75	64.0	11.9	0.00	17.9	0.00	0.03	99.7
				Sample S026 16-21						
1	0.00	0.00	9.35	61.4	11.2	0.00	15.0	0.05	0.00	96.9
2	0.00	0.00	6.30	63.1	9.16	0.00	17.2	0.06	0.00	95.8
3	0.00	0.00	6.51	64.0	8.36	0.00	17.9	0.06	0.00	96.8
4	0.00	0.00	6.57	65.1	8.61	0.00	18.0	0.00	0.08	98.4
5	0.00	0.00	6.57	65.5	10.0	0.00	16.8	0.00	0.00	98.9
Average	0.00	0.00	7.06	63.8	9.47	0.00	17.0	0.04	0.02	97.4
				Sample S026 21-26						
1	0.00	0.00	8.86	59.6	11.9	0.00	18.2	0.00	0.00	98.6
2	0.00	0.00	8.41	60.9	7.93	0.00	19.4	0.00	0.00	96.7
3	0.00	0.00	6.28	62.2	9.16	0.00	21.5	0.00	0.09	99.2
4	0.00	0.00	7.96	62.5	8.81	0.00	17.7	0.00	0.00	96.9
5	0.00	0.00	5.61	64.7	9.44	0.00	16.8	0.00	0.00	96.5
Average	0.00	0.00	7.43	62.0	9.44	0.00	18.7	0.00	0.02	97.6
				Sample S047 5-9						
1	0.00	0.00	8.38	58.9	7.28	0.00	21.5	0.00	0.05	96.1
2	0.00	0.00	7.36	59.1	11.0	0.00	19.6	0.05	0.06	97.1
3	0.00	0.00	8.25	59.7	9.17	0.00	19.9	0.07	0.06	97.2
4	0.00	0.00	8.79	61.0	9.28	0.00	17.4	0.00	0.06	96.5
Average	0.00	0.00	8.20	59.7	9.17	0.00	19.6	0.03	0.06	96.7
				Sample S048 0-6						
1	0.00	0.00	18.2	47.5	12.1	0.00	21.2	0.06	0.13	99.1
2	0.00	0.00	4.96	62.4	7.37	0.00	22.9	0.00	0.07	97.7
3	0.00	0.00	5.45	63.0	8.67	0.00	20.5	0.00	0.08	97.6
4	0.00	0.00	4.78	63.3	8.26	0.00	21.3	0.00	0.06	97.7
5	0.00	0.00	3.82	64.7	8.25	0.00	23.1	0.00	0.00	99.9
Average	0.00	0.00	7.43	60.2	8.93	0.00	21.8	0.01	0.07	98.4

* Total Fe as Fe2O3

TABLE 15 : ELECTRON-PROBE MICROANALYSES (WT%) OF MANGANESE OXIDES IN SOME LATERITE SAMPLES

Analysis No.	MnO	NiO	CoO	FeO*	SiO_2	Al_2O_3	MgO	CaO	Total
Sample S004 13-18									
3	48.2	11.0	4.64	3.8	0.4	1.3	1.20	0.33	70.9
1	36.7	13.8	6.16	11.3	0.6	0.6	1.66	0.12	70.9
2	38.8	16.4	3.65	11.6	2.1	1.8	1.89	0.13	76.4
Sample S009 8-13									
1	33.6	2.48	7.06	14.6	0.8	14.6	0.37	0.16	73.7
Sample S017 5-11									
1	30.2	5.94	5.57	6.4	5.4	7.5	0.96	0.18	62.2
Sample S018 17-25									
1	38.9	6.33	5.82	16.0	4.1	1.0	2.04	0.00	74.2
Sample S026 16-21									
1	42.3	13.4	5.43	7.3	2.8	0.1	1.54	0.26	73.1
Sample S026 21-26									
1	35.9	15.9	7.16	6.6	1.5	0.6	1.40	0.19	69.2
Sample S047 5-9									
1	25.8	4.90	5.27	10.8	21.2	13.2	2.74	0.15	84.1

*Total Fe as FeO

TABLE 16 : NICKEL AND COBALT CONTENTS OF MAGNETITE AND HEMATITE IN ELEVEN LATERITE SAMPLES

Sample No.	No. of Analyses	NiO (Wt%)		CoO (Wt%)	
		Individual Analysis	Avg*	Individual Analyses	Avg*
Magnetite					
S004 13-18	0				
S009 8-13	8	7 @ <0.05, 0.05	0.01	8 @ <0.05	0.00
S015 6-13	5	5 @ <0.05	0.00	5 @ <0.05	0.00
S017 5-11	4	3 @ <0.05, 0.10	0.02	4 @ <0.05	0.00
S017 11-17	5	3 @ <0.05, 0.05, 0.32	0.07	5 @ <0.05	0.00
S018 9-17	3	1 @ <0.05, 0.06, 0.18	0.08	2 @ <0.05, 0.09	0.03
S018 17-25	4	4 @ <0.05	0.00	4 @ <0.05	0.00
S026 16-21	7	4 @ <0.05, 0.08, 0.09, 0.25	0.06	7 @ <0.05	0.00
S026 21-26	7	5 @ <0.05, 0.05, 0.06	0.01	7 @ <0.05	0.00
S047 5-9	4	0.14, 0.16, 0.33, 0.71	0.33	4 @ <0.05	0.00
S048 0-6	2	<0.05, 0.06	0.03	2 @ <0.05	0.00
Hematite					
S004 13-18	0				
S009 8-13	0				
S015 6-13	0				
S017 5-11	0				
S017 11-17	3	2 @ 0.02, 0.06	0.03	3 @ <0.05	0.00
S018 9-17	0				
S018 17-25	3	3 @ <0.05	0.00	3 @ <0.05	0.00
S026 16-21	4	2 @ <0.05, 0.05, 0.09	0.03	4 @ <0.05	0.00
S026 21-26	1	0.08	0.08	<0.05	0.00
S047 5-9	0				
S048 0-6	2	0.08, 0.09	0.09	2 @ <0.05	0.00

* Average calculated assuming values below detection limit of 0.05% contain no Ni or Co.

TABLE 17 : CALCULATED MINERALOGY OF ELEVEN LATERITE SAMPLES

Sample No.	Mineralogy (Wt%)								
	Smectite	Clay	Serpentine	Goethite	Magnetite	Hematite	Chromite	Quartz	Total
S004 13-18	61	38	-	-	-	-	1	-	100
S009 8-13	35	-	13	32	16	3	1	-	100
S015 6-13	20	-	61	10	7	1	1	-	100
S017 5-11	59	-	10	8	16	6	1	-	100
S017 11-17	34	-	45	8	9	4	Tr	-	100
S018 9-17	57	-	3	15	6	2	1	16	100
S018 17-25	77	-	11	5	6	-	1	Tr	100
S026 16-21	43	20	-	17	10	9	1	-	100
S026 21-26	48	-	42	3	4	2	1	Tr	100
S047 5-9	35	25	31	4	4	1	Tr	-	100
S048 0-6	42	38	5	8	5	2	Tr	-	100

TABLE 18: MINERALOGICAL DISTRIBUTION OF NICKEL IN ELEVEN LATERITE SAMPLES

Sample No.	Ni Distribution (%)						
	Smectite	Clay	Serpentine	Goethite	Magnetite/ Hematite	Quartz	Total
S004 13-18	73	27	-	-	-	-	100
S009 8-13	77	-	13	10	-	-	100
S015 6-13	46	-	51	3	-	-	100
S017 5-11	93	-	6	1	-	-	100
S017 11-17	73	-	26	-	1	-	100
S018 9-17	90	-	1	4	1	4	100
S018 17-25	93	-	5	2	-	-	100
S026 16-21	90	3	-	6	1	-	100
S026 21-26	90	-	8	2	-	-	100
S047 5-9	77	11	10	1	1	-	100
S048 0-6	62	32	2	4	-	-	100

Sample No.	NiO Content of Minerals (% NiO)							
	Smectite	Clay	Serpentine	Goethite	Magnetite/ Hematite	Quartz	Total	% NiO in Sample
S004 13-18	0.97	0.36	-	-	-	-	1.33	1.17
S009 8-13	0.35	-	0.06	0.045	-	-	0.46	0.75
S015 6-13	0.50	-	0.55	0.029	-	-	1.08	1.09
S017 5-11	1.25	-	0.08	0.010	0.005	-	1.34	1.36
S017 11-17	0.87	-	0.31	0.004	0.007	-	1.19	1.23
S018 9-17	0.63	-	0.01	0.030	0.006	0.03	0.71	0.94
S018 17-25	0.83	-	0.05	0.016	-	-	0.90	0.99
S026 16-21	1.73	0.056	-	0.12	0.009	-	1.92	1.84
S026 21-26	1.53	-	0.13	0.027	-	-	1.69	1.56
S047 5-9	0.91	0.13	0.12	0.009	0.012	-	1.18	0.95
S048 0-6	0.74	0.39	0.02	0.046	0.003	-	1.20	1.21

APPENDIX C

231156

REPORT G693500G/97

NICKEL LATERITE LEACHING

231157

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INTERNATIONAL QUALITY MANAGEMENT SYSTEM

7 October 1997

McKeown Mining Pty Ltd
PO Box 50
RIDGLEY TAS 7321

Attention: Mr M McKeown

REPORT G693500G/97 (N8172)

NICKEL LATERITE LEACHING

YOUR REFERENCE:	Fax dated 5 September 1997
SAMPLE IDENTIFICATION:	See list in test
MATERIAL:	Nickel laterite
DATE RECEIVED:	8 July 1997
PROJECT MANAGER:	F Radke

Frank Radke
For

Keith J Henley
Manager, Mineralogy

FR:msm1

1. INTRODUCTION

In August 1997, Amdel carried out a mineralogical examination of 11 nickel laterite samples for McKeown Mining Pty Ltd. Pressure leaching tests were then authorised on 5 September 1997 on 9 composite samples as follows:

S004	13 to 18
S009	8 to 13
S015	6 to 13
S017	5 to 11
S017	11 to 17
S018	9 to 25
S026	16 to 26
S047	5 to 9
S048	0 to 6

2. PROCEDURE

2.1 Sample Preparation

The samples which had not been used for mineralogical work were crushed and pulverised for leaching. Two 400g samples and a head sample for analysis were riffled out of each pulverised sample.

2.2 Pressure Leaching

For each sample, leaching was carried out at 240 and 260°C. For each test, a 400g sample of ore was leached at 25% solids in a sulphuric acid solution containing 200g H_2SO_4 (500g H_2SO_4/kg of ore). The initial slurry contained 400g of solids and 800g of water. Sulphuric acid solution (400g of 50% w/w H_2SO_4) was added when the slurry had reached the operating temperature to avoid any effects of the heating-up time. The overall leach solution contained 188.3 g/L H_2SO_4. (1062mL weighing 1200g).

Samples of the slurry were taken after 1 hour and 2 hours. Head and residue samples were analysed for nickel and cobalt and the final liquor for residual free acid. The results are listed in Tables 1 and 2 together with calculated extractions of nickel and cobalt and consumption of acid.

3. RESULTS

(1) The results at 240°C showed that 2 hours residence time was required to obtain a high extraction. Six of the nine samples gave nickel extractions of 95% and above with similar cobalt extractions in most cases. The other three all contained high percentages of serpentine. Apparently decomposition of the serpentine into clays, goethite, etc., makes the nickel and cobalt more soluble in acid solutions.

(2) Acid consumptions were generally in the range 330 to 370kg/tonne for the samples with high extractions, and 440 to 480kg/tonne for the high serpentine samples.

(3) At 260°C, the nickel and cobalt extractions from the serpentine samples increased significantly. Acid consumptions were similar to those at 240°C.

TABLE 1: PRESSURE LEACHING RESULTS - 240°C

Sample	Weights g	Leach Time, h	Analyses, ppm		Extraction, %		Free Acid g/L	Acid Usage, kg/t
			Ni	Co	Ni	Co		
S004	F* 400.0	Feed	9350	430			188.3	
13 to 18	TR* 316.6	1	1650	220	86.0	59.5		
		2	600	100	94.9	81.6	60.8	338.5
S009	F 400.0	Feed	6100	1250			188.3	
8 to 13	TR 336.8	1	1000	190	86.2	87.2		
		2	270	100	96.3	93.3	63.2	332.1
S015	F 400.0	Feed	8650	380			188.3	
6 to 13	TR 324.8	1	3600	240	66.2	48.7		
		2	2500	190	76.5	59.4	22.5	440.2
S017	F 400.0	Feed	10900	1050			188.3	
5 to 11	TR 324.4	1	2050	240	84.7	81.5		
		2	450	240	96.7	81.5	46.1	377.5
S017	F 400.0	Feed	10000	430			188.3	
11 to 17	TR 307.8	1	3950	230	69.6	58.8		
		2	2750	230	78.8	58.8	10.3	472.6
S018	F 400.0	Feed	7550	460			188.3	
9 to 25	TR 298.9	1	1200	70	88.1	88.6		
		2	250	30	97.5	95.1	58.8	343.8
S026	F 400.0	Feed	13600	950			188.3	
16 to 26	TR 288.5	1	2250	60	88.1	95.6		
		2	470	30	97.5	97.7	50.7	365.3
S047	F 400.0	Feed	7600	600			188.3	
5 to 9	TR 291.9	1	4450	170	57.3	79.3		
		2	3400	120	67.4	85.4	7.3	480.6
S048	F 400.0	Feed	9500	650			188.3	
0 to 6	TR 342.5	1	1500	100	86.5	86.8		
		2	290	40	97.4	94.7	30.6	418.7

*F = Feed
TR = Total Residue

TABLE 2: PRESSURE LEACHING RESULTS - 260°C

Sample	Weights g	Leach Time, h	Analyses, ppm		Extraction, %		Free Acid g/L	Acid Usage, kg/t
			Ni	Co	Ni	Co		
S004	F* 400.0	Feed	9350	430			188.3	
13 to 18	TR* 327.3	1	2000	40	82.5	92.4		
		2	260	<20	97.7	>96.2	59.3	342.5
S009	F 400.0	Feed	6100	1250			188.3	
8 to 13	TR 342.6	1	700	100	90.2	93.1		
		2	290	70	95.9	95.2	65.4	326.3
S015	F 400.0	Feed	8650	380			188.3	
6 to 13	TR 313.8	1	2900	80	73.7	83.5		
		2	1550	30	85.9	84.2	20.8	444.7
S017	F 400.0	Feed	10900	1050			188.3	
5 to 11	TR 344.9	1	1500	80	88.1	93.4		
		2	240	30	98.1	97.5	43.6	384.2
S017	F 400.0	Feed	10000	430			188.3	
11 to 17	TR 302.0	1	3200	130	75.8	77.2		
		2	1650	70	87.5	87.7	8.7	476.8
S018	F 400.0	Feed	7550	460			188.3	
9 to 25	TR 332.5	1	1300	90	85.7	83.7		
		2	200	<20	97.8	>96.4	51.9	362.1
S026	F 400.0	Feed	13600	950			188.3	
16 to 26	TR 320.8	1	1600	70	90.6	94.1		
		2	700	<20	95.9	>98.3	49.0	369.8
S047	F 400.0	Feed	7600	600			188.3	
5 to 9	TR 324.1	1	3650	160	61.1	78.4		
		2	2800	110	70.1	85.1	6.9	481.6
S048	F 400.0	Feed	9500	650			188.3	
0 to 6	TR 347.9	1	1500	100	86.3	86.5		
		2	400	50	96.3	93.3	32.3	414.2

F* = Feed
TR = Total Residue

98-4171 (B)
Vol. 2 of 2

NEWNHAM EXPLORATION & MINING SERVICES

ANDERSONS CREEK PROJECT

EL 10/96

ANNUAL REPORT

TO END MAY, 1998

(Volume 2 of 2)

For:

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25 May, 1998

98-4171B

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APPENDIX D

231164 98-4171B

ANDERSONS CREEK LATERITE

MINERAL RESOURCE ESTIMATE

MARCH 1998

Prepared by

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for

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on behalf of

ALLEGIANCE MINING NL

SUMMARY

Exploration Licence number 10/96 (EL 10/96) covers an area of 18 square kilometres about five kilometres to the west of Beaconsfield on the Tamar River in northern Tasmania.

The Exploration Licence covers an area of Cambrian ultramafic rocks which have been intruded into a sequence of Cambrian sedimentary rocks.

A laterite has developed over the ultramafic rocks and nickel and cobalt have concentrated in parts of the laterite .

Allegiance Mining NL undertook two drilling programs to test the laterite during 1997: 116 reverse circulation, and eight diamond drill, holes were drilled for a total drilled length of 1,179 metres.

After the second drilling program, a resource estimate was made. An Inferred Mineral Resource of 12,027,000 tonnes at 0.94% Ni and 0.052% Co has been estimated.

Mineralogical investigations indicate that most of the nickel present occurs in smectite, a clay mineral.

Metallurgical assessment of nine samples of laterite indicate that the laterite is amenable to extraction of nickel and cobalt by pressure leaching in sulphuric acid at elevated temperatures.

Further drilling to increase the size of the resource is recommended.

231166

IMPORTANT NOTES

This report is not intended for use as a public document or, in whole or in part, in a public document.

Throughout this report, figures quoted have not been rounded and are not intended to indicate a degree of accuracy; figures are quoted exactly as stated during calculations so that the sources of figures can be traced and confirmed if necessary.

This report has been prepared using information and data available to the author at the time of writing.

231167

PREFACE

This report was written after the completion of the second drilling program undertaken by Allegiance Mining NL on EL 10/96, Andersons Creek, Tasmania. A previous report, dated August 1997, described the resource estimate which was made after the first drilling program.

This report has been compiled based on the results of both drilling programs and has been written as a stand alone report and encompasses the information contained in the first report. Consequently, many parts of the first report are repeated in this report.

ABBREVIATIONS

textual abbreviations

ACC	Andersons Creek ultramafic Complex
AM	Allegiance Mining NL
AMDEL	Australian Mineral Development Laboratories
CRA	Conzinc Rio Tinto Australia Limited
CRAE	CRA Exploration Pty Ltd
EL	Exploration Licence
KIS	King Island Scheelite Limited
MM	McKeown Mining Pty Ltd
NEMS	Newnham Exploration and Mining Services
NL	No liability

scientific abbreviations

Al	aluminium
Au	gold
Ca	calcium
Co	cobalt
Cr	chromium
Cu	copper
Fe	iron
K	potassium
LOI	loss on ignition
Mg	magnesium
Mn	manganese
Na	sodium
Ni	nickel
P	phosphorous
PAL	pressure acid leach
S	sulphur
Si	silicon
Ti	titanium

231169

CONTENTS

231170

APPENDICES

TABLES

FIGURES

Note that all figures appear at the end of the text before the appendices

PLAN

1 INTRODUCTION

Exploration Licence number 10/96 (EL 10/96) covers an area of 18 square kilometres about 5 kilometres to the west of Beaconsfield on the Tamar River in northern Tasmania. The EL is known as the Andersons Creek Licence after a creek which runs from south to north through the Licence.

The EL is transected by Andersons Creek and encompasses three significant topographic highs: Scotts Hill and Settlers Hills in the north, and Barnes Hill in the centre.

The EL covers an area of Cambrian ultramafic rocks which have been intruded into a sequence of Cambrian sedimentary rocks. Exploration of ironstone which occurs in the laterite overlying the ultramafic rocks began in 1866 (Gould, 1866) and mining of **iron** ore which began at Mt Vulcan in 1872 continued sporadically until 1875.

Chromite, shed from the Cambrian ultramafic rocks, has been concentrated in some places in Tertiary sands and gravels and these were mined for a brief period during the early 1980s before the operation proved to be uneconomic (Summons et al., 1981).

The first mention of **nickel** in the area was made in 1930 by Nye who reported on the high nickel content of the iron ore at Mt Vulcan (Nye, 1930). Exploration for nickel in the Andersons Creek laterite began in 1956 and continued to 1969, by which time a resource of 6.1 million tonnes at 1.04% Ni and 0.06% Co had been estimated (Anthony, 1969). In 1994, CRA Exploration Pty Ltd took up an EL over the Anderson's Creek laterite and re-commenced exploration for nickel. That EL was relinquished in 1995.

A summary of the exploration which was undertaken prior to the acquisition of the EL by Allegiance Mining NL is attached as Appendix 1.

Allegiance Mining NL was granted EL 10/96 in June 1996. The EL was granted from the surface of the earth down to a depth of 30 metres, that is, the EL covers the volume of ground which staff of Mineral Resources Tasmania thought likely to contain all laterite. Following data review and hole planning (Newnham 1996a, 1996b and 1996c), Allegiance Mining undertook a drilling program to test the nickel bearing laterite in February and March 1997. Fifty-one reverse circulation drill holes were drilled for a total drilled length of 558 metres.

The results of the drilling program suggested that the nickel resource was more extensive than previously thought and a resource estimate was made based on the results of the drilling: an Inferred Mineral Resource of 9,743,000 tonnes at 0.93% Ni and 0.052% Co was estimated (McKeown, 1997). Further drilling was recommended (McKeown, 1997 and Newnham, 1997). Consequently, a second drilling program took place in November 1997.

Sixty-five reverse circulation, and eight diamond drill, holes were drilled for a total drilled length of 621 metres.

This report describes the resource estimate which has been made based on the results of both drilling programs.

2 GEOLOGICAL SETTING

A complete and detailed description of the geology of the EL is beyond the scope of this report but a brief description of the geology is given so that a sensible appreciation of the resource estimate can be made.

The Andersons Creek Complex (ACC) is a package of Cambrian ultramafic rocks which have been intruded into a metamorphosed sequence of Cambrian and Ordovician sedimentary rocks which lie to the east of the Precambrian Badger Head Block.

The ACC outcrop is elongate in a north-north-west direction and is about 6.5 kilometres long and about 1.5 kilometres wide although, within this area, there are rafts of older metamorphosed sedimentary rocks and other parts of the ACC are obscured by Tertiary and Quaternary sediments. Aerial magnetics surveys indicate that, in total, the ACC is a north-north-west trending lozenge shaped body which is 20 kilometres long and 3 kilometres wide (Newnham, 1996b).

The original lithologies of the ACC have been extensively altered by metamorphism and, consequently, the descriptions of rocks by various authors have been inconsistent and confusing with rocks being mis-identified by early workers (Gee and Legge, 1979). However, the descriptions of the major rock types have been summarised from a few relatively recent publications and are listed in Table 1. At the present time, the broad scale mapping suggests a layered distribution of rock types within the ACC with the boundaries of the layers parallel to the long axis of the ACC (Summons et al, 1981).

Tasmanian ultramafic successions are known to be the source of platinum group minerals, gold, copper and nickel, and the successions have been classified, and the platinum group mineral enrichments associated with each succession have been described, by Brown (1992):

• LDH	layered dunite-harzburgite	iridium, osmium and ruthenium, with or without gold
• LPD	layered pyroxenite-dunite	platinum, palladium, rhodium, with or without gold
• LPG	layered pyroxenite-gabbro	

The descriptions of the lithologies present in the ACC suggest that the complex is a mixture of LDH and LPG types.

The serpentinite, pyroxenite and gabbronorite listed in Table 1 are referred to collectively as "serpentinites" for the remainder of this report.

Nickel and cobalt occur in varying proportions in the serpentinites: nickel content is known to range up to 0.41% and cobalt up to 779ppM (Maher, 1994 and 1995). The spatial distribution of the rock types listed in Table 1 will, almost certainly, be a determining factor in the distribution of nickel and cobalt in the overlying laterite.

A primary laterite developed over the ACC during the late Mesozoic-early Tertiary (Summons et al, 1981), presumably during what Colhoun (1989) described as "relatively warm humid climatic and predominantly forested conditions". During the middle Tertiary, a secondary ferruginous laterite formed from the primary laterite at Scotts Hill, Mt Vulcan and Barnes Hill. Since its formation the primary laterite has been eroded and has been removed from the parts of the ACC where serpentinites now outcrop. Nickel and cobalt have concentrated in places in the primary laterite and it is these nickel rich parts which have been the subject of exploration.

Anthony (1967) subdivided the lateritic profile into six zones (Table 2).

Note that the complete lateritic profile does not occur at all locations where laterite is found. Similarly, the thicknesses of each zone in the profile vary from location to location. As a general guide, the maximum thickness of laterite, intersected in the February to March 1997 drilling program, was 26 metres in hole in S018 (Appendix 6).

Nickel tends to be concentrated in the bleached to mottled zones of the laterite. A more detailed description of the nickel mineralisation is given below in section 5 *THE LATERITE MINERALISATION*.

Tertiary sands and gravels have been deposited over the laterite in places on the EL (Plan 1) sometimes with chromite enrichment.

3 PREVIOUS RESOURCE ESTIMATES

By 1969, King Island Scheelite Limited (KIS) had drilled 37 holes to test the nickel bearing laterite. The holes were spread over Scotts Hill, Mt Vulcan, Barnes Hill and Barnes Hill South. A resource was estimated using the following parameters (Anthony, 1969):

- an assumed bulk density of 1.8 tonnes per cubic metre (20 cubic feet per ton)
- a cutoff grade of 0.7% Ni

The KIS resource estimate was 6,110,000 tonnes at 1.04% Ni and 0.06% Co (Table 3).

In August 1997, a resource estimate based on the first Allegiance Mining drilling program was made using the following parameters (McKeown, 1997):

- an assumed bulk density of 2.0 tonnes per cubic metre
- a cutoff grade of 0.5% Ni

An Inferred Mineral Resource of 9,743,000 tonnes at 0.93% Ni and 0.052% Co was estimated (Table 4).

4 THE 1997 DRILLING PROGRAMS

4.1 OBJECTIVES

In early 1996, Newnham reviewed the available existing data and concluded that there were four areas of significant nickel-cobalt concentration within the Andersons Creek laterite: Scotts Hill and Mt Vulcan in the north of the EL, Barnes Hill near the centre, and Barnes Hill South in the south (Newnham, 1996b). These areas were those identified by Anthony (1969) for his resource estimate.

Newnham concluded that potential existed for finding extensions to the resource outlined by Anthony and proposed a drilling program. The objectives of the program were summarised by Newnham (1996c):

> "Previous drilling at Andersons Creek inferred a resource of 6.1 Mt 1.04% Ni 0.06% Co.
>
> An assessment of existing data by this writer (Report dated 22 May 96) concluded:
>
> (a) this inferred estimate is reasonable
>
> (b) scope exists to define modest extensions to this resource
>
> (c) the existing resource data base is somewhat deficient in that drill holes and other data points have not been surveyed and well presented on acceptable maps
>
> (d) very little metallurgical work has been undertaken which reflects currently available extractive technology
>
> In response to these principal conclusions, this proposed drilling program has three main objectives:
>
> (i) Elevate the resource data base by better defining the inferred resource areas and checking several previous drill holes. To achieve this objective, all drill holes must be professionally surveyed and plotted.
>
> (ii) Test for modest extensions of the four inferred resource areas
>
> Whilst there exists a range of resource targets within E.L. 10/96, it is recommended at this early stage of the project that knowledge be acquired steadily by stepping out drill holes only modest distances from the inferred resource areas.

(iii) provide adequate samples for initial metallurgical test work. Because of the variable nature of the material in the four resource areas, at least one sample should be acquired from each area for testing."

Metallurgical testing of the laterite was carried out, and further drilling was recommended following the first drilling program (McKeown, 1997 and Newnham, 1997) The drilling was undertaken to:

> "firstly, increase the resource tonnes and, secondly, validate the previous drilling technique. Approximately 61 air core holes ... are proposed to increase the tonnage and six cored holes totalling 150m are proposed to validate previous drilling methods" (Newnham, 1997).

4.1 THE FIRST DRILLING PROGRAM

The first drilling program was undertaken in March and April 1997 and was supervised by the author. The holes were drilled using a track mounted Scout 250 drill rig and track mounted compressor, both of which were supplied by Diamond Drilling Tasmania.

Fifty one holes were drilled for a total drilled length of 558 metres. Three different reverse circulation methods were employed: one hole was drilled using a down the hole hammer, five holes using a tricone rotary bit and 45 using an air core bit (Table 5). Samples returned by the rotary bit were small (see drill logs, Appendix 6) whereas the air core bit returned samples weighing up to about 10 kilograms per metre. The one hole completed with the down the hole hammer was drilled in serpentinite rock.

For each hole, the aim was to drill until fresh serpentinite was met and this was achieved with 44 holes, five holes bottoming in weathered serpentinite, one in clay and one in weathered rocks from the Cabbage Tree Formation. Drilling progress was reasonably rapid except in damp or wet ground which caused blockages in the bits, drill string, sampling hose and cyclone, and in rock, generally towards the bottom of each hole, which caused blockages in the bit.

THE SECOND DRILLING PROGRAM

The second drilling program took place in November and December 1997 and was supervised by the author. The same drill rig was used: the Scout 250 drill rig and the track mounted compressor.

65 reverse circulation holes were drilled for a total drilled length of 492 metres. Two different reverse circulation methods were employed: one hole was partially drilled using a down the hole hammer, and 65 using an air core bit (Table 5). The one hole completed with the down the hole hammer was drilled through hard ironstone overlying laterite. Samples weighing up to about 10 kilograms per metre were returned. In addition, eight cored holes were drilled with the purpose of validating the suitability of reverse circulation drilling for testing the laterite.

55 holes bottoming in weathered serpentinite, two in clay, one in weathered rocks from the Cabbage Tree Formation and four in Permian siltstone. Drilling progress was reasonably rapid with far fewer blockages than in the previous program, especially in damp or wet ground. The ability to successfully bale samples from damp and wet holes was achieved by eliminating all air leaks from the sample return system, and by the use of BP Comprox, a domestic detergent, in the in line oil bottles mounted in the compressed air feed to the hole.

4.4 RESULTS OF THE DRILLING PROGRAM

A summary of the significant nickel bearing intersections is listed in Table 6. Note that a cutoff grade of 0.5% Ni was used when defining the significant intersections. The cutoff grade chosen is discussed in section 6.4 THE RESOURCE ASSESSMENT CRITERIA.

The new resource boundaries are shown on Plan 1 and the new resource estimate is described below in section 6 THE RESOURCE ESTIMATE.

4.4 COMPARISON OF PAIRED RC AND DD HOLES

An attempt was made during the second drilling program to validate the reliability of samples collected using reverse circulation drilling. Eight diamond drill holes were attempted to provide samples for comparison of assays with those achieved from reverse circulation drilling. Unfortunately, satisfactory core recovery could only be achieved in three holes, S073 to S075 drilled at Barnes Hill and Barnes Hill South. The reasons for poor recovery from the holes drilled at Scotts Hill and Mt Vulcan, S121 to S124, were never clearly ascertained although the friable ironstone gravel and clay near the collars of these holes may have been the source of the problem.

Three useful drill hole pairs were achieved: diamond holes S073, S074 and S075 were drilled on the sites of the reverse circulation holes S026, S018 and S048 respectively. Each diamond drill hole was drilled within five metres of its paired reverse circulation hole. The geological logs and the analytical data from these holes were compared (Appendices 2 and 6) and the important geological information from these pairs of holes is presented in Table 7.

The depth to the top of the laterite did not vary significantly between the hole types. The variation in depth to the top of the underlying serpentinite did vary between hole types, reflecting the observed local irregularities in the serpentinite surface observed in outcrop, for example at Barnes Hill South.

The agreement between nickel analyses on a metre by metre basis was generally, but not always, within the error expected from the sampling and analytical methods employed. As far as average nickel assays for whole laterite intersections were concerned, there was good agreement between holes S018 and S074, reasonable agreement between holes S048 and S075, and poor agreement between S026 and S074. The poor agreement between some assay pairs, and between average grades, is likely to be due to real variations in grade between the paired holes rather than poor sampling or analytical methods. Further comparison of the analytical data sets will be possible after the check analyses recommended in 6.3 THE RESOURCE ASSESSMENT CRITERIA have been completed.

5 THE LATERITE MINERALISATION

5.1 INTRODUCTION

The Andersons Creek laterite has developed from the weathering of serpentinites. During the weathering process the serpentinites have completely to partially altered to clay and the weathering products form the Andersons Creek laterite. In the laterite, nickel and, to a lesser extent, cobalt have, at least in places, concentrated to economically significant levels.

The profitable mining and processing of the nickel laterite depends not on the absolute nickel content of the laterite but on the recoverable nickel content. Consequently, eleven composited samples of nickel bearing laterite intersected during the February to March 1997 drilling program were submitted for mineralogical evaluation. The results of that evaluation form the basis of this part of the report.

The eleven samples were chosen from the better grade nickel intersections in each of the four areas of laterite development.

5.2 MINERALOGY OF THE LATERITE

The eleven composite samples of nickel bearing laterite were sent to the mineralogical laboratories of AMDEL, Adelaide, for assessment. The samples which were submitted are listed in Table 8.

The lateritic profile which occurs over the Andersons Creek serpentinite is summarised in Table 2 and the original rocks from which the laterite has developed are listed in Table 1. As the serpentinites weather, the constituent silicate minerals tend to alter to clay, and any magnetite present tends to convert to haematite and goethite. The principal constituents of the eleven composite samples were clays, serpentinite and iron oxides (Table 9).

The snapshot of the laterite mineralogy depicted in Table 9 differs somewhat from that presented in a report of a mineralogical investigation undertaken for KIS in 1968 (Clayton et al, 1968). In that investigation, two distinct laterite mineralogies were reported: a dominantly talc-magnesite assemblage and a serpentine-chlorite assemblage. However, the criteria used when choosing the samples for the 1968 investigation are not known and the samples may have been taken from parts of the lateritic profile which were not considered for this report, that is from parts of the lateritic profile above the transition zone.

The eleven laterite samples were analysed by AMDEL on a whole rock basis (Bradke, 1997) and the average analyses are shown in Table 10 together with an average whole rock analyses quoted by Anthony (1969).

The data in Tables 9 and 10 suggest a mineralogy dominated by a few minerals. Bradke (1997) concluded:

> "Mineralogically these samples consist mainly of phyllosilicates consisting of smectite and varying amounts of serpentine (variety lizardite). Some samples contain a clay mineral compositionally different from the more abundant smectite, but which could also be a smectite or possibly a highly degraded serpentine. The samples also generally contain goethite, magnetite, hematite and chromite. A manganese oxide mineral containing relatively high nickel and cobalt values was noted in most samples and could be present in all samples. Microcrystalline to cryptocrystalline quartz is also present in some samples and does contain low levels of nickel"

5.3 MINERALOGY OF THE NICKEL OCCURRENCE

Bradke (1997) commissioned electron-probe microanalysis of the eleven composite samples to determine the nickel content of, and nickel distribution amongst, various mineral species (Tables 11 and 12).

The important conclusions which can be drawn from these tables are:

- in most samples, most of the nickel (usually >70%) occurs in smectite
- in all samples, most of the nickel (>90%) occurs in the silicate minerals: smectite, clay and serpentine
- in all samples, very little nickel (less than 9%) occurs in iron oxides
- in one sample only, a small proportion of nickel (4%) occurs in quartz

Bradke (1997) concluded:

> "... the smectite has a relatively high nickel content ranging up to several percent. The other clay mineral, serpentine and goethite generally have somewhat lower nickel contents and the magnetite, hematite and chromite contain very low nickel values. The calculated mineralogical distributions of nickel in these samples ... show that in most samples the nickel occurs mainly in the smectite."

This conclusion is similar to that of Clayton et al (1967) who concluded that the bulk of the nickel is contained in smectite.

5.4 ORIGIN OF THE NICKEL

Outcrops of the serpentinites which underlie the laterite were sampled and analysed by CRAE, 72 rocks were analysed and the ranges of the abundances of some metallic elements are listed in Table 13.

The data in Tables 13 and 14 suggest that the serpentinites are the source of the nickel in the laterite. However, the following features of the occurrence of nickel in the serpentinites remain unknown:

- the spatial distribution of nickel throughout the intrusion
- the identities of the nickel bearing minerals
- the relative proportions of the different nickel bearing minerals
- the distribution of nickel bearing minerals by specific rock type

5.5 MINERALOGY OF THE COBALT OCCURRENCE

The cobalt content of the samples submitted to AMDEL for mineralogical investigations was low, ranging from 0.055% to 0.170% Co (Table 8). The low values were reflected in very low values in individual mineral species and, consequently, a calculation of the mineralogical distribution of cobalt was impossible (Bradke, 1997). However, a manganese oxide mineral with a very high cobalt content, ranging from 1.95% to 12.9% Co, was identified. Bradke (1997) concluded:

> "... most of the cobalt in these samples also occurs in smectite, although a greater proportion of cobalt compared to nickel would occur in the manganese oxide material"

5.6 METALLURGICAL ASSESSMENT

Nine laterite samples from the March 1998 drilling program were submitted to AMDEL, Adelaide, for metallurgical assessment (Table 15). The samples were chosen to represent the range of styles of nickel occurrence described in section 5.3 MINERALOGY OF THE NICKEL OCCURRENCE.

The samples were crushed, pulverised and pressure leached in sulphuric acid at 240°C and 260°C. The results of the testwork were:

> "(1) The results at 240°C showed that 2 hours residence time was required to obtain a high extraction. Six of the nine samples gave nickel extractions of 95% and above with similar cobalt extractions in most cases. The other three all contained high percentages of serpentine. Apparently, decomposition of the serpentine into clays, goethite, etc., makes the nickel and cobalt more soluble in acid solutions.
>
> (2) Acid consumptions were generally in the range 330 to 370kg/tonne for the samples with high extractions, and 440 to 480kg/tonne for the high serpentine samples.
>
> (3) At 260°C, the nickel and cobalt extractions from the serpentine samples increased significantly. Acid consumptions were similar to those at 240°C." (AMDEL, 1997)

In summary, the laterite seems amenable to extraction of nickel and cobalt by pressure leaching in sulphuric acid at elevated temperatures. AMDEL's report is attached (Appendix 3).

6 THE RESOURCE ESTIMATE

6.1 THE GEOLOGICAL INTERPRETATION

This resource estimate is based on the results of both the 1997 drilling programs.

The intersections used to estimate the resource were those listed in Table 7. These intersections were defined by applying a 0.5% Ni cutoff grade to the assay data for each drill hole. The boundaries defined by the points which result from applying this cutoff at the level of individual drill holes appear to be geologically coherent.

Note that the high cobalt analyses do not coincide with the high nickel analyses and, consequently, the intersections defined for this resource estimate will optimise the average nickel grade but not the average cobalt grade.

Sections through each of the four main areas of laterite are shown in Figures 1 to 4.

The assumption of continuity of mineralisation between adjacent holes is reasonable based on
- the consistent occurrence of the defined nickel intersections in the transition and bleached zones of the laterite
- the apparent geological continuity of the mineralisation shown on the sections

6.2 THE MINERAL RESOURCE ESTIMATE

6.2.1 HOW THE MINERAL RESOURCE WAS ESTIMATED

Three key criteria for the resource estimate were that:
- a cutoff grade of 0.5% Ni was applied to each drill intersection
- a minimum mineralisation thickness of 1 metre was used
- a bulk density of 2.0 tonnes per cubic metre was used

The cutoff grade and bulk density are discussed in section 6.4 THE RESOURCE ASSESSMENT CRITERIA

In summary, the steps involved in the estimation of the resource tonnage were:
- the locations of the intersections were plotted in plan at 1:5000 scale
- each hole was annotated with the vertical thickness of the laterite intersection
- a square grid, 100m X 100m, was drawn over the area covered by the drill holes
- contours of the vertical thickness of the laterite were drawn
- mineralisation boundaries for the resource assessment were drawn:

  - where the vertical thickness of the mineralisation was greater than 1 metre, boundaries were drawn along block margins; generally, if there was an intersection within 100 metres of the block centroid then the block was included in the resource, and

  - where the vertical thickness of the mineralisation was less than 1 metre, the mineralisation was excluded from the resource estimate
- within the mineralisation boundaries, the area of laterite in each square was assessed
- within the mineralisation boundaries, the average vertical thickness of the laterite in each square was assessed

- *for each square the tonnage of mineralisation was calculated* by multiplying the area X the average vertical thickness X the mineralisation bulk density

The drill hole spacing is too wide for variography of the assay data set, and the best **grade** estimate possible is a simple arithmetic mean of regularly composited assay values. The nickel and cobalt assay data were composited to one metre lengths, and the average Ni and Co grades for each of the four areas were estimated by averaging all the composited assays of the mineralisation intersections of the drill holes, at a 0.5% Ni cutoff, which fell within the mineralisation boundary.

6.2.2 THE MINERAL RESOURCE

The estimate of the Inferred Mineral Resource is:

Scotts Hill	784,000 tonnes	0.76% Ni	0.059% Co
Mt Vulcan	1,863,000	0.86	0.056
Barnes Hill/ Barnes Hill South	9,380,000	0.97	0.051
Total	**12,027,000 tonnes**	**0.94% Ni**	**0.052% Co**

6.3 THE RESOURCE ASSESSMENT CRITERIA

Data density: the drill hole spacing within mineralisation boundaries ranges from about 100 to 150 metres. Given the apparent continuity of the nickel bearing laterite evident from the sections (Figures 1 to 4), the consistency of the occurrence of the nickel bearing laterite in the mottled and transition zones of the laterite, and the regularity of the contours of the thickness of the nickel bearing laterite, but admitting the current inadequacy of knowledge regarding grade continuity within the nickel bearing laterite, this drill hole data spacing is considered adequate to classify the resource as Inferred.

Accuracy of location of samples: most drill hole collar locations were surveyed in Australian Map Grid (AMG) co-ordinates by staff from Campbell-Smith, Phelps, Pedley Pty Ltd of

Launceston. The survey of the Scotts Hill and Mt Vulcan area was extended from a point for which co-ordinates were established using a global positioning system (GPS) fix and, so, although the survey of this area is internally consistent, there may be some lateral and vertical shift to correct the survey to precise AMG co-ordinates. The survey of the Barnes Hill and Barnes Hill South area was tied in to existing AMG trig stations.

No down hole surveys were made. All drill holes were set up as vertical holes and, given the short length of the holes, it is reasonable to assume that all holes were vertical over their entire length.

Drilling technique: all holes used for the resource assessment were reverse circulation holes (Table 6).

Sampling technique: all material which was baled from the hole passed through a cyclone and was collected in calico bags. Generally, samples were collected as one metre samples and weighed from 5 to 10 kilograms (Appendix 6). A very few samples were collected over two metre intervals (Appendix 6). For submission for analysis, a smaller sample, weighing about one kilogram, was taken from each one metre sample.

Sample recovery: the mass of sample recovered for each sample was recorded for each sample interval (Appendix 6). For the air core holes, masses of one metre samples generally ranged from 6 to 12 kilograms and, assuming a bulk density of 2.0 tonnes per cubic metre, this mass range represents recoveries ranging from 68% to 136%. The matter of sample recoveries depends upon the bulk density of the mineralisation which still requires further consideration (see below).

Tonnage factors: In a previous resource estimate, made by King Island Scheelite Limited (Anthony, 1969), a bulk density of 1.8 tonnes per cubic metre (20 cubic feet per ton) was assumed. This is at the low end of the density of clay cited in Gieck (1979) as 1.8 to 2.6 tonnes per cubic metre.

For the air core holes, masses of one metre samples generally ranged from 6 to 12 kilograms. The air core holes were nominally 75mm in diameter and masses of 6 to 12 kilograms per metre indicate a material density ranging from 1.4 to 2.7 tonnes per cubic metre.

In the previous resource estimate for Allegiance Mining a bulk density of 2.0 tonnes per cubic metre was assumed (McKeown, 1997). It was hoped that the core from diamond holes drilled during the second program could be used to estimate the bulk density of the laterite. Unfortunately, as has been mentioned (4.4 COMPARISON OF PAIRED RC AND DD HOLES) satisfactory core recovery could only be achieved in the three holes, S073 to S075. The data from S073 to S075 were used to calculate the laterite density which ranged from 2.01 to 2.10 tonnes per cubic metre (Table 16). For this resource estimate, the same bulk density was used as was used in the previous estimate, that is 2.0 tonnes per cubic metre even though the results from the diamond drilling suggest that this may be slightly conservative.

It is recommended that samples be collected for bulk density estimation when the project reaches the stage of bulk metallurgical testing.

Quality of assay data: all nickel and cobalt analyses for holes S001 to S051 were carried out at the Australian Mineral Development (AMDEL) laboratories at Thebarton, South Australia. The analyses for holes S052 to S124 were carried out at Analabs Pty Ltd laboratories at Burnie, Tasmania.

Check analyses of samples from both programs should be undertaken before the next drilling program commences.

Quality of data description: samples were logged by the author. For each sample interval, generally one metre, a brief description was made of the material recovered, particular attention being paid to the features which would enable classification of the material according to the scheme outlined by Anthony (1967) (Table 2.).

Geological interpretation: the method of geological interpretation which was used for this report is described in 6.1 GEOLOGICAL INTERPRETATION

Estimation technique: the estimation technique for both tonnage and grade is described in sections 6.2.1 HOW THE MINERAL RESOURCE WAS ESTIMATED.

Cutoff grade: a cutoff grade of 0.5% Ni was used. All the nickel analyses were used to construct both a frequency histogram and a cumulative distribution plot (Appendix 4). Both plots indicate that the distribution of nickel analyses is bimodal with a split at about 0.5% Ni. The application of the 0.5% Ni cutoff grade resulted in the series of intersections listed in Table 6. All of these intersections occur in the mottled and transition zones of the laterite, and appear geologically consistent, see section 6.1 THE GEOLOGICAL INTERPRETATION.

Location of data: samples are held in a shed rented by Newnham Exploration and Mining Pty Ltd at Beaconsfield, Tasmania. Hard copies of drill hole logs, geological plans and sections, grade plans, and assay data used for this resource and reserve estimate are located at the offices of McKeown Mining Pty Ltd at Ridgley, Tasmania. Computer based plans are located at the office of Gillian Bennett Draughting Services at Burnie, Tasmania.

7 FUTURE WORK

When considering the future exploration of the Andersons Creek Exploration Licence, there are four key points which arose from the 1997 drilling programs:

- the Inferred Mineral Resource on the Andersons Creek Exploration Licence is estimated to be just over 12,000,000 tonnes at 0.94% Ni and 0.05%Co
- metallurgical testwork suggests that over 90% of the contained nickel is recoverable using high temperature, high pressure, sulphuric acid leach (PAL)
- the second drilling program increased the Resource by just over 23%
- about 55% (6,500,000 tonnes) of this Resource occurs in an area of just over 60ha at Barnes Hill

The metallurgical testwork indicates that the nickel could be successfully recovered using a PAL process. However, given the relatively high capital cost of establishing a PAL plant, it is likely that a Mineral Resource needs to be increased by a factor of at least two. A drilling program is recommended to determine the possibility of such a quantum increase in the Resource.

A broadly spaced drilling pattern is recommended to test the laterite over the whole of the unexplored part of the Exploration Licence where the Andersons Creek ultramafic Complex is known to exist. The programme could be completed in two stages, so that the most likely areas where a Barnes Hill type of laterite occurrence, that is relatively thick laterite over a small area (up to 16 metres vertical thickness over about 60ha), is most likely to be found.

At the completion of such a drilling program, probably at the completion of the first stage, it should be possible to evaluate the likelihood of significantly increasing the Mineral Resource.

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TABLE 1

ROCK TYPES WITHIN THE ANDERSONS CREEK ULTRAMAFIC COMPLEX

serpentinite	antigorite with accessory magnetite, chromite and chrysotile constitutes the bulk of the ACC outcrop probably formed from peridotites and dunites
pyroxenite	pyroxenes with accessory olivine, magnetite and chromite and trace chalcopyrite and chalcocite occurs commonly along the western margin and as layers up to 40 metres wide throughout the serpentinite
gabbronorite	saussuritised plagioclase feldspar and pyroxene with accessory ilmenite, pyrrhotite and trace chalcopyrite and pentlandite occurs interlayered with pyroxenite in layers a few metres thick
rodingite	grossular garnet and pyroxene with accessory vesuvianite occurs in a north-north-west trending zone at the south of the ACC considered to have formed by the lime metasomatism of gabbro
diorite	pyroxene, amphibole and saussuritised plagioclase with accessory sericite occurs as small bodies 25 metres across associated with gabbro
gneiss hornfels?	quartz, biotite, plagioclase and orthoclase feldspar with accessory muscovite, chlorite and epidote occurs as a few large "septa" up to 500 metres by 100 metres considered to have formed by metamorphism of sedimentary rocks

Summarised from Gee and Legge (1979), Summons et al (1981) and Maher (1995)

TABLE 2

THE LATERITIC PROFILE OVER THE ANDERSONS CREEK SERPENTINITES

secondary laterite	**pisolitic zone**	hard ironstone with red clay matrix
primary laterite	**ferruginous red zone**	soft chocolate red clay with pisolitic and black ironstone
	limonitic yellow zone	soft yellow orange and minor red clay
	mottled zone	soft bright red, brown, yellow and purple clay with black and white specks
	transition zone	soft decomposed serpentinite with dark green to light green and minor red clay
	bleached zone	soft pale yellow to green serpentinite with some magnetite
original rock	**fresh zone**	moderately hard dark green serpentinite

Note: this table follows the scheme devised by Anthony (1967)

TABLE 3

KING ISLAND SCHEELITE LIMITED
1969 RESOURCE ESTIMATE

location	no of holes	tonnage tonnes	grade %Ni	grade %Co	average depth to mineralisation metres
Scotts Hill	3	510,000	0.98	0.06	15.5
Mt Vulcan	3	1,344,000	0.95	0.05	6.4
Barnes Hill	16	3,274,000	1.03	0.07	8.8
Barnes Hill South	2	982,000	1.25	0.07	3.0
total		**6,110,000**	**1.04**	**0.06**	**7.9**

Note: the information in this table is taken from Anthony (1969)

TABLE 4

ALLEGIANCE MINING NL
AUGUST 1997 RESOURCE ESTIMATE

Inferred Mineral Resource

location	tonnage tonnes	grade %Ni	grade %Co
Scotts Hill	615,000	0.77	0.072
Mt Vulcan	1,866,000	0.87	0.058
Barnes Hill	6,099,000	0.97	0.051
Barnes Hill South	1,163,000	0.90	0.038
total	**9,743,000**	**0.93**	**0.052**

Note: the information in this table is taken from McKeown (1997)

TABLE 5

DRILLING METHODS EMPLOYED DURING THE 1997 DRILLING PROGRAMS

method	hole numbers	length drilled
diamond drilling	S073 to S075, S121 to S124	129m
rotary bit	S001, S002, S003, S006 & S009 to 11m	48m
down the hole hammer	S008, S069 to 4m	11m
air core	S009 11m to 15m, S069 4m to 11m, all other holes	991m
total		**1179m**

TABLE 6
SUMMARY OF RESULTS OF 1997 RC DRILLING PROGRAMS

hole no	location	collar east AMG	collar north AMG	collar level m	intersection from m	intersection to m	down hole length m	%Ni	%Co
S001	Scotts Hill	479,716	5,440,015	36	0	0			
S002	Scotts Hill	479,833	5,440,055	22	11	12	1	0.52	0.024
S003	Scotts Hill	479,956	5,440,032	30	5	8	3	0.94	0.048
S004	Scotts Hill	479,702	5,439,887	35	13	19	6	0.88	0.035
S005	Scotts Hill	479,837	5,439,901	24	21	23	2	0.55	0.032
S006	Scotts Hill	479,934	5,439,919	31	10	11	1	0.65	0.142
S007	Scotts Hill	479,709	5,439,771	40	18	20	2	0.71	0.064
S008	Scotts Hill	479,876	5,439,656	57	0	0			
S009	Scotts Hill	479,881	5,439,774	40	8	13	5	0.66	0.138
S096	Scotts Hill	480,071	5,440,104	27	0	0			
S097	Scotts Hill	479,920	5,440,130	28	0	0			
S098	Scotts Hill	479,863	5,440,213	28	0	0			
S099	Scotts Hill	480,015	5,439,891	37	0	0			
S100	Scotts Hill	480,018	5,439,765	39	0	0			
S101	Scotts Hill	480,048	5,439,685	36	0	0			
S102	Scotts Hill	479,619	5,439,877	38	5	6	1	0.88	0.030
S103	Scotts Hill	479,624	5,439,762	44	6	8	2	0.87	0.028
S104	Scotts Hill	479,612	5,439,622	61	0	0			
S105	Scotts Hill	480,143	5,440,284	22	0	0			
S106	Scotts Hill	480,194	5,440,486	24	0	0			
S107	Mt Vulcan	479,920	5,439,690	45	3	8	5	0.73	0.037
S117	Scotts Hill	479,581	5,439,528	63	0	0			
S118	Scotts Hill	479,494	5,439,466	69	0	0			
S119	Scotts Hill	479,824	5,439,732	58	0	0			
S120	Scotts Hill	479,726	5,439,642	72	0	0			

TABLE 6
SUMMARY OF RESULTS OF 1997 RC DRILLING PROGRAMS

hole no	location	collar east AMG	collar north AMG	collar level m	intersection from m	intersection to m	down hole length m	%Ni	%Co
S010	Mt Vulcan	479,788	5,439,297	48	0	7	7	0.67	0.067
S011	Mt Vulcan	479,881	5,439,386	42	0	0			
S012	Mt Vulcan	480,028	5,439,337	33	1	4	3	0.65	0.041
S013	Mt Vulcan	479,894	5,439,302	39	5	8	3	0.51	0.022
S014	Mt Vulcan	480,050	5,439,298	30	2	13	11	0.52	0.049
S015	Mt Vulcan	479,847	5,439,249	43	6	13.5	7.5	0.84	0.045
S016	Mt Vulcan	479,989	5,439,103	55	7	18	11	0.98	0.064
S017	Mt Vulcan	480,058	5,439,075	56	5	17	12	1.08	0.070
S108	Mt Vulcan	480,150	5,439,279	35	0	0			
S109	Mt Vulcan	479,705	5,439,062	71	0	0			
S110	Mt Vulcan	479,590	5,439,071	66	0	0			
S111	Mt Vulcan	480,750	5,439,200	65	0	0			
S112	Mt Vulcan	480,710	5,438,910	75	0	0			
S113	Mt Vulcan	479,847	5,439,007	75	7	9	2	0.74	0.034
S114	Mt Vulcan	481,000	5,438,975	82	3	4	1	0.80	0.058
S115	Mt Vulcan	480,128	5,438,931	71	1	3.5	2.5	1.14	0.082
S116	Mt Vulcan	480,002	5,438,981	71	7	11	4	0.86	0.037

TABLE 6
SUMMARY OF RESULTS OF 1997 RC DRILLING PROGRAMS

hole no	location	collar east AMG	collar north AMG	collar level m	intersection from m	intersection to m	down hole length m	%Ni	%Co
S018	Barnes Hill	480,995	5,436,880	94	9	25	16	0.79	0.050
S019	Barnes Hill	481,097	5,436,962	99	5	12	7	0.63	0.100
S020	Barnes Hill	481,156	5,436,889	105	3	14	11	0.73	0.042
S021	Barnes Hill	481,279	5,436,943	97	11	21	10	0.89	0.043
S022	Barnes Hill	481,314	5,437,102	102	13	19	6	1.14	0.065
S023	Barnes Hill	481,120	5,437,126	99	0	14	14	0.96	0.070
S024	Barnes Hill	481,164	5,437,327	102	0	6.5	6.5	0.56	0.033
S025	Barnes Hill	481,352	5,437,392	93	0	0			
S026	Barnes Hill	481,442	5,437,033	86	16	25	9	1.65	0.067
S027	Barnes Hill	481,529	5,437,150	80	13	20	7	1.00	0.051
S028	Barnes Hill	481,666	5,437,240	72	0	4	4	0.82	0.037
S029	Barnes Hill	481,738	5,437,449	73	0	0			
S030	Barnes Hill	481,508	5,437,358	78	2	4	2	0.53	0.025
S031	Barnes Hill	481,289	5,436,874	91	6	19	13	1.02	0.048
S032	Barnes Hill	481,569	5,436,904	72	5	11	6	1.34	0.033
S033	Barnes Hill	480,837	5,436,878	107	8	11	3	0.61	0.039
S034	Barnes Hill	480,872	5,436,979	88	5	15	10	0.70	0.049
S035	Barnes Hill	481,328	5,435,657	91	0	2	2	0.76	0.022
S036	Barnes Hill	481,469	5,435,578	86	0	3	3	0.76	0.027
S037	Barnes Hill	481,575	5,435,457	81	0	3	3	0.86	0.025
S038	Barnes Hill	481,664	5,435,348	78	2	6	4	0.94	0.035
S039	Barnes Hill	481,681	5,435,752	88	0	9	9	1.01	0.046
S040	Barnes Hill	481,657	5,436,012	93	0	2	2	0.88	0.029
S041	Barnes Hill	481,448	5,435,941	90	0	2	2	1.14	0.017
S042	Barnes Hill	481,295	5,435,915	95	0	0			
S043	Barnes Hill	481,401	5,436,078	85	0	0			
S044	Barnes Hill	481,324	5,436,143	88	0	0			
S045	Barnes Hill	481,625	5,435,920	93	0	2	2	0.79	0.031
S046	Barnes Hill	481,630	5,436,166	84	2	3	1	0.52	0.020

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TABLE 6
SUMMARY OF RESULTS OF 1997 RC DRILLING PROGRAMS

hole no	location	collar east AMG	collar north AMG	collar level m	intersection from m	intersection to m	down hole length m	%Ni	%Co
S047	Barnes Hill	481,692	5,436,145	86	3	9	6	0.75	0.032
S048	Barnes Hill	481,554	5,435,791	91	0	6	6	1.03	0.073
S049	Barnes Hill	481,742	5,435,992	107	0	0			
S050	Barnes Hill	481,578	5,435,955	91	0	3	3	1.10	0.027
S051	Barnes Hill	481,577	5,435,633	88	0	0			
S053	Barnes Hill	481,391	5,436,629	82	3	4	1	0.50	0.053
S054	Barnes Hill	481,298	5,436,485	82	0	0			
S055	Barnes Hill	481,190	5,436,420	93	2	3	1	0.70	0.015
S056	Barnes Hill	481,153	5,436,301	93	0	0			
S057	Barnes Hill	481,191	5,436,429	88	1	2	1	0.50	0.025
S058	Barnes Hill	481,158	5,436,609	96	4	6	2	1.03	0.057
S059	Barnes Hill	481,258	5,436,676	89	2	3.5	1.5	0.80	0.026
S060	Barnes Hill	481,447	5,436,870	85	3	5	2	1.29	0.023
S061	Barnes Hill	481,373	5,436,807	88	0	3	3	0.92	0.022
S062	Barnes Hill	481,620	5,436,760	75	0	0			
S063	Barnes Hill	481,200	5,436,808	91	6	20	14	1.55	0.045
S064	Barnes Hill	480,737	5,437,020	84	2	3.5	1.5	0.78	0.028
S065	Barnes Hill	481,020	5,437,023	89	5	6	1	0.75	0.044
S066	Barnes Hill	480,943	5,437,127	85	0	0			
S067	Barnes Hill	481,057	5,437,105	96	0	0			
S068	Barnes Hill	481,153	5,437,197	104	1	4	3	0.68	0.009
S069	Barnes Hill	481,276	5,437,248	95	9	11	2	1.13	0.109
S070	Barnes Hill	481,428	5,437,251	76	14	24	10	1.15	0.051
S071	Barnes Hill	481,573	5,437,051	72	8	15.5	7.5	1.10	0.085
S072	Barnes Hill	481,650	5,437,120	83	6	9	3	1.59	0.078
S076	Barnes Hill	481,420	5,435,790	92	0	5.5	5.5	1.06	0.098
S077	Barnes Hill	481,690	5,436,286	81	4	7.5	3.5	0.68	0.021
S078	Barnes Hill	481,711	5,436,447	75	3	5	2	0.76	0.084
S079	Barnes Hill	481,736	5,436,589	69	1	3	2	0.57	0.042

TABLE 6
SUMMARY OF RESULTS OF 1997 RC DRILLING PROGRAMS

hole no	location	collar east AMG	collar north AMG	collar level m	intersection from m	intersection to m	down hole length m	%Ni	%Co
S080	Barnes Hill	481,863	5,436,676	64	0	0			
S081	Barnes Hill	481,555	5,436,404	80	0	0			
S082	Barnes Hill	481,555	5,436,304	80	0	0			
S083	Barnes Hill	481,565	5,435,319	80	0	0			
S084	Barnes Hill	481,474	5,435,339	81	0	0			
S085	Barnes Hill	481,176	5,435,806	93	11	14	3	0.66	0.039
S086	Barnes Hill	481,064	5,435,886	111	0	0			
S087	Barnes Hill	481,128	5,436,219	95	0	5	5	1.19	0.080
S088	Barnes Hill	481,210	5,436,204	95	0	0			
S089	Barnes Hill	481,051	5,436,318	96	0	0			
S090	Barnes Hill	480,909	5,436,491	104	0	0			
S091	Barnes Hill	481,026	5,436,467	100	0	0			
S092	Barnes Hill	481,057	5,436,636	103	2	2.5	0.5	0.73	0.118
S093	Barnes Hill	481,093	5,436,782	94	8	16	8	0.62	0.054
S094	Barnes Hill	480,757	5,436,647	143	0	0			
S095	Barnes Hill	480,801	5,436,695	132	10	11.5	1.5	0.71	0.025

231204

TABLE 6

SAMPLES SUBMITTED FOR MINERALOGICAL ASSESSMENT

Scotts Hill	S004	13m to	18m	0.92%Ni	0.075%Co
	S009	8	13	0.59	0.170
Mt Vulcan	S015	6	13	0.86	0.070
	S017	5	11	1.07	0.105
	S017	11	17	0.97	0.085
Barnes Hill	S018	9	17	0.74	0.085
	S018	17	25	0.78	0.065
	S026	16	21	1.45	0.115
	S026	21	26	1.23	0.055
Barnes Hill South	S047	5	9	0.75	0.070
	S048	0	6	0.95	0.115

The analyses are taken from Bradke (1997)

TABLE 7

COMPARISON OF SOME RESULTS FROM PAIRED REVERSE CIRCULATION AND DIAMOND DRILL HOLES

hole type	hole no	depth to laterite m	depth to serpentinite m	mean grade of laterite %Ni
RC	S026	16	24	0.70
DDH	S073	15.6	23.1	0.40
RC	S018	9	24	0.54
DDH	S074	7.7	23.8	0.51
RC	S048	0	6	0.88
DDH	S075	0	11.0	0.61

Note: laterite is defined as in 6.4 RESOURCE ASSESSMENT CRITERIA, that is >0.5% Ni

TABLE 8

SAMPLES SUBMITTED FOR MINERALOGICAL ASSESSMENT

Scotts Hill	S004	13m to	18m	0.92%Ni	0.075%Co
	S009	8	13	0.59	0.170
Mt Vulcan	S015	6	13	0.86	0.070
	S017	5	11	1.07	0.105
	S017	11	17	0.97	0.085
Barnes Hill	S018	9	17	0.74	0.085
	S018	17	25	0.78	0.065
	S026	16	21	1.45	0.115
	S026	21	26	1.23	0.055
Barnes Hill South	S047	5	9	0.75	0.070
	S048	0	6	0.95	0.115

The analyses are taken from Bradke (1997)

TABLE 9

PRINCIPAL MINERAL SPECIES IDENTIFIED IN SAMPLES SUBMITTED FOR MINERALOGICAL ASSESSMENT[1]

mineral category	mineral	mineral abundance	occurrence
serpentine	lizardite	accessory, occasionally dominant	most samples
clays	smectite[2]	generally dominant	all samples
	kaolinite	trace	some samples
hydrated mica	vermiculite	accessory	few samples
iron oxides	magnetite	trace to accessory	most samples
	haematite	trace to accessory	most samples
	goethite	trace to accessory	most samples
		dominant	one sample
other silicates	talc	trace	few samples
	quartz	trace	many sample
	dolomite?	trace	few samples

Notes:

1 information in this table summarised from Table 2 in Bradke (1997)

2 an unidentified clay mineral has also been identified but it is probably a variety of smectite

TABLE 10

WHOLE ROCK ANALYSES OF LATERITE

	BRADKE 1997	ITS 1969[1]
SiO_2	38.14	34.6
TiO_2	0.11	not quoted
Al_2O_3	4.81	4.9
Fe_2O_3	28.05	29.5
MgO	12.37	12.3
MnO	0.35	not quoted
CaO	0.14	0.9
Na_2O	0.05	not quoted
K_2O	0.03	not quoted
P_2O_5	0.02	not quoted
LOI	12.59	not quoted

Notes:

1 ITS = International Technical Services Limited, ITS data quoted in Anthony (1969)

TABLE 11

MINERALOGICAL DISTRIBUTION OF NICKEL IN LATERITE - PROPORTION OF TOTAL NICKEL IN EACH MINERAL SPECIES

		smectite	clay	serpentine	goethite	magnetite/ haematite	quartz	total
S004	13m to 18m	73%	27%					100%
S009	8m to 13m	77		14	9			100
S015	6m to 13m	38		60	2			100
S017	5m to 11m	93		6	1			100
S017	11m to 17m	73		26		1		100
S018	9m to 17m	90		1	4	1	4	100
S018	17m to 25m	93		5	2			100
S026	16m to 21m	90	3		6	1		100
S026	21m to 26m	90		8	2			100
S047	5m to 9m	77	11	10	1	1		100
S048	0m to 6m	62	32	2	4			100

Note: this table is taken from Bradke (1997)

TABLE 12

MINERALOGICAL DISTRIBUTION OF NICKEL IN LATERITE - %NICKEL CONTENT OF EACH MINERAL SPECIES

sample	smectite	clay	serpentine	goethite	magnetite/ haematite	quartz	total
S004 13m to 18m	0.76	0.28					1.05
S009 8m to 13m	0.29		0.05	0.03			0.48
S015 6m to 13m	0.39		0.60	0.02			1.28
S017 5m to 11m	0.99		0.06	0.01			1.05
S017 11m to 17m	0.68		0.24		0.01		0.94
S018 9m to 17m	0.50		0.01	0.02	0.01	0.02	0.56
S018 17m to 25m	0.65		0.04	0.01			0.70
S026 16m to 21m	1.36	0.04		0.09	0.01		1.51
S026 21m to 26m	1.20		0.10	0.09	0.01		1.33
S047 5m to 9m	0.72	0.10	0.09	0.01	0.01		0.93
S048 0m to 6m	0.58	0.31	0.02	0.04			0.94

Note: this table is taken from Bradke (1997)

TABLE 13

ABUNDANCES OF SOME METALLIC ELEMENTS IN THE ANDERSONS CREEK SERPENTINITES

element	low	high
Ni	<3ppM	4116ppM
Co	<3ppM	779ppM
Au	0.038ppM	0.1ppM
S	424ppM	5320ppM
Cu	2ppM	1520ppM
Cr	329ppM	1.53%
Fe	0.96%	36.01%

Notes: not all 72 samples were analysed for all the elements listed,
these data were summarised from data in Maher, 1994 and Maher, 1995

TABLE 14

REPORTED OCCURRENCE OF SOME METALLIC MINERALS IN ANDERSONS CREEK SERPENTINITES

mineral	occurrence	type of description	reference
magnetite	accessory in serpentinite	general description	Gee and Legge
	accessory in pyroxenite	general description	Gee and Legge
chromite	accessory in serpentinite	general description	Gee and Legge
	accessory in pyroxenite	general description	Gee and Legge
iron oxides	accessory in gabbro	general description	Gee and Legge
marcasite	sparse in mafic to ultramafic rock	specimen description	Mason
pyrrhotite	trace in mafic to ultramafic rock	specimen description	Mason
	accessory (1%) in gabbronorite	specimen description	Mason
	minor in gabbroic rock	specimen description	Mason
chalcopyrite	trace in mafic to ultramafic rock	specimen description	Mason
	trace in gabbronorite	specimen description	Mason
	sparse in gabbroic rock	specimen description	Mason
chalcocite	rare in pyroxenite	general description	Maher

Notes:
References are to Gee and Legge (1979), Mason (1994) and Maher (1995)

TABLE 15

SAMPLES SUBMITTED FOR METALLURGICAL TESTING

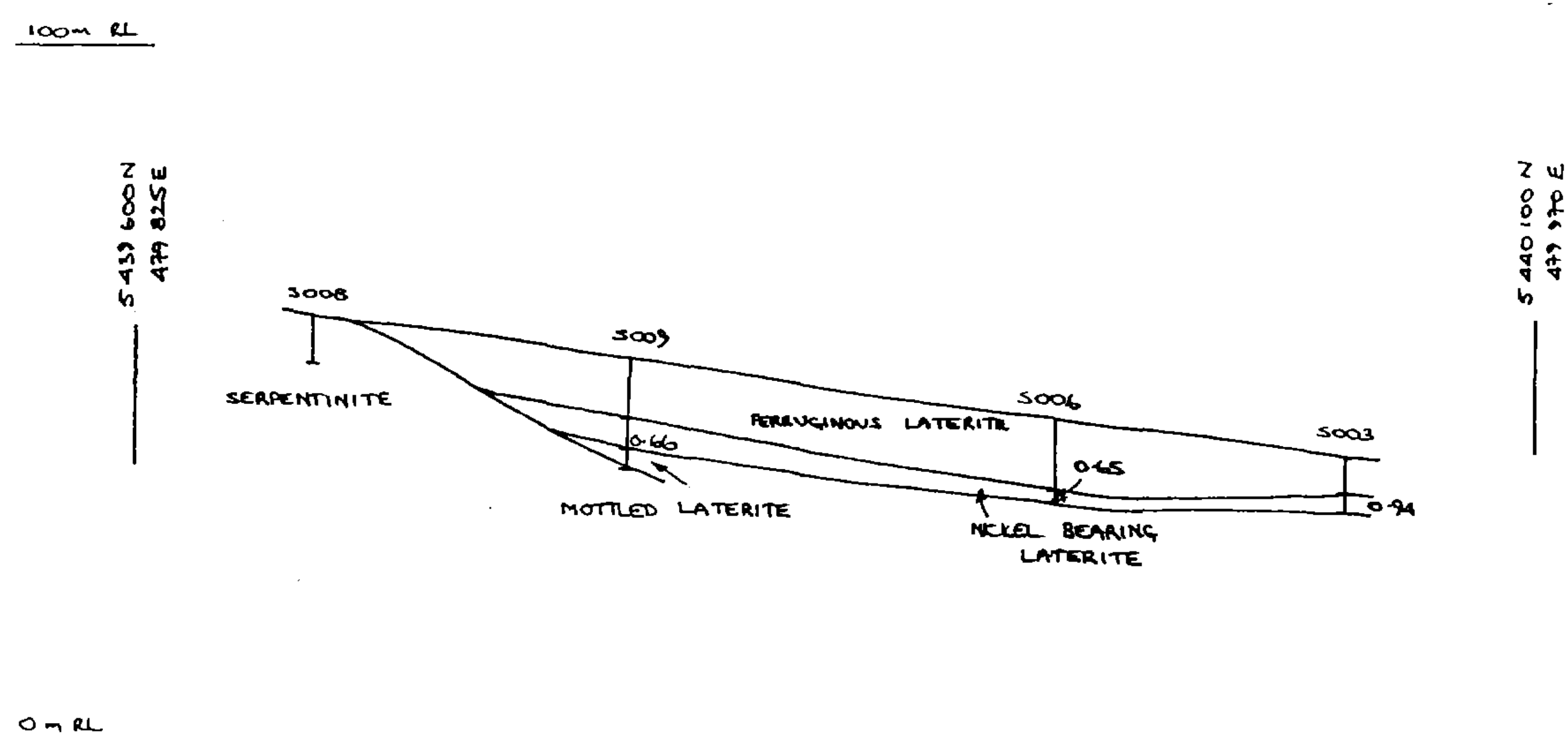
S004	13m	to	18m
S009	8m	to	13m
S015	6m	to	13m
S017	5m	to	11m
S017	11m	to	17m
S018	9m	to	25m
S026	16m	to	26m
S047	5m	to	9m
S048	0m	to	6m

TABLE 16

MASSES AND BULK DENSITIES BASED ON DIAMOND DRILL CORE

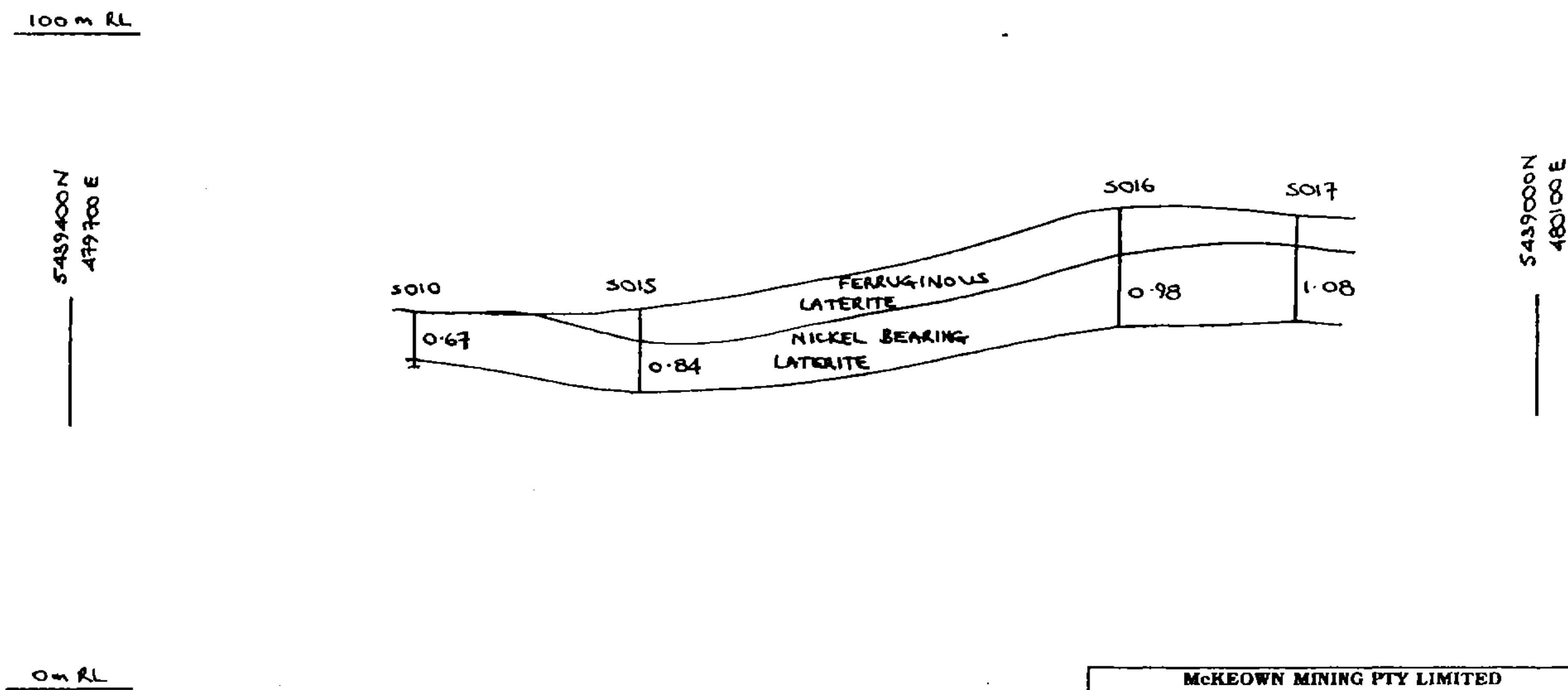
hole no	mass recovered kg	length recovered m	calculated density tonnes/ cubic metre
S073	72.4	11.8	2.10
S074	91.5	15.6	2.01
S075	52.6	8.8	2.04

Note: for calculations of density the diameter of the triple tube core was assumed to be 61mm.



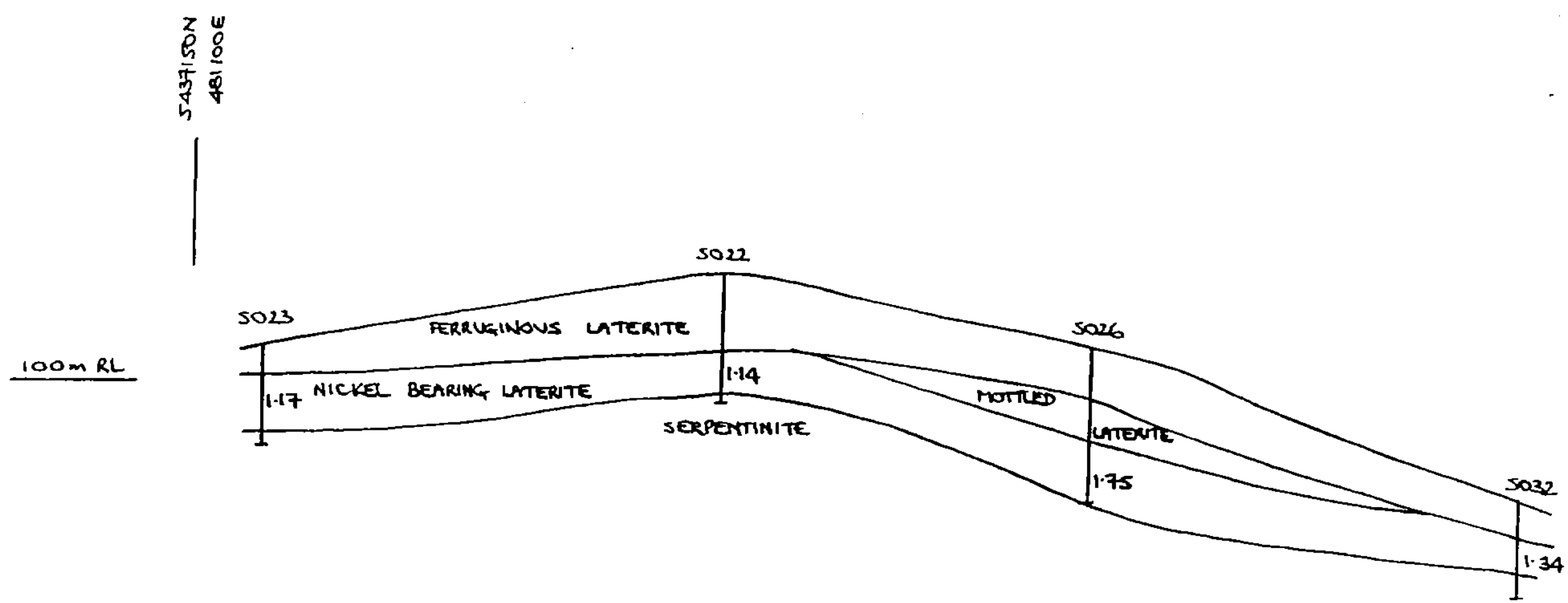
NOTE: VERTICAL EXAGGERATION
Horizontal scale 1: 2500
Vertical scale 1: 1000
Grades shown are % Ni

McKEOWN MINING PTY LIMITED		
ALLEGIANCE MINING N.L. **EL 10/96 ANDERSONS CREEK** **SECTION AT SCOTTS HILL**		
		Scale:
Drawn:M V McK	Date 31 Aug 97	Fig: 1



NOTE: VERTICAL EXAGGERATION
Horizontal scale 1: 2500
Vertical scale 1: 1000
Grades shown are % Ni

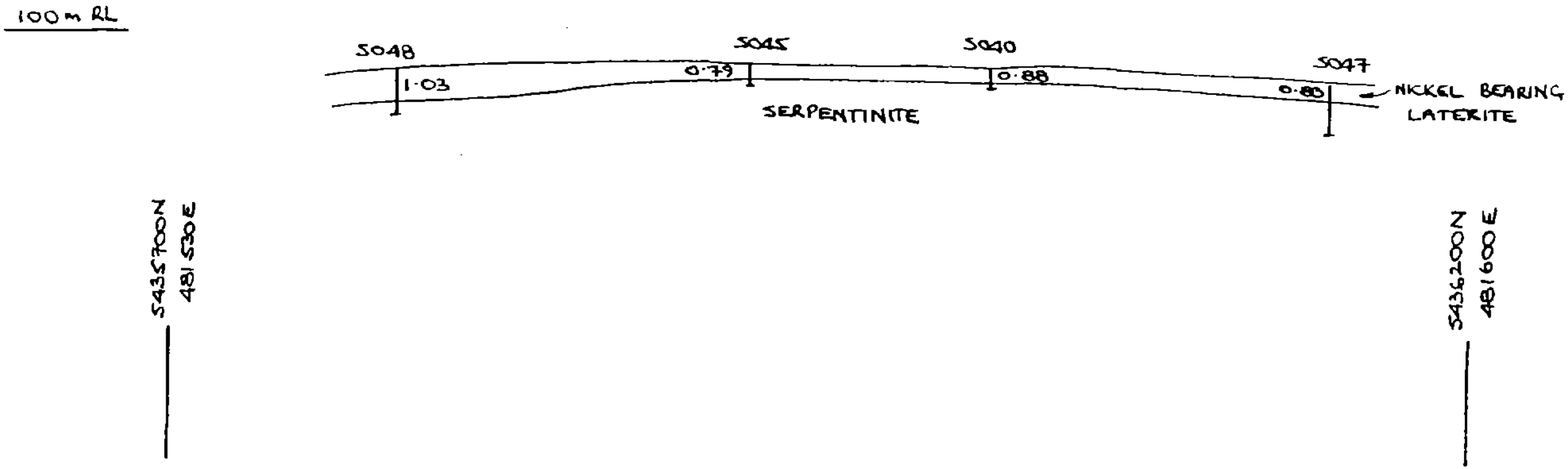
McKEOWN MINING PTY LIMITED		
ALLEGIANCE MINING N.L. EL 10/96 ANDERSONS CREEK SECTION AT MOUNT VULCAN		
		Scale: see note
Drawn:M V McK	Date 31 Aug 97	Fig: 2



NOTE: VERTICAL EXAGGERATION
Horizontal scale 1: 2500
Vertical scale 1: 1000
Grades shown are % Ni

McKEOWN MINING PTY LIMITED		
ALLEGIANCE MINING N.L. **EL 10/96 ANDERSONS CREEK** **SECTION AT BARNES HILL**		
		Scale: see note
Drawn: M V McK	Date 31 Aug 97	Fig: 3

23128



NOTE: VERTICAL EXAGGERATION
Horizontal scale 1: 2500
Vertical scale 1: 1000
Grades shown are % Ni

McKEOWN MINING PTY LIMITED

ALLEGIANCE MINING N.L.
EL 10/96 ANDERSONS CREEK

SECTION BARNES HILL SOUTH

	Scale: see note

Drawn: M V McK	Date 31 Aug 97	Fig: 4

231220

Appendix 1

Summary of exploration prior to the acquisition by Allegiance Mining N.L.
of Exploration Licence 10/96

SUMMARY OF EXPLORATION PRIOR TO THE ACQUISITION BY ALLEGIANCE MINING N.L. OF EXPLORATION LICENCE 10/96

The summaries are arranged in chronological order.

Abbreviations used below:

DDH diamond drill hole
TDM Tasmania Department of Mines
BHP The Broken Hill Proprietary Company
KIS King Island Scheelite (1947) Limited
CRA CRA Exploration Pty Ltd

Gould, 1866	iron ore and asbestos occurrences reported
Twelvetrees, 1900 TDM	report on asbestos production by the Australian Asbestos Company
Twelvetrees, 1903 TDM	report describing the serpentinite rocks in the area
Twelvetrees, 1917 TDM	report describing the failure of asbestos production by the Australian Asbestos Company
Reid, 1919 TDM	report describing the failure of the Australian Asbestos Company
Hills, 1923 TDM	report describing the geology of the Beaconsfield area
Nye, 1930 TDM	report describing the results of drilling of the iron ore deposits at Mt Scott, Mt Vulcan and Barnes Hill; the iron ore described as an iron laterite developed on serpentinite with relatively high nickel and chromium content
Taylor, 1955 TDM	report on the asbestos potential of Tasmania; commented that sufficient medium grade asbestos ore was available to satisfy Tasmania's needs
Hughes, 1957 TDM	reported on the occurrence of nickel in the Beaconsfield district and recommended drilling to test it
Ben Lomond Mining 1956-1957	the Ben Lomond Mining Company prospected the areas of serpentinite outcrop and brown clay over serpentinite and the prospect was then taken over by Consolidated Zinc Pty Ltd
Knight, 1957 Consolidated Zinc	report for Consolidated Zinc recommended that, because the nickel grade in the laterite was below 2.5%, the project be dropped; an

	exposed triangular area of ultrabasic outcrop was tested by hand augering on ten lines, total line length being 6,309m.
Enterprise Exploration 1957-1958	Enterprise Exploration, in association with Ben Lomond Mining, completed 147 auger holes, 57 in an area of garnierite bearing serpentinite being the most nickeliferous with assays ranging up to 1.83% Ni; estimated that reserves of nickel in the soil over the serpentinite contained less than 0.5 million tonnes at 1% Ni
Hughes, 1958 TDM	commented that Consolidated Zinc had not tested areas of laterite over serpentinite; Pitulej sampled trenches in laterite and nickel assays up to 1.25% were reported
Stefanski, 1959 TDM	reported on further sampling of trenches in clay and laterite over serpentinite and recommended drilling if further information was required
Hughes, 1962 TDM	reported on DDH Andersons Creek 1 drilled into weathered serpentinite to a depth of 45.7m; nickel assays ranged from >0.5% in clay, to >0.4% in decomposed serpentinite, to about 0.3% in serpentinite at the bottom of the hole
Noldart, 1963 TDM	reported on the chromite occurrences in the Beaconsfield area and the results of auger holes; he concluded that chromiferous sands occur in Tertiary gravels overlying the serpentinite
Gebert, 1967 BHP	reported on one year's exploration for limestone, chromite, nickel, iron ore and base metals using geological mapping, air and ground magnetics, geochemical sampling, pitting, trenching, auger drilling and one DDH; prospect abandoned due to poor prospectivity; the DDH Scotts Hill 1 was drilled at Scotts Hill but was not assayed
Anthony, 1967 KIS	presented a summary of exploration to that time and outlined the KIS target of 50 million tonnes of 1% Ni as a target; 17 DDHs suggested*** the presence of 7 to 11 million tonnes of ore at 1.05% (Ni + Co); he described the lateritic profile over the serpentinite and related nickel grades to laterite development
Anthony, 1969 KIS	20 more DDHs had been drilled and resources, at 0.7% Ni cutoff grade, were estimated at 6 million tonnes at 1.04% Ni + 0.06% Co; he recommended that work on the prospect be stopped due to the small size of the deposit
Allstate 1971-1972	15 diamond drill holes completed in a search for an asbestos deposit
Summons, 1980 TDM	reported on the chromite occurrences in the Beaconsfield area

Fox, 1980 Northern Chromite	described mining of Tertiary chromite sands by the Northern Chromite Pty Ltd for use as foundry sand, reserves of 250,000 tonnes to be mined at 80,000 tonnes per year
Summons et al, 1981 TDM	reported that the Andersons Creek iron ores are secondary laterites containing 3.5 to 5.5% Cr and that chromite ore reserves in sands at Barnes Hill and the Rifle Range Prospects total 667, 000 tonnes at about 12% chromite, using a 6.5% chromite cutoff
Maher, 1994 CRA	CRA took up EL 35/92 as a nickel target; an historical review, rock geological mapping and rock chip sampling were reported
Maher, 1995 CRA	relogged and assayed some existing drill core, completed rock chip and soil sampling, IP survey; identified gold occurrence in DDH Scotts Hill 1, 3m down hole length at about 1g/t Au; recommended diamond drilling of IP anomalies in nickeliferous laterite

231224

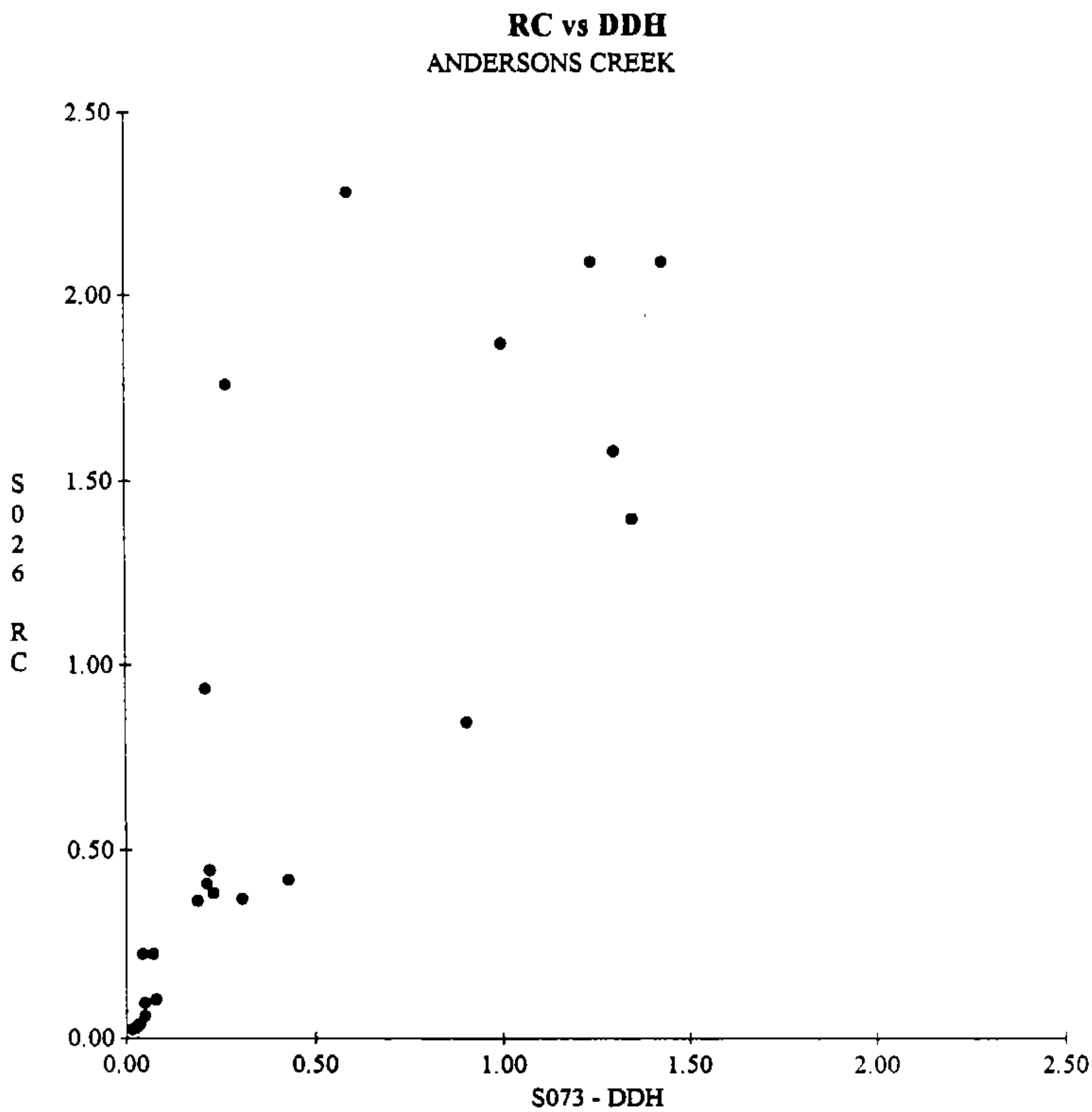
Appendix 2

Comparison of results from paired reverse circulation and diamond drill holes
holes

from	to	S073	S026
0	1	0.04	0.23
1	2	0.07	0.23
2	3	0.05	0.06
3	4	0.03	0.03
4	5	0.03	0.04
5	6	0.03	0.04
6	7	0.02	0.03
7	8	0.02	0.02
8	9	0.02	0.03
9	10	0.05	0.10
10	11	0.08	0.11
11	12	0.19	0.37
12	13	0.21	0.41
13	14	0.23	0.39
14	15	0.31	0.37
15	16	0.43	0.42
16	17	0.90	0.85
17	18	1.35	1.40
18	19	1.30	1.58
19	20	1.43	2.09
20	21	1.24	2.09
21	22	1.00	1.87
22	23	0.59	2.28
23	24	0.27	1.76
24	25	0.21	0.94
25	26	0.22	0.45
totals		10.3	**18.1**
means		0.40	0.70

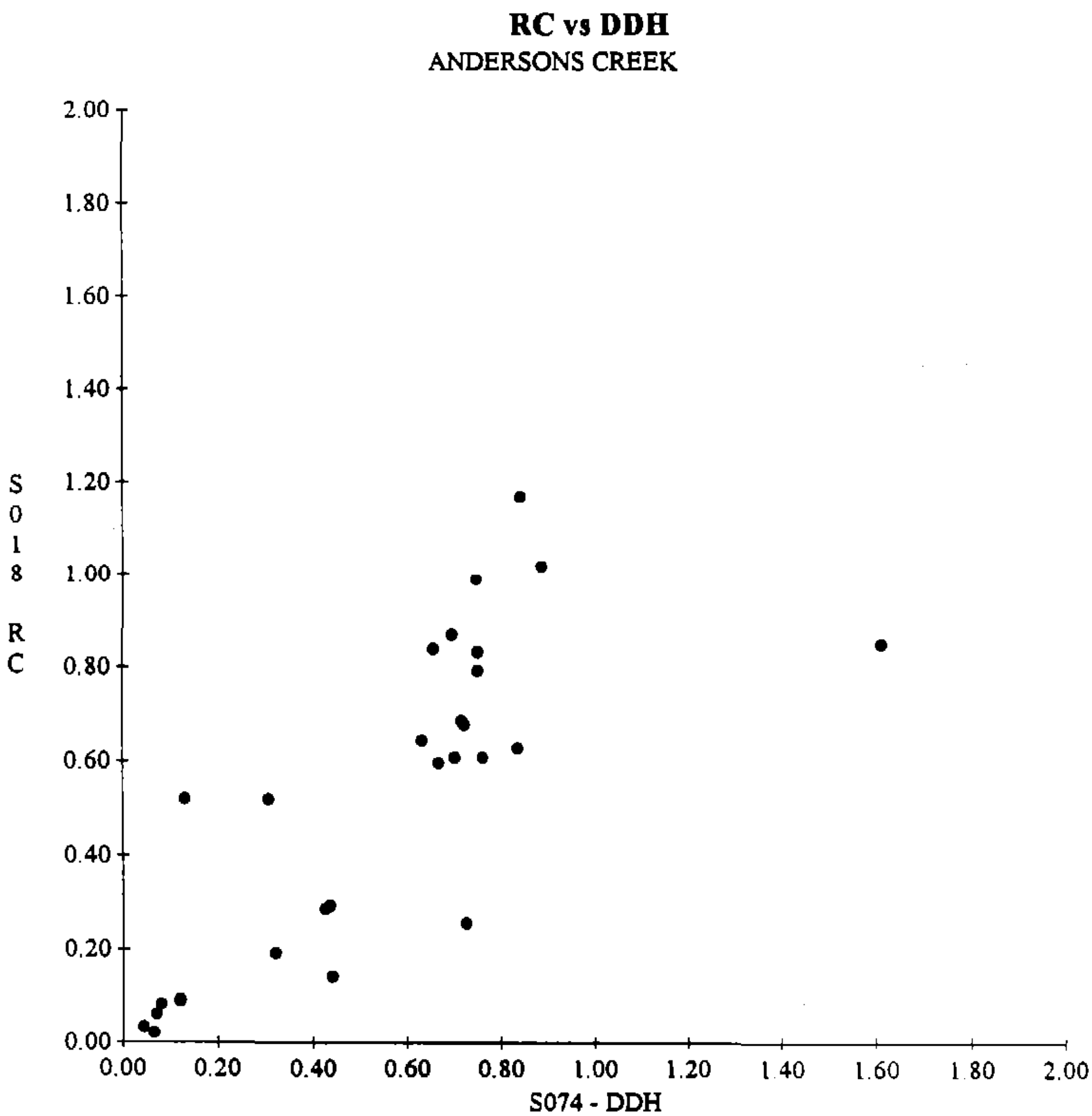
from	to	S074	S018
0	1	0.02	0.07
1	2	0.03	0.04
2	3	0.06	0.07
3	4	0.08	0.08
4	5	0.09	0.12
5	6	0.09	0.12
6	7	0.29	0.43
7	8	0.52	0.31
8	9	0.52	0.13
9	10	0.69	0.72
10	11	0.83	0.75
11	12	0.99	0.75
12	13	0.63	0.84
13	14	0.60	0.67
14	15	0.61	0.70
15	16	0.65	0.63
16	17	0.84	0.66
17	18	0.79	0.75
18	19	0.61	0.76
19	20	0.87	0.70
20	21	0.68	0.72
21	22	1.17	0.84
22	23	0.85	1.61
23	24	1.02	0.89
24	25	0.26	0.73
25	26	0.14	0.44
26	27	0.19	0.32
27	28	0.29	0.44
totals		**14.4**	**15.2**
means		**0.51**	**0.54**

from	to	S075	S048
0	1	0.48	1.51
1	2	0.683	1.51
2	3	0.882	0.640
3	4	0.856	0.875
4	5	0.730	0.720
5	6	0.647	0.905
totals		**4.3**	**6.2**
means		**0.61**	**0.88**

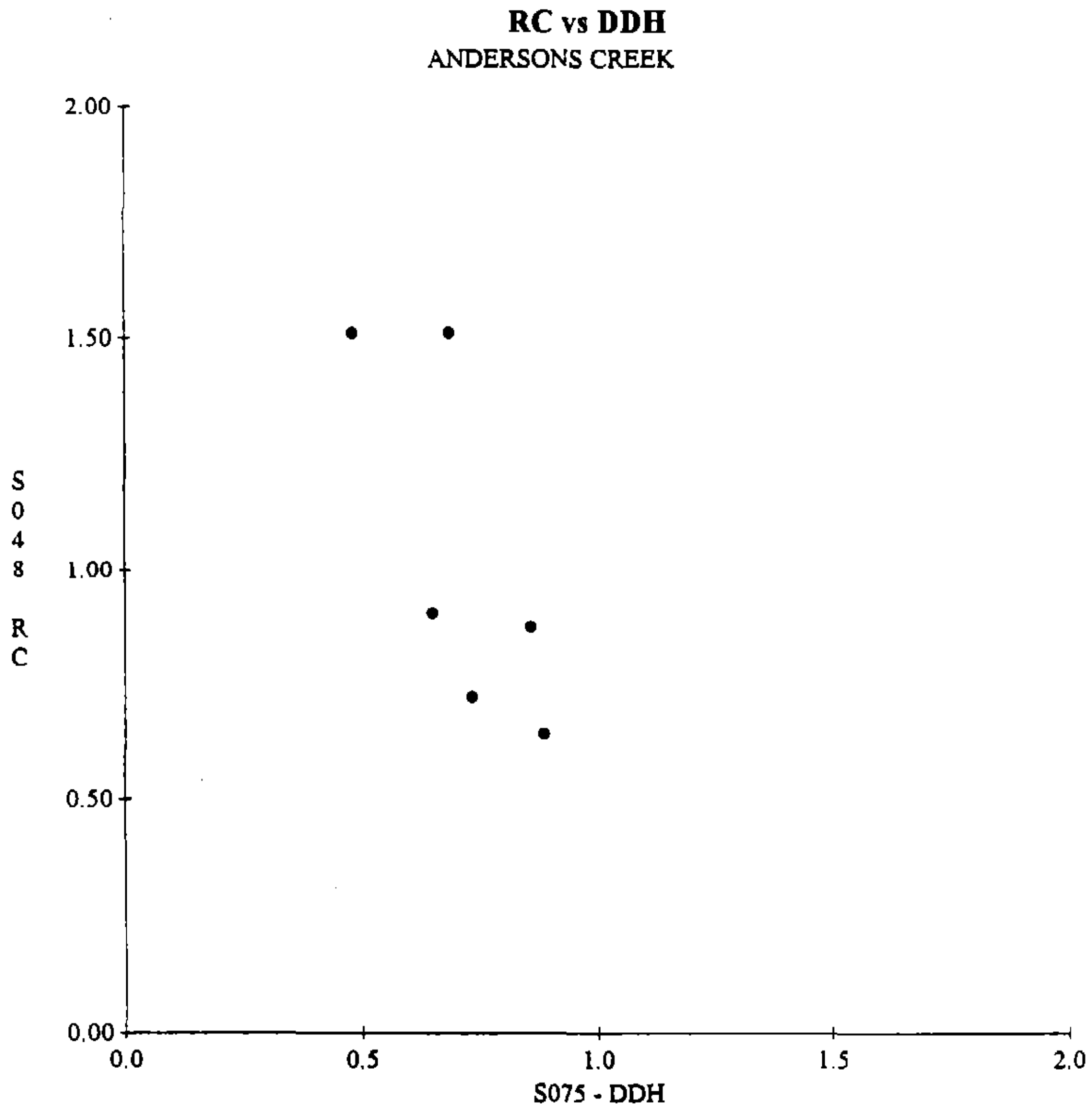


RC vs DDH
ANDERSONS CREEK
2.50
2.00
1.50
1.00
0.50
0.00
S026 RC
0.00
0.50
1.00
1.50
2.00
2.50
S073 - DDH

231227



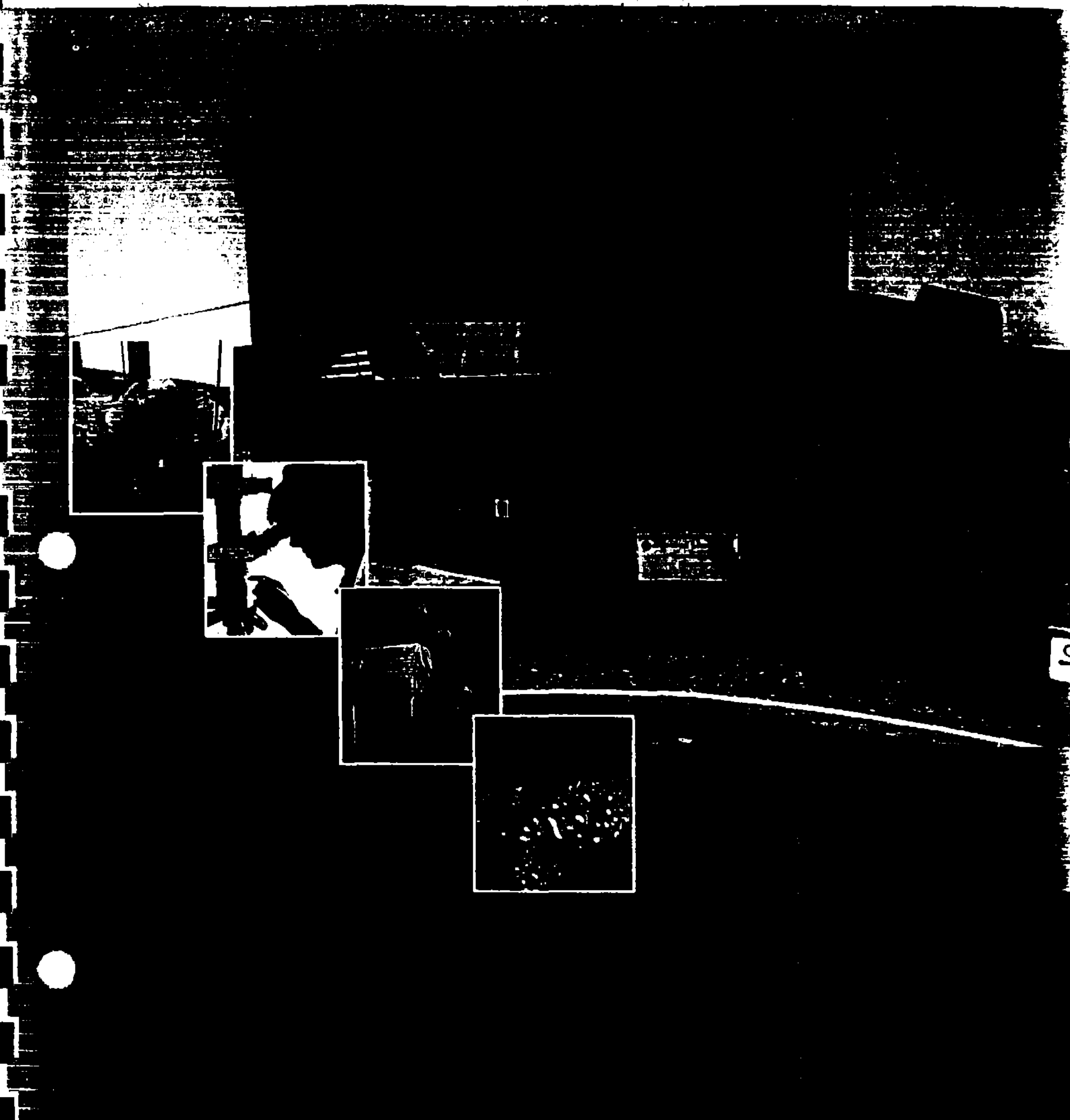
RC vs DDH
ANDERSONS CREEK
S018 RC
S074 - DDH
0.00
0.20
0.40
0.60
0.80
1.00
1.20
1.40
1.60
1.80
2.00


RC vs DDH
ANDERSONS CREEK
2.00
1.50
1.00
0.50
0.00
S048 RC
0.0
0.5
1.0
1.5
2.0
S075 - DDH

Appendix 3

Nickel laterite leaching

231230



REPORT G693500G/97

NICKEL LATERITE LEACHING

1. INTRODUCTION

In August 1997, Amdel carried out a mineralogical examination of 11 nickel laterite samples for McKeown Mining Pty Ltd. Pressure leaching tests were then authorised on 5 September 1997 on 9 composite samples as follows:

S004	13 to 18
S009	8 to 13
S015	6 to 13
S017	5 to 11
S017	11 to 17
S018	9 to 25
S026	16 to 26
S047	5 to 9
S048	0 to 6

2. PROCEDURE

2.1 Sample Preparation

The samples which had not been used for mineralogical work were crushed and pulverised for leaching. Two 400g samples and a head sample for analysis were riffled out of each pulverised sample.

2.2 Pressure Leaching

For each sample, leaching was carried out at 240 and 260°C. For each test, a 400g sample of ore was leached at 25% solids in a sulphuric acid solution containing 200g H_2SO_4 (500g H_2SO_4/kg of ore). The initial slurry contained 400g of solids and 800g of water. Sulphuric acid solution (400g of 50% w/w H_2SO_4) was added when the slurry had reached the operating temperature to avoid any effects of the heating-up time. The overall leach solution contained 188.3 g/L H_2SO_4. (1062mL weighing 1200g).

Samples of the slurry were taken after 1 hour and 2 hours. Head and residue samples were analysed for nickel and cobalt and the final liquor for residual free acid. The results are listed in Tables 1 and 2 together with calculated extractions of nickel and cobalt and consumption of acid.

3. RESULTS

(1) The results at 240°C showed that 2 hours residence time was required to obtain a high extraction. Six of the nine samples gave nickel extractions of 95% and above with similar cobalt extractions in most cases. The other three all contained high percentages of serpentine. Apparently decomposition of the serpentine into clays, goethite, etc., makes the nickel and cobalt more soluble in acid solutions.

(2) Acid consumptions were generally in the range 330 to 370kg/tonne for the samples with high extractions, and 440 to 480kg/tonne for the high serpentine samples.

(3) At 260°C, the nickel and cobalt extractions from the serpentine samples increased significantly. Acid consumptions were similar to those at 240°C.

TABLES

TABLE 1: PRESSURE LEACHING RESULTS - 240°C

Sample	Weights g	Leach Time, h	Analyses, ppm		Extraction, %		Free Acid g/L	Acid Usage, kg/t
			Ni	Co	Ni	Co		
S004	F* 400.0	Feed	9350	430			188.3	
13 to 18	TR* 316.6	1	1650	220	86.0	59.5		
		2	600	100	94.9	81.6	60.8	338.5
S009	F 400.0	Feed	6100	1250			188.3	
8 to 13	TR 336.8	1	1000	190	86.2	87.2		
		2	270	100	96.3	93.3	63.2	332.1
S015	F 400.0	Feed	8650	380			188.3	
6 to 13	TR 324.8	1	3600	240	66.2	48.7		
		2	2500	190	76.5	59.4	22.5	440.2
S017	F 400.0	Feed	10900	1050			188.3	
5 to 11	TR 324.4	1	2050	240	84.7	81.5		
		2	450	240	96.7	81.5	46.1	377.5
S017	F 400.0	Feed	10000	430			188.3	
11 to 17	TR 307.8	1	3950	230	69.6	58.8		
		2	2750	230	78.8	58.8	10.3	472.6
S018	F 400.0	Feed	7550	460			188.3	
9 to 25	TR 298.9	1	1200	70	88.1	88.6		
		2	250	30	97.5	95.1	58.8	343.8
S026	F 400.0	Feed	13600	950			188.3	
16 to 26	TR 288.5	1	2250	60	88.1	95.6		
		2	470	30	97.5	97.7	50.7	365.3
S047	F 400.0	Feed	7600	600			188.3	
5 to 9	TR 291.9	1	4450	170	57.3	79.3		
		2	3400	120	67.4	85.4	7.3	480.6
S048	F 400.0	Feed	9500	650			188.3	
0 to 6	TR 342.5	1	1500	100	86.5	86.8		
		2	290	40	97.4	94.7	30.6	418.7

*F = Feed
TR = Total Residue

TABLE 2: PRESSURE LEACHING RESULTS - 260°C

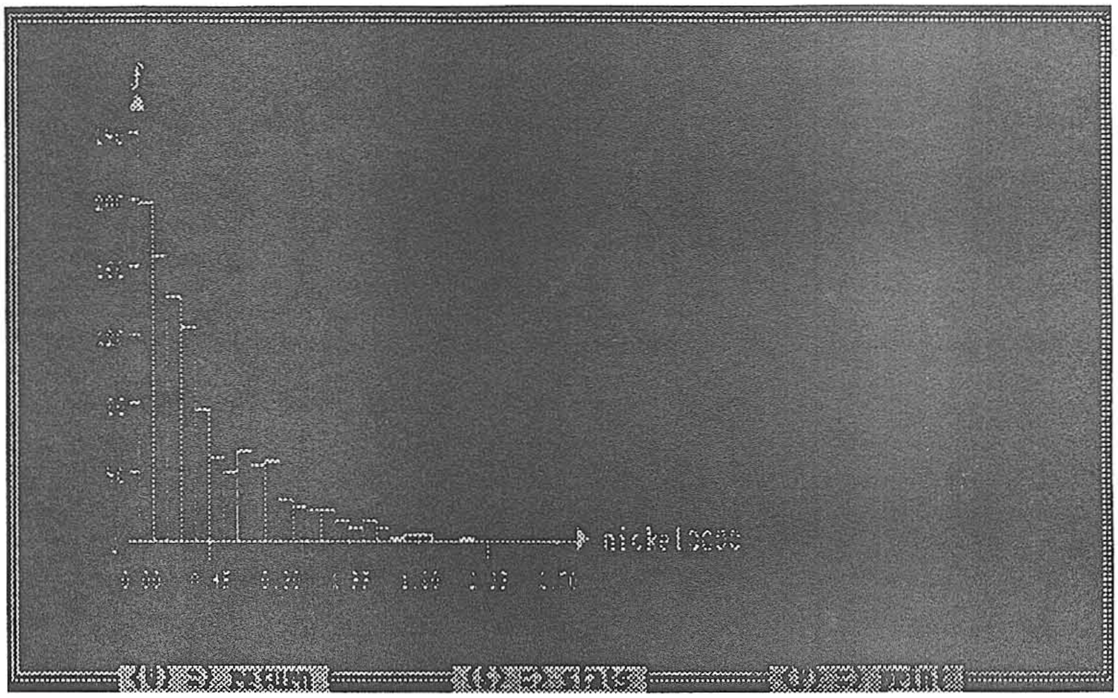
Sample	Weights g	Leach Time, h	Analyses, ppm		Extraction, %		Free Acid g/L	Acid Usage, kg/t
			Ni	Co.	Ni	Co		
S004	F* 400.0	Feed	9350	430			188.3	
13 to 18	TR* 327.3	1	2000	40	82.5	92.4		
		2	260	<20	97.7	>96.2	59.3	342.5
S009	F 400.0	Feed	6100	1250			188.3	
8 to 13	TR 342.6	1	700	100	90.2	93.1		
		2	290	70	95.9	95.2	65.4	326.3
S015	F 400.0	Feed	8650	380			188.3	
6 to 13	TR 313.8	1	2900	80	73.7	83.5		
		2	1550	30	85.9	84.2	20.8	444.7
S017	F 400.0	Feed	10900	1050			188.3	
5 to 11	TR 344.9	1	1500	80	88.1	93.4		
		2	240	30	98.1	97.5	43.6	384.2
S017	F 400.0	Feed	10000	430			188.3	
11 to 17	TR 302.0	1	3200	130	75.8	77.2		
		2	1650	70	87.5	87.7	8.7	476.8
S018	F 400.0	Feed	7550	460			188.3	
9 to 25	TR 332.5	1	1300	90	85.7	83.7		
		2	200	<20	97.8	>96.4	51.9	362.1
S026	F 400.0	Feed	13600	950			188.3	
16 to 26	TR 320.8	1	1600	70	90.6	94.1		
		2	700	<20	95.9	>98.3	49.0	369.8
S047	F 400.0	Feed	7600	600			188.3	
5 to 9	TR 324.1	1	3650	160	61.1	78.4		
		2	2800	110	70.1	85.1	6.9	481.6
S048	F 400.0	Feed	9500	650			188.3	
0 to 6	TR 347.9	1	1500	100	86.3	86.5		
		2	400	50	96.3	93.3	32.3	414.2

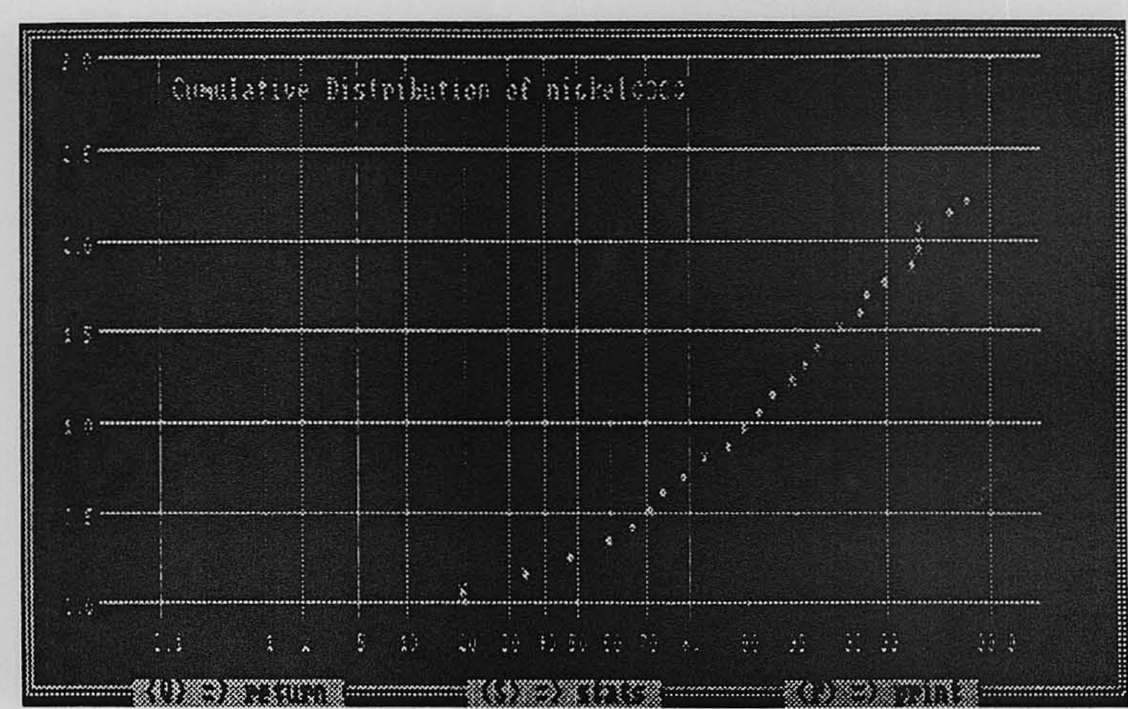
F* = Feed
TR = Total Residue

231236

Appendix 4

Frequency plots for the nickel analyses from samples from holes drilled during the 1997 drilling programs





Cumulative Distribution of nickel
return
print

Appendix 5

Co-ordinates and logs of holes drilled in 1997

EL10/96 - ANDERSONS CREEK
HOLES DRILLED BY ALLEGIANCE MINING NL

hole no	collar east AMG	collar north AMG	collar level m
S001	479,716	5,440,015	36
S002	479,833	5,440,055	22
S003	479,956	5,440,032	30
S004	479,702	5,439,887	35
S005	479,837	5,439,901	24
S006	479,934	5,439,919	31
S007	479,709	5,439,771	40
S008	479,876	5,439,656	57
S009	479,881	5,439,774	40
S010	479,788	5,439,297	48
S011	479,881	5,439,386	42
S012	480,028	5,439,337	33
S013	479,894	5,439,302	39
S014	480,050	5,439,298	30
S015	479,847	5,439,249	43
S016	479,989	5,439,103	55
S017	480,058	5,439,075	56
S018	480,995	5,436,880	94
S019	481,097	5,436,962	99
S020	481,156	5,436,889	105
S021	481,279	5,436,943	97
S022	481,314	5,437,102	102
S023	481,120	5,437,126	99
S024	481,164	5,437,327	102
S025	481,352	5,437,392	93
S026	481,442	5,437,033	86
S027	481,529	5,437,150	80
S028	481,666	5,437,240	72
S029	481,738	5,437,449	73
S030	481,508	5,437,358	78
S031	481,289	5,436,874	91
S032	481,569	5,436,904	72
S033	480,837	5,436,878	107
S034	480,872	5,436,979	88
S035	481,328	5,435,657	91
S036	481,469	5,435,578	86
S037	481,575	5,435,457	81
S038	481,664	5,435,348	78
S039	481,681	5,435,752	88
S040	481,657	5,436,012	93
S041	481,448	5,435,941	90
S042	481,295	5,435,915	95
S043	481,401	5,436,078	85
S044	481,324	5,436,143	88
S045	481,625	5,435,920	93

231241

EL10/96 - ANDERSONS CREEK
HOLES DRILLED BY ALLEGIANCE MINING NL

hole no	collar east AMG	collar north AMG	collar level m
S046	481,630	5,436,166	84
S047	481,692	5,436,145	86
S048	481,554	5,435,791	91
S049	481,742	5,435,992	107
S050	481,578	5,435,955	91
S051	481,577	5,435,633	88
S052	there is no hole S052		
S053	481,391	5,436,629	82
S054	481,298	5,436,485	82
S055	481,190	5,436,420	93
S056	481,153	5,436,301	93
S057	481,191	5,436,429	88
S058	481,158	5,436,609	96
S059	481,258	5,436,676	89
S060	481,447	5,436,870	85
S061	481,373	5,436,807	88
S062	481,620	5,436,760	75
S063	481,200	5,436,808	91
S064	480,737	5,437,020	84
S065	481,020	5,437,023	89
S066	480,943	5,437,127	85
S067	481,057	5,437,105	96
S068	481,153	5,437,197	104
S069	481,276	5,437,248	95
S070	481,428	5,437,251	76
S071	481,573	5,437,051	72
S072	481,650	5,437,120	83
S073	481,442	5,437,033	88
S074	480,995	5,436,880	95
S075	481,554	5,435,791	90
S076	481,420	5,435,790	92
S077	481,690	5,436,286	81
S078	481,711	5,436,447	75
S079	481,736	5,436,589	69
S080	481,863	5,436,676	64
S081	481,555	5,436,404	80
S082	481,555	5,436,304	80
S083	481,565	5,435,319	80
S084	481,474	5,435,339	81
S085	481,176	5,435,806	93
S086	481,064	5,435,886	111
S087	481,128	5,436,219	95
S088	481,210	5,436,204	95
S089	481,051	5,436,318	96
S090	480,909	5,436,491	104
S091	481,026	5,436,467	100

EL10/96 - ANDERSONS CREEK
HOLES DRILLED BY ALLEGIANCE MINING NL

hole no	collar east AMG	collar north AMG	collar level m
S092	481,057	5,436,636	103
S093	481,093	5,436,782	94
S094	480,757	5,436,647	143
S095	480,801	5,436,695	132
S096	480,071	5,440,104	27
S097	479,920	5,440,130	28
S098	479,863	5,440,213	28
S099	480,015	5,439,891	37
S100	480,018	5,439,765	39
S101	480,048	5,439,685	36
S102	479,619	5,439,877	38
S103	479,624	5,439,762	44
S104	479,612	5,439,622	61
S105	480,143	5,440,284	22
S106	480,194	5,440,486	24
S107	379,920	5,439,690	45
S108	480,150	5,439,279	35
S109	479,705	5,439,062	71
S110	479,590	5,439,071	66
S111	480,750	5,439,200	65
S112	480,710	5,438,910	75
S113	479,847	5,439,007	75
S114	481,000	5,438,975	82
S115	480,128	5,438,931	71
S116	480,002	5,438,981	71
S117	479,581	5,439,528	63
S118	479,494	5,439,466	69
S119	479,824	5,439,732	58
S120	479,726	5,439,642	72
S121	479,881	5,439,774	51
S121A	479,881	5,439,774	51
S122	479,847	5,439,249	42
S123	480,058	5,439,075	67
S124	479,823	5,439,733	44

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S001

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	no sample									
1	2	brown clay	1.68	0.248	0.026						
2	3	brown clay and minor green and black hard serpentinite	1.32	0.166	0.020						
3	4	black to green hard serpentinite	2.90	0.110	0.010						
4	5	black hard serpentinite and sparse brown clay	9.16	0.088	0.010						
5	6	black to green hard serpentinite	16.24	0.086	0.010						
		END OF HOLE AT 6m									
		hole dry to 6m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S002

from m	to m	DESCRIPTION	mass kg	Ni %	Co %					
0	2	red brown clay	2.92	0.354	0.022					
2	3	red brown clay	2.64	0.196	0.010					
3	4	red brown clay	0.84	0.328	0.022					
4	5	red clay	0.92	0.264	0.124					
5	6	red and brown clay	1.68	0.324	0.112					
6	7	red clay	0.26	0.246	0.170					
7	8	red clay	0.24	0.336	0.148					
8	9	red and green clay	1.32	0.396	0.090					
9	10	light brown clay	3.98	0.184	0.042					
10	11	light brown clay and very weathered white to green serpentinite	3.80	0.256	0.022					
11	12	red and brown clay	7.08	0.516	0.024					
		END OF HOLE AT 12m								
		hole damp to 10m then wet								

231244

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S003

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	light brown gravel and topsoil	6.08	0.060	0.004						
1	2	mid brown clay and sparse ironstone pebbles and sparse ironstone pebbles	1.92	0.090	0.010						
2	3	mid brown clay	0.16	0.102	0.006						
3	4	ditto	0.16	0.070	0.004						
4	5	mid brown clay with minor white serpentinite chips	0.08	0.156	0.028						
5	6	no sample									
6	8	soft decomposed dark green serpentinite	0.08	0.936	0.048						
		END OF HOLE AT 8m									
		hole dry to 5m then damp to 6m then wet									

231245

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S004

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	no sample			
1	2	red clay with trace ironstone pebbles with trace serpentinite (contamination from previous hole)	1.24	0.210	0.028
2	3	red brown clay with trace serpentinite (contamination from previous hole)	2.56	0.086	0.010
3	4	mid to light brown clay	2.44	0.202	0.246
4	5	mid brown clay	4.00	0.290	0.310
5	6	tan silty clay	4.24	0.064	0.050
6	7	mid brown clay	4.90	0.092	0.036
7	8	mid brown silty clay	5.52	0.072	0.044
8	9	ditto	6.42	0.110	0.024
9	10	mid brown clay	9.80	0.100	0.048
10	11	light brown clay with sparse light green serpentinite	5.96	0.110	0.036
11	12	light brown clay with minor light green serpentinite	11.90	0.128	0.016
12	13	weathered green serpentinite = green brown clay	6.72	0.192	0.016
13	14	weathered dark green serpentinite with minor brown clay	4.44	0.634	0.032
14	15	weathered dark green serpentinite with sparse red clay	4.16	1.37	0.056
15	16	weathered dark green serpentinite with sparse red clay	4.28	1.34	0.044
16	17	weathered olive green serpentinite	4.24	0.866	0.028
17	18	weathered olive green serpentinite	4.24	0.596	0.016
18	19	weathered olive green serpentinite with sparse red clay	5.28	0.494	0.016
19	20	weathered dark green serpentinite with sparse red clay	1.44	0.248	0.040
		END OF HOLE AT 20m			
		hole dry to 9m then damp to 20m then wet			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S005

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	no sample	-								
1	2	mid brown to reddish brown clay with sparse specular iron oxide fragments	1.76	0.092	0.010						
2	3	mid brown to reddish brown clay	2.88	0.090	0.008						
3	4	ditto	3.10	0.140	0.016						
4	5	ditto	1.84	0.134	0.020						
5	6	ditto	5.96	0.124	0.018						
6	7	ditto	3.72	0.092	0.034						
7	8	mid brown >> red > yellow clay with trace specular iron oxide fragments	5.86	0.226	0.320						
8	9	mid brown > yellow clay with trace specular iron oxide fragments	2.96	0.168	0.116						
9	10	red brown clay	2.80	0.148	0.054						
10	11	ditto	3.56	0.118	0.040						
11	12	red brown to mid brown clay	3.54	0.156	0.054						
12	13	brown > yellow clay	5.92	0.228	0.078						
13	14	mid brown clay	4.40	0.196	0.066						
14	15	red brown clay with trace serpentinite	3.84	0.292	0.088						
15	16	red brown >> yellow clay with trace serpentinite	2.40	0.230	0.036						
16	17	mid brown >> red = yellow clay	4.04	0.458	0.064						
17	18	red brown >> yellow clay with trace serpentinite	4.00	0.282	0.072						
18	19	mid brown > red brown > yellow clay with trace dark green serpentinite	0.58	0.364	0.134						
19	20	ditto	2.70	0.358	0.086						
20	21	mid brown >>> red clay	1.90	0.390	0.076						
21	23	mid brown clay grading to light green serpentinite	6.24	0.550	0.032						
23	24	dirty green decomposed serpentinite with sparse serpentinite rock chips	14.08	0.240	0.014						
24	25	mid green to light green decomposed serpentinite with sparse serpentinite rock chips	14.94	0.238	0.014						
25	26	mid green to brown green decomposed serpentinite with sparse serpentinite rock chips	16.34	0.284	0.018						
26	27	ditto	17.56	0.294	0.018						
		END OF HOLE AT 27m									
		hole dry to 12m then damp									

231247

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S006

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	topsoil and dark brown clay	1.08	0.080	0.008						
1	2	dark brown clay	3.52	0.170	0.012						
2	3	mid brown clay	3.90	0.238	0.016						
3	4	ditto	1.88	0.294	0.020						
4	5	dark brown > yellow clay with trace specular iron oxide fragments	2.14	0.202	0.158						
5	6	mid brown clay with trace specular iron oxide fragments	3.80	0.256	0.296						
6	7	dark brown > yellow clay with trace specular iron oxide fragments	6.36	0.248	0.092						
7	8	mid brown clay with trace specular iron oxide fragments	5.00	0.266	0.066						
8	9	mid brown to dark brown clay	4.72	0.396	0.104						
9	10	mid brown clay with trace green serpentinite rock chips	1.10	0.452	0.136						
10	11	ditto	1.38	0.652	0.142						
		END OF HOLE AT 11m									
		hole dry to 10m then wet									

231248

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S007

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	dark brown clay	2.36	0.188	0.018
2	3	mid brown >> dark brown clay	4.50	0.064	0.004
3	4	light brown to tan clay with sparse ironstone fragments	3.34	0.064	0.004
4	5	mid brown to tan clay	6.20	0.156	0.016
5	6	tan clay	6.56	0.166	0.020
6	7	mid brown >> red brown clay	5.24	0.234	0.028
7	8	red brown clay	4.64	0.198	0.024
8	9	mid brown = dark brown clay	4.16	0.328	0.116
9	10	dark brown >> red = yellow clay and sparse green serpentinite fragments	3.82	0.220	0.094
10	11	dark brown >> red = yellow clay	4.28	0.220	0.140
11	12	dark brown >> red = yellow clay with sparse very weathered green to black serpentinite	6.16	0.328	0.094
12	13	mid brown = yellow >> red clay with minor weathered green to black serpentinite	4.90	0.468	0.064
13	14	ditto	1.92	0.440	0.152
14	15	dark brown clay with minor weathered green to black serpentinite and sparse specular iron oxide fragments	0.80	0.336	0.520
15	16	dark brown clay	4.48	0.212	0.158
16	17	green brown >> yellow = red clay	3.32	0.330	0.190
17	18	ditto	2.24	0.432	0.116
18	19	olive green >> yellow = red brown clay	3.16	0.834	0.104
19	20	light and dark green hard serpentinite	0.44	0.580	0.024
		END OF HOLE AT 20m			
		hole dry to 15m then wet			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S008

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	light green serpentinite flour and rock chips	4.24	0.066	0.014						
2	3	light green serpentinite flour and rock chips	1.20	0.096	0.020						
3	4	light green serpentinite flour and rock chips	11.60	0.046	0.012						
4	5	light green serpentinite flour and rock chips	12.04	0.024	0.006						
5	6	light green serpentinite flour and rock chips	9.90	0.016	0.004						
6	7	light green serpentinite flour and rock chips	8.60	0.014	0.006						
		END OF HOLE AT 7m									
		hole dry to 7m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S009

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	red brown topsoil and clay and an occasional ironstone pebble	1.12	0.060	0.008
1	2	mid brown >> yellow clay with sparse ironstone pebble chips	2.60	0.126	0.022
2	3	mid brown clay	2.56	0.176	0.018
3	4	tan clay	3.20	0.126	0.018
4	5	mid brown = tan clay	4.84	0.152	0.026
5	6	red brown clay	14.32	0.172	0.060
6	7	ditto	7.16	0.334	0.194
7	8	red brown clay with trace specular iron oxide fragments	2.52	0.448	0.498
8	9	red to mid brown clay with minor weathered green serpentinite	6.24	0.538	0.252
9	10	mid brown clay with minor weathered green serpentinite	6.10	0.862	0.174
10	11	mid brown clay with weathered green serpentinite grading to light and dark green	4.38	0.790	0.174
		weathered serpentinite becoming hard towards end of run			
11	12	mid brown clay and weathered green serpentinite	10.20	0.556	0.064
12	13	green brown clay and moderately hard green serpentinite	8.32	0.538	0.026
13	14	brown green very weathered serpentinite	8.40	0.382	0.016
14	15	ditto	6.64	0.454	0.014
		END OF HOLE AT 15m			
		hole dry to 3m then damp			

231251

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S010

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	green brown to tan clay with trace soft decomposed very weathered light green serpentinite	7.04	0.900	0.098						
2	3	green brown to mid brown clay with sparse decomposed very weathered light green serpentinite	3.84	0.638	0.078						
3	4	brown to green clay and serpentinite rock flour with common to abundant relatively hard dark green serpentinite rock chips	6.50	0.444	0.062						
4	5	brown to green clay and serpentinite rock flour with minor relatively hard dark green serpentinite rock chips	6.00	0.718	0.066						
5	6	green brown to green clay with minor relatively hard dark green serpentinite rock chips	4.86	0.612	0.038						
6	7	decomposed dirty green serpentinite with trace to sparse light green to dark green serpentinite rock chips	6.04	0.502	0.026						
7	8	decomposed dirty green serpentinite with sparse to minor light green to dark green serpentinite rock chips	4.44	0.358	0.016						
8	8.5	light green to dark green serpentinite rock flour and chips	0.56	0.334	0.014						
		END OF HOLE AT 8.5m									
		hole dry to 2m then damp to 7m then wet									

231252

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S011

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	slightly weathered light green serpentinite	4.84	0.232	0.014						
2	3	slightly weathered light green serpentinite	6.00	0.238	0.012						
		END OF HOLE AT 3m									
		hole dry to 3m									

231253

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S012

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	no sample									
1	2	mid brown clay	2.24	0.582	0.052						
2	3	mid brown clay with trace ironstone fragments and trace light green serpentinite	4.38	0.852	0.054						
3	4	soft very weathered light green serpentinite with minor mid brown clay with trace ironstone fragments	5.40	0.510	0.018						
4	5	soft very weathered light green serpentinite with sparse light to dark green serpentinite rock chips	8.04	0.296	0.010						
5	6	moderately weathered light green serpentinite rock flour and chips	9.40	0.272	0.014						
6	7	ditto	12.02	0.238	0.014						
7	8	moderately weathered light and dark green serpentinite rock flour and chips	11.18	0.228	0.012						
8	9	ditto	10.96	0.230	0.010						
		END OF HOLE AT 9m									
		hole dry to 9m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S013

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	topsoil and red brown clay with sparse specular ironstone pebbles	1.56	0.136	0.020						
1	2	red brown clay	5.52	0.086	0.012						
2	3	red brown clay with trace specular ironstone fragments	5.22	0.112	0.022						
3	4	ditto	7.72	0.294	0.110						
4	5	dark brown clay	3.32	0.356	0.190						
5	6	dark brown to green brown clay with minor soft to medium hard weathered serpentinite rock chips	7.72	0.494	0.036						
6	7	moderately weathered light green serpentinite rock flour and chips	8.60	0.502	0.024						
7	8	ditto	6.06	0.546	0.020						
		END OF HOLE AT 8m									
		hole dry to 8m									

231255

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S014

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	red brown clay with trace light green serpentinite (contamination from previous hole)	1.92	0.164	0.036
1	2	red brown = tan clay	5.40	0.388	0.276
2	3	light brown clay with common weathered olive green serpentinite	6.16	0.672	0.044
3	4	mid brown to light brown clay with minor weathered olive green serpentinite	5.36	0.404	0.268
4	5	light brown clay with sparse weathered white and green serpentinite	4.44	0.196	0.068
5	6	mid brown to red brown clay with trace weathered white and green serpentinite	6.08	0.218	0.066
6	7	light brown clay with trace weathered white and green serpentinite	6.32	0.236	0.036
7	8	ditto	9.02	0.248	0.042
8	9	mid brown clay with common to abundant weathered bright green to dark green serpentinite	5.60	0.600	0.062
9	10	green brown clay with abundant weathered light green to dark green serpentinite including occasional relatively hard rock chips	6.12	1.09	0.070
10	11	green brown clay with abundant weathered light green to dark green serpentinite including occasional relatively hard rock chips grading to soft decomposed light green serpentine	7.08	0.822	0.034
11	12	soft decomposed light green serpentinite with sparse relatively hard serpentinite rock chips	7.96	0.694	0.034
12	13	ditto	2.16	0.548	0.046
		END OF HOLE AT 13m			
		hole dry to 13m, hit water at 13m			

231256

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S015

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	red clay with common ironstone pebbles	3.76	0.088	0.008						
2	3	red clay with minor ironstone pebbles	9.84	0.052	0.006						
3	4	red to mid brown clay	7.50	0.132	0.022						
4	5	mid brown clay	6.80	0.144	0.040						
5	6	red brown clay with sparse very weathered green serpentinite	6.84	0.414	0.140						
6	7	red brown clay with sparse to minor very weathered green serpentinite	5.88	0.722	0.116						
7	8	red brown clay with minor very weathered green serpentinite	5.04	1.15	0.080						
8	9	red brown clay with minor very weathered green serpentinite	9.84	0.626	0.036						
9	10	red brown clay with common very weathered green serpentinite	10.72	0.868	0.038						
10	11	very weathered green serpentinite with light green to dark green serpentine rock chips and minor red clay	1.46	0.704	0.020						
11	12	very weathered green serpentinite with light green to dark green serpentine rock chips and sparse to minor red clay	6.40	1.02	0.014						
12	13	very weathered dirty green serpentinite with relatively hard light green to dark green serpentinite rock chips	9.94	0.830	0.022						
13	13.5	ditto	0.76	0.726	0.028						
		END OF HOLE AT 13.5m									
		hole dry to 4m then damp to 9m then wet									

231257

COMPANY Allegiance Mining NL

PROJECT Anderson's Creek Exploration Licence

HOLE NUMBER S016

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	red brown clay with sparse ironstone pebbles and sparse serpentinite	3.56	0.304	0.014						
		(contamination from previous hole)									
2	3	red brown clay with minor ironstone pebbles	3.96	0.062	0.004						
3	4	dark brown clay with sparse ironstone pebbles	5.60	0.054	0.006						
4	5	dark brown clay with minor ironstone pebbles	5.28	0.072	0.004						
5	6	light brown clay	3.32	0.094	0.006						
6	7	light brown to dark brown clay	6.56	0.180	0.016						
7	8	decomposed green brown serpentinite	6.44	0.514	0.042						
8	9	mid brown clay = decomposed green brown serpentinite	5.84	0.528	0.080						
9	10	decomposed green brown serpentinite > brown clay	6.08	0.800	0.154						
10	11	decomposed dark green serpentinite	6.68	0.936	0.128						
11	12	decomposed dark green serpentinite	6.00	0.992	0.064						
12	13	decomposed dark green serpentinite	6.08	1.17	0.066						
13	14	decomposed dark green serpentinite	5.02	1.81	0.062						
14	15	decomposed green and brown serpentinite	6.04	0.864	0.024						
15	16	decomposed dark green >> white serpentinite	7.70	1.20	0.042						
16	17	light green serpentinite rock flour and chips	7.68	1.24	0.022						
17	18	light green serpentinite rock flour and chips	9.16	0.672	0.020						
		END OF HOLE AT 18m									
		hole dry to 18m									

231258

COMPANY Allegiance Mining NL

PROJECT Anderson's Creek Exploration Licence

HOLE NUMBER S017

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	topsoil and red brown clay with sparse ironstone pebbles	1.00	0.120	0.010						
1	2	red brown clay with trace green serpentinite (contamination from previous hole)	2.92	0.074	0.006						
2	3	mid brown clay	3.90	0.080	0.006						
3	4	dark brown clay	4.44	0.106	0.016						
4	5	dark brown to red brown clay with trace soft weathered light green to dark green serpentinite	6.66	0.370	0.042						
5	6	red brown clay with sparse soft weathered light green to dark green serpentinite	6.60	0.906	0.068						
6	7	red brown to mid brown and green brown clay with sparse light green to dark green serpentinite rock chips	5.52	1.10	0.200						
7	8	very weathered slightly mottled olive >> light green serpentinite with sparse to minor red clay	4.96	1.02	0.124						
8	9	ditto	5.80	1.09	0.082						
9	10	ditto	5.62	1.50	0.074						
10	11	ditto	5.68	1.09	0.036						
11	12	very weathered slightly mottled olive >> light green serpentinite with sparse to minor red brown clay	5.52	1.21	0.058						
12	13	green brown clay with minor very weathered olive green serpentinite	6.08	1.58	0.070						
13	14	very weathered soft decomposed serpentinite with minor red brown clay	4.56	1.01	0.036						
14	15	soft decomposed light green serpentinite	8.02	0.790	0.024						
15	16	ditto	5.80	0.902	0.028						
16	17	soft decomposed light green serpentinite with sparse to minor hard dark green serpentinite rock fragments	8.44	0.722	0.040						
		END OF HOLE AT 17m									
		hole dry to 4m then damp									

231259

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S018

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	grey quartz gravel and topsoils and minor brown sandy clay	3.88	0.065	<0.002						
1	2	red brown clay	4.68	0.043	0.017						
2	3	mid brown to red brown clay with trace ironstone pebbles	4.84	0.070	0.043						
3	4	mid brown clay	7.12	0.080	0.025						
4	5	mid brown >> light brown clay	6.24	0.120	0.020						
5	6	dark brown clay	6.84	0.120	0.017						
6	7	mid brown to dark brown clay with trace weathered light green to dark green serpentinite	7.24	0.425	0.033						
7	8	mid brown clay with trace weathered light green serpentinite	3.16	0.305	0.024						
8	9	mid brown clay with sparse weathered light green serpentinite	6.12	0.130	0.032						
9	10	mid brown >> red clay	3.20	0.715	0.055						
10	11	mid brown >> red = yellow clay with trace hard dark green serpentinite rock chip	1.96	0.750	0.085						
11	12	mid brown clay with trace hard dark green serpentinite rock chips	0.40	0.745	0.130						
12	13	mid brown >> yellow clay with trace weathered light green serpentinite rock chip	4.96	0.835	0.090						
13	14	mid brown >> yellow clay with sparse soft decomposed dark green serpentinite	6.00	0.665	0.045						
14	15	ditto	2.26	0.700	0.044						
15	16	mid brown to green brown clay with sparse to minor soft decomposed yellow green serpentinite	2.84	0.630	0.030						
16	17	green brown >> orange brown clay with trace soft decomposed light green serpentinite	3.84	0.655	0.036						
17	18	green brown clay with trace decomposed light green serpentinite	6.08	0.750	0.032						
18	19	green brown clay with sparse to minor decomposed light green serpentinite	14.82	0.760	0.027						
19	20	green brown clay with light green serpentinite as rock flour and chips	6.44	0.695	0.016						
20	21	soft decomposed dark green serpentinite with common green brown clay	2.44	0.720	0.025						
21	22	decomposed dark green brown serpentinite >> orange brown clay	2.32	0.840	0.041						
22	23	ditto	11.56	1.610	0.050						
23	24	dark green brown clay with minor hard light green serpentinite rock chips	6.44	0.885	0.044						
24	25	dark brown clay with abundant hard light green serpentinite rock chips	5.92	0.725	0.027						
25	26	ditto	14.44	0.440	0.020						
26	27	olive green serpentinite rock flour and chips	7.88	0.320	0.015						
27	28	green brown serpentinite rock flour and chips	5.52	0.435	0.029						
		END OF HOLE AT 28m									
		hole dry to 3m then damp to 17m then wet									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S019

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	no sample									
2	3	mid brown clay with trace serpentinite (contamination from previous hole)	6.82	0.060	0.008						
3	4	mid brown to green brown and red clay	9.24	0.215	0.014						
4	5	ditto	7.16	0.400	0.039						
5	6	mid brown to green brown clay	7.62	0.595	0.140						
6	7	red brown > green brown clay with soft weathered decomposed serpentinite	7.64	0.475	0.215						
7	8	ditto	7.12	0.365	0.125						
8	9	red brown > green brown clay with soft weathered decomposed serpentinite and	8.96	0.585	0.080						
		trace dark green serpentinite rock chips									
9	10	red brown = green brown clay	6.08	0.940	0.075						
10	11	soft very weathered decomposed light green to olive green serpentinite with	14.06	0.840	0.043						
		minor light brown clay									
11	12	light green to dark green serpentinite rock flour and chips contaminated with red	7.40	0.060	0.025						
		clay from line clean out									
12	13	dirty green to dark green serpentine rock chips and flour with sparse fibrous	9.30								
		white mineral									
		END OF HOLE AT 13m									
		hole dry to 2m then damp to 11m then wet									

231261

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S020

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	mid brown to light brown clay with trace ironstone pebbles	6.88	0.060	0.007
2	3	mid brown to red brown clay	2.62	0.155	0.026
3	4	red to green brown clay with trace light green to dark green serpentinite rock chip	3.56	0.640	0.105
4	5	dark green >> red brown clay	3.84	0.650	0.050
5	6	decomposed dirty green serpentinite with trace white to green serpentinite rock chips	4.44	0.780	0.033
6	7	ditto	4.84	0.840	0.035
7	8	ditto	4.92	0.685	0.029
8	9	decomposed light green serpentinite with sparse light green serpentinite rock chips	3.64	0.680	0.019
9	10	ditto	2.60	0.740	0.027
10	11	decomposed dirty green serpentinite with sparse light green to dark green serpentinite rock chips	4.76	0.765	0.039
11	12	ditto	7.38	0.805	0.050
12	13	ditto	2.92	0.745	0.037
13	14	ditto	5.00	0.730	0.034
14	15	light green serpentinite rock flour and chips with trace fibrous white mineral	8.56		
15	16	ditto	4.92		
16	17	ditto	8.32		
17	18	ditto	6.48		
		END OF HOLE AT 18m			
		hole dry to 11m then wet			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S021

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	red brown clay with sparse green serpentinite (contamination from previous hole)	3.04	0.110	0.090
1	2	dark brown clay .	5.08	0.024	<.002
2	3	dark brown clay with sparse to minor ironstone pebbles	8.04	0.038	0.008
3	4	mid brown to light brown clay with trace ironstone pebbles and trace soft weathered dark green serpentinite	7.24	0.050	0.005
4	5	mid brown to light brown clay with trace soft weathered light green serpentinite	7.96	0.130	0.010
5	6	ditto	7.80	0.315	0.022
6	7	mid brown to green brown clay	8.04	0.520	0.038
7	8	mid brown >> light brown clay	7.34	0.250	0.022
8	9	light brown to dark brown clay with trace soft very weathered pale serpentinite	7.32	0.265	0.022
9	10	light brown = mid brown > red brown clay	8.08	0.410	0.060
10	11	red brown clay with sparse to minor soft very weathered decomposed olive green serpentinite	10.44	0.360	0.055
11	12	red brown clay with sparse to minor soft very weathered decomposed olive green serpentinite and trace soft white serpentinite	8.04	0.965	0.046
12	13	red brown clay = soft very weathered decomposed olive green serpentinite with sparse soft to medium hard light green to dark green serpentinite rock chips	5.60	0.985	0.080
13	14	ditto	6.00	0.925	0.050
14	15	hard fragments of dark green serpentinite in red clay	9.20		
15	16	hard fragments of dark green serpentinite in brown to red brown clay	5.80	0.805	0.030
16	17	green brown clay with sparse dark green serpentinite fragments	5.68	0.945	0.046
17	18	green brown clay with common dark green serpentinite fragments	4.64	1.05	0.045
18	19	very weathered dirty green serpentinite with minor green to red brown clay and common light green to dark green serpentinite fragments	7.76	0.950	0.037
19	20	soft very weathered decomposed dirty green serpentinite with minor light t green to dark green serpentinite fragments	3.64	0.855	0.035
20	21	ditto	10.36	0.590	0.021
21	22	hard light green to dark green serpentinite fragments with trace fibrous white mineral	9.04		
		END OF HOLE AT 22m			
		hole dry to 14m then wet			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S022

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	no sample			
1	2	mid brown clay with sparse serpentinite (contamination from previous hole)	7.84	0.280	0.013
2	3	mid brown to red brown clay with sparse ironstone pebbles	9.08	0.050	0.005
3	4	ditto	11.20	0.026	0.005
4	5	mid brown to red brown clay with common ironstone pebbles	10.80	0.023	<.002
5	6	mid brown to red brown clay with sparse to minor ironstone pebbles	9.00	0.040	0.005
6	7	light brown to mid brown clay with sparse to minor ironstone pebbles	8.64	0.060	0.006
7	8	mid brown clay with trace ironstone pebbles and trace green serpentinite rock fragments	7.04	0.130	0.014
8	9	mid brown >> light brown clay with trace ironstone pebbles and trace green serpentinite rock fragments	7.20	0.120	0.006
9	10	light brown >> mid brown clay	6.94	0.220	0.011
10	11	light brown clay	7.76	0.255	0.010
11	12	light brown >> red brown clay	7.50	0.105	0.006
12	13	red >> light brown clay	8.36	0.160	0.048
13	14	red to red brown clay with trace soft light green to dark green serpentinite	5.92	0.695	0.075
14	15	red to red brown clay with minor soft light green to dark green serpentinite	5.92	1.30	0.105
15	16	soft very weathered decomposed dirty light green to dirty dark green serpentinite with sparse red clay	6.80	0.855	0.080
16	17	soft very weathered decomposed dirty light green to dirty dark green serpentinite with minor serpentinite rock chips and sparse red clay	6.76	1.22	0.055
17	18	soft very weathered decomposed dirty light green to dirty dark green serpentinite with common serpentinite rock chips and trace red clay	3.68	1.48	0.040
18	19	ditto	5.32	1.26	0.035
19	20	dirty green serpentinite rock flour and light green to dark green serpentinite rock chips with trace fibrous white mineral	12.84		
20	21	ditto	2.20		
		END OF HOLE AT 21m			
		hole dry to 11m then damp			

2312604

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S023

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	topsoil and mid brown clay with sparse to minor serpentinite (contamination from previous hole)	1.64	0.585	0.024						
2	3	mid brown clay	5.26	0.205	0.024						
3	4	light brown clay	9.08	0.335	0.020						
4	5	mid brown >> light brown clay	8.88	0.760	0.055						
5	6	dark brown clay with trace to sparse soft very weathered decomposed light green serpentinite and trace red clay	6.40	1.11	0.210						
6	7	green brown clay with sparse soft very weathered decomposed light green to dark green serpentinite	3.88	1.58	0.140						
7	8	light brown clay with sparse soft dark green serpentinite and light green to dark green serpentinite rock chips	5.12	1.60	0.044						
8	9	light brown clay with sparse to minor hard light green to white serpentinite rock chips	4.80	1.22	0.050						
9	10	light brown clay with sparse to minor hard light green to white serpentinite rock chips and trace red clay	5.04	1.09	0.048						
10	11	mid brown to red brown clay with sparse to minor soft dark green serpentinite	8.94	0.835	0.050						
11	12	green brown clay with minor soft light green to dark green serpentinite rock chips	4.72	1.31	0.055						
12	13	green brown >> red clay with minor soft light green to dark green serpentinite rock chips	8.48	1.07	0.020						
13	14	green brown clay with minor soft light green to dark green serpentinite rock chips	7.00	1.12	0.032						
14	15	dirty green serpentinite rock flour and chips with trace red brown clay and trace fibrous white mineral	7.32								
15	16	crushed hard light green serpentinite	4.80								
		END OF HOLE AT 16m									
		hole dry to 4m then damp									

231265

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S024

from m	to m	DESCRIPTION	mass kg	Ni %	Co %					
0	2	dark brown clay with trace soft white serpentinite	4.12	0.595	0.050					
2	3	decomposed light green to dark green serpentinite	9.28	0.540	0.027					
3	4	decomposed dirty green serpentinite	8.64	0.650	0.035					
4	5	light green serpentinite rock flour and chips	8.84	0.320	0.013					
5	6	decomposed dark green serpentinite	5.80	0.650	0.028					
6	6.5	light brown green serpentinite rock flour and chips	1.84	0.570	0.021					
		END OF HOLE AT 6.5m								
		hole dry to 6.5m								

231266

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S025

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	light brown topsoil and gravel	6.56	0.030	0.004
2	3	soft decomposed olive green serpentinite	8.50	0.425	0.021
3	4	ditto	5.72	0.470	0.019
4	5	decomposed white and dirty green serpentinite	1.96	0.225	0.016
5	6	ditto	0.72	0.195	0.011
6	7	ditto	0.56	0.275	0.016
		END OF HOLE AT 7m			
		hole dry to 7m			

231267

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S026

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	mid brown clay	6.64	0.225	0.013
2	3	ditto	7.20	0.060	0.003
3	4	light brown clay	6.48	0.034	0.004
4	5	ditto	7.52	0.039	0.003
5	6	ditto	5.36	0.035	0.004
6	7	ditto	6.08	0.026	0.002
7	8	tan clay	6.94	0.024	<.002
8	9	ditto	7.54	0.027	<.002
9	10	mid brown to dark brown clay	8.14	0.095	0.014
10	11	mauve brown clay	7.88	0.105	0.035
11	12	mid brown to green brown clay	8.80	0.365	0.100
12	13	ditto	8.76	0.410	0.075
13	14	mid brown clay	8.26	0.385	0.095
14	15	green brown clay	9.40	0.370	0.100
15	16	mid brown >> yellow clay	7.34	0.420	0.115
16	17	mid brown >> red clay	5.12	0.845	0.130
17	18	mid brown to green brown clay	8.16	1.40	0.090
18	19	green brown clay with sparse dark green serpentinite rock chips	6.44	1.58	0.065
19	20	decomposed dirty green serpentinite with sparse to minor dark green serpentinite rock chips	4.88	2.09	0.065
20	21	decomposed dirty green serpentinite with sparse dark green serpentinite rock chips	5.40	2.09	0.075
21	22	ditto	7.64	1.87	0.060
22	23	decomposed dirty green serpentinite with sparse white serpentinite rock chips	4.66	2.28	0.060
23	24	ditto	3.94	1.76	0.045
24	25	light green serpentinite rock flour and chips	8.96	0.935	0.014
25	26	ditto	5.68	0.445	0.012
		END OF HOLE AT 25m			
		hole dry to 15m then damp to 25m then hit water			

231268

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S027

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	mid brown clay with trace serpentinite (contamination from previous hole)	6.08	0.160	0.009						
2	3	mid brown to red brown clay with trace serpentinite (contamination from previous hole)	8.24	0.080	0.008						
3	4	mid brown to red brown clay	7.08	0.095	0.006						
4	5	light brown to mid brown clay	6.76	0.295	0.021						
5	6	light brown = red clay	7.76	0.160	0.013						
6	7	light brown = red clay with trace soft very weathered bright green serpentinite	7.68	0.125	0.008						
7	8	red clay with trace soft white serpentinite	6.98	0.095	0.005						
8	9	ditto	6.24	0.170	0.010						
9	10	mid brown to red clay	6.56	0.185	0.028						
10	11	mid brown to red brown clay with trace soft green serpentinite	6.20	0.145	0.040						
11	12	ditto	7.28	0.120	0.034						
12	13	mid brown to red brown clay with trace soft white to green serpentinite	7.64	0.310	0.065						
13	14	mid brown clay with sparse to minor soft light green to dark green serpentinite	8.00	1.02	0.075						
14	15	soft very weathered dirty olive green serpentinite with minor red clay	5.20	1.81	0.140						
15	16	soft weathered light green to olive green serpentinite with minor red clay	10.70	1.16	0.055						
16	17	green >> red clay with sparse soft light green to dark green serpentinite	5.84	0.825	0.019						
17	18	light green to dark green serpentinite rock flour and chips	5.68	0.780	0.024						
18	19	ditto	6.84	0.780	0.026						
19	20	light green to dark green serpentinite rock flour and chips with trace fibrous white mineral	5.72	0.655	0.020						
		END OF HOLE AT 20m									
		hole dry to 12m then damp then hit water at 19m									

231269

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S028

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	red brown to dark brown clay	6.24	0.675	0.050
2	3	soft dirty green and white serpentinite	7.96	1.06	0.032
3	4	ditto	5.62	0.860	0.014
4	5	ditto	8.48		
5	6	dirty green serpentinite and common fibrous white mineral	6.72		
6	7	brown green serpentinite rock flour and chips	8.32		
7	8	brown green serpentinite rock flour and chips	8.48		
		END OF HOLE AT 8m			
		hole dry to 8m			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S029

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	light green serpentinite rock flour and chips		0.420	0.014						
2	3	light green serpentinite rock flour and chips		0.270	0.012						
		END OF HOLE AT 3m									
		hole dry to 3m									

23127

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S030

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	dark brown clay	4.12	0.200	0.006						
2	3	decomposed dirty brown green serpentinite with trace white serpentinite	8.92	0.535	0.022						
3	4	ditto	7.64	0.520	0.028						
4	5	light green serpentinite rock flour and chips with common fibrous white mineral	5.48								
5	6	ditto	7.36								
6	7	medium green serpentinite rock flour and chips	7.92								
7	8	light green serpentinite rock flour and chips with sparse fibrous white mineral	8.96								
8	9	light green serpentinite rock flour and chips with common fibrous white mineral	8.42								
		END OF HOLE AT 9m									
		hole dry to 9m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S031

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	red brown clay with sparse serpentinite (contamination from previous hole)	5.86	0.200	0.014
2	3	red brown and mid brown clay	5.76	0.200	0.020
3	4	mid brown clay	4.98	0.385	0.035
4	5	light brown clay	7.96	0.315	0.028
5	6	ditto	6.36	0.275	0.125
6	7	dark brown clay	5.76	0.600	0.095
7	8	mid brown clay = decomposed dark brown green serpentinite	3.04	0.700	0.065
8	9	red brown clay = decomposed dark brown green serpentinite	5.02	1.12	0.060
9	10	decomposed dirty green serpentinite	4.72	1.17	0.048
10	11	decomposed dirty green serpentinite with sparse brown clay	4.26	1.07	0.055
11	12	decomposed dirty green >> white serpentinite	4.68	1.44	0.065
12	13	decomposed brown green serpentinite	4.94	1.71	0.055
13	14	ditto	4.00	1.53	0.055
14	15	decomposed olive green > white serpentinite	5.24	1.33	0.040
15	16	ditto	5.60	1.07	0.033
16	17	ditto	8.68	0.325	0.017
17	19	decomposed brown green serpentinite	5.40	0.580	0.016
19	20	light green serpentinite rock flour and chips	7.54	0.455	0.015
		HOLE ENDS AT 20m			
		hole dry to 15m then wet			

231273

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S032

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	red brown clay	4.32	0.150	0.013
2	3	ditto	5.48	0.090	0.011
3	4	red brown clay with minor ironstone pebbles	8.68	0.080	<0.002
4	5	ditto	9.20	0.220	0.014
5	6	light brown clay with sparse olive green soft very weathered serpentinite	6.96	1.03	0.024
6	7	ditto	5.96	1.23	0.045
7	8	white to olive green very weathered decomposed serpentinite with minor chips of serpentinite rock	5.48	1.50	0.039
8	9	ditto	5.66	1.72	0.033
9	10	ditto	6.40	1.47	0.032
10	11	olive green and minor white decomposed serpentinite and minor serpentinite rock chips	4.80	1.08	0.024
11	12	olive green to dirty green decomposed serpentinite and minor serpentinite rock chips	9.50	0.290	0.007
12	13	dirty green decomposed serpentinite and minor white serpentinite rock chips	8.24	0.295	0.005
13	14	ditto	7.76	0.360	0.006
14	15	*dirty green serpentinite rock flour and chips*	10.92	0.215	0.006
		END OF HOLE AT 15M			
		hole dry to 15m			

231274

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S033

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	white quartz gravel grading to mid brown clay with trace light green serpentinite rock flour (contamination from the end of the previous hole)	9.78	0.075	0.005
2	3	light brown clay	7.58	0.060	0.003
3	4	ditto	5.96	0.090	0.005
4	5	mid brown clay with sparse light green serpentinite rock chips	3.20	0.115	0.007
5	6	ditto	5.60	0.200	0.036
6	7	ditto	6.40	0.265	0.145
7	8	mid to green brown clay	5.44	0.445	0.130
8	9	olive green soft very weathered decomposed serpentinite	5.90	0.610	0.050
9	10	olive green >> light green soft weathered very decomposed serpentinite	5.64	0.675	0.033
10	11	olive green soft weathered very decomposed serpentinite with common hard dark green serpentinite rock chips	6.58	0.550	0.034
11	12	olive green soft weathered very decomposed serpentinite grading to light green weathered serpentinite	4.60	0.450	0.030
12	12.25	light to dark green serpentinite rock chips	0.92	0.230	0.015
		END OF HOLE AT 12.25			
		hole dry to 4m, then damp			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S034

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	ironstained quartz gravel grading to green brown clay	10.10	0.125	0.016						
2	3	red brown >> green brown clay	6.36	0.090	0.017						
3	4	green brown > red brown clay	10.08	0.115	0.017						
4	5	green brown very decomposed serpentinite grading to clay	7.12	0.160	0.017						
5	6	olive and dirty green very decomposed serpentinite with trace to sparse dark	6.30	0.765	0.105						
		green serpentinite rock chips									
6	7	dark green >> olive green very decomposed serpentinite with trace to sparse	6.16	0.855	0.075						
		dark green serpentinite rock chips									
7	8	ditto	4.48	0.775	0.055						
8	9	ditto	5.66	0.555	0.037						
9	10	olive green very decomposed serpentinite with sparse to minor dark green	9.08	0.655	0.038						
		serpentinite rock chips; traces of a mineral with metallic lustre									
10	11	olive green > dirty green very decomposed serpentinite with sparse to minor	6.36	0.730	0.031						
		dark green serpentinite rock chips	5.64	0.670	0.030						
11	12	olive green to dirty green very decomposed serpentinite with common dark green									
		serpentinite rock chips									
12	13	ditto but wet	8.78	0.635	0.033						
13	14	very wet dark green very decomposed serpentinite with common dark green	2.80	0.690	0.043						
		serpentinite rock chips									
14	15	ditto	5.86	0.710	0.043						
		END OF HOLE AT 15m									
		hole dry to 12m then wet									

231276

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S035

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	green and white serpentinite rock flour and chips	10.56	0.760	0.022
2	3	dark green serpentinite rock flour and chips	5.48	0.305	0.012
		END OF HOLE AT 3m			
		hole dry to 3m			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S036

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	2	red brown clay and decomposed dirty green serpentinite	7.20	0.705	0.028
2	3	decomposed olive green serpentinite	5.38	0.870	0.025
3	4	green and white serpentinite rock flour and chips	6.20	0.275	0.011
4	5	ditto	6.60	0.100	0.005
		END OF HOLE AT 5m			
		hole dry to 5m			

231278

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S037

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	brown clay and minor soft white serpentinite	2.80	0.915	0.027						
2	3	green serpentinite rock flour and chips	5.34	0.755	0.021						
3	4	ditto	8.20	0.350	0.014						
		END OF HOLE AT 4m									
		hole dry to 4m									

231253

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S038

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	light brown to mid brown clay	2.16	0.350	0.014						
2	3	mid brown clay	1.94	0.615	0.027						
3	4	green brown clay	8.00	0.880	0.037						
4	5	decomposed green brown >> white serpentinite	6.44	1.14	0.037						
5	6	ditto	11.28	1.13	0.037						
		END OF HOLE AT 6m									
		hole dry to 3m then wet									

082132

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S039

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	decomposed olive green serpentinite with minor light brown clay	10.16	0.555	0.029						
2	3	decomposed olive green serpentinite with sparse white to dark green serpentinite rock chips and sparse red brown clay	7.24	1.43	0.085						
3	4	weathered light green to olive green serpentinite and sparse light green to dark green serpentinite rock chips and sparse red brown clay	6.36	1.59	0.095						
4	5	weathered light green to olive green serpentinite and sparse light green to dark green serpentinite rock chips and sparse to minor red brown clay	7.50	0.535	0.029						
5	6	weathered light green to olive green serpentinite and sparse light green to dark green serpentinite rock chips and sparse to minor red brown clay	5.88	1.19	0.055						
6	7	decomposed dirty green >> light green serpentinite with trace dark green serpentinite rock chips	6.32	1.34	0.060						
7	8	light green serpentinite rock flour and chips with sparse brown clay	5.06	0.935	0.030						
8	9	light green serpentinite rock flour and chips	5.98	0.935	0.020						
		END OF HOLE AT 9m									
		hole dry to 9m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S040

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	decomposed brown and white serpentinite	5.80	0.875	0.029						
2	3	light green serpentinite rock flour and chips with minor fibrous white mineral	6.78								
		END OF HOLE AT 3m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S041

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	decomposed green and white serpentinite	7.18	1.14	0.017						
2	3	dirty white serpentinite rock flour	7.10	0.280	0.011						
		END OF HOLE AT 3m									
		hole dry to 3m									

2312283

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S042

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	red brown clay	3.40	0.155	0.011						
2	3	dirty light green serpentinite rock flour and chips	6.50	0.340	0.017						
3	4	light green serpentinite rock flour and chips	6.76	0.275	0.011						
		END OF HOLE AT 4m									

231284

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S043

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	dirty green serpentinite rock flour and chips	2.80	0.320	0.043						
2	3	dark green serpentinite rock flour and chips	6.56	0.335	0.015						
		END OF HOLE AT 3m									
		hole dry to 3m									

231285

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S044

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	light green serpentinite rock flour and chips	6.46	0.330	0.011						
2	3	light green serpentinite rock flour and chips with sparse fibrous white mineral	8.80								
		END OF HOLE AT 3m									

231286

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S045

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	light green serpentinite rock flour and chips	6.60	0.790	0.031						
2	3	ditto	4.74								
		END OF HOLE AT 3m									
		hole dry to 3m									

2312287

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S046

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	no sample									
2	3	dirty green serpentinite rock flour and chips	5.24	0.520	0.020						
3	4	green and white serpentinite rock flour and chips	7.20	0.460	0.019						
		END OF HOLE AT 4m									
		hole dry to 4m									

231288

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S047

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	mid brown clay	7.56	0.110	0.009						
2	3	dark brown clay	8.26	0.220	0.019						
3	4	red brown clay	6.20	0.495	0.070						
4	5	dark brown clay and decomposed dark green serpentinite	4.58	1.03	0.090						
5	6	decomposed dirty green and white serpentinite	5.28	0.565	0.039						
6	7	decomposed dirty green and white serpentinite	7.42	0.510	0.018						
7	8	decomposed dark green and white serpentinite	5.24	1.21	0.035						
8	9	light green serpentinite rock flour and chips	11.82	0.685	0.034						
		END OF HOLE AT 4m									
		hole dry to 9m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S048

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	mid brown clay with trace decomposed white serpentinite	5.92	1.51	0.140						
2	3	red brown clay with sparse decomposed white serpentinite	7.12	0.640	0.049						
3	4	ditto	6.96	0.875	0.049						
4	5	ditto	7.74	0.720	0.027						
5	6	brown clay with white serpentinite rock flour and chips	6.70	0.905	0.031						
6	7	light green serpentinite rock flour and chips with trace fibrous white mineral	9.84								
		END OF HOLE AT 7m									
		hole dry to 7m									

231290

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S049

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	tan silty clay	8.44	0.055	0.002						
2	3	light brown silty clay	6.78	0.028	<0.002						
3	4	ditto	7.54	0.030	0.004						
4	5	ditto	7.76	0.050	<0.002						
5	6	pale brown silty clay	8.32	0.042	<0.002						
6	7	ditto	9.56	0.036	0.006						
7	8	light grey silty clay	5.32	0.019	0.003						
8	9	ditto	7.60	0.018	<0.002						
		END OF HOLE AT 9m									
		hole dry to 9m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S050

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	2	green brown clay	7.04	1.06	0.029						
2	3	green brown clay and decomposed mid green serpentinite	7.70	1.19	0.024						
3	4	light green serpentinite rock flour and chips with trace white fibrous mineral	8.88								
		END OF HOLE AT 4m									
		hole dry to 4m									

231292

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S051

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	light green serpentinite rock powder and chips with sparse brown clay and sparse fibrous white mineral	6.20								
2	3	light green serpentinite rock powder and chips with sparse to minor fibrous white mineral	8.10								
		END OF HOLE AT 3m									
		hole dry to 3m									

231293

THERE IS NO HOLE S052

231294

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S053

from m	to m	DESCRIPTION	mass	Ni %	Co %					
0	1	brown to red-brown clay	1.62	0.054	0.007					
1	2	brown to red brown clay	5.04	0.247	0.032					
2	3	green brown clay and common white extremely weathered serpentinite	3.24	0.323	0.080					
3	4	brown clay and sparse white to pale green very weathered serpentinite	6.00	0.496	0.053					
4	5	pale green weathered serpentinite	7.36	0.408	0.037					
5	5.5	pale green weathered serpentinite	1.56	0.318	0.025					
		END OF HOLE AT 5.5m								

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S054

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	dirty green extremely weathered serpentinite	3.27	0.384	0.036						
1	2	pale green weathered serpentinite	2.50	0.318	0.015						
		END OF HOLE AT 2m									

231296

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S055

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	red brown clay	3.40	0.290	0.042						
1	2	brown to dirty green clay (extremely weathered serpentinite)	4.84	0.416	0.030						
2	3	light to dark green extremely weathered serpentinite	4.24	0.700	0.015						
3	4	light green weathered serpentinite	1.82	0.409	0.015						
		END OF HOLE AT 4m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S056

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	light to dark brown clay	5.24	0.260	0.013						
1	2	dark brown to red brown clay	5.72	0.175	0.019						
2	3	green weathered serpentinite	4.40	0.313	0.022						
		END OF HOLE AT 3m									

231298

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S057

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	brown clay to dark green weathered serpentinite (contaminated from previous hol	2.84								
1	2	green weathered serpentinite	4.28	0.497	0.025						
		END OF HOLE AT 2m									

23129 9

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S058

from m	to m	DESCRIPTION	mass	Ni %	Co %
0	1	dark brown clay	4.20	0.204	0.013
1	2	tan to dark brown clay	4.66	0.170	0.067
2	3	brown to green brown clay	6.12	0.322	0.101
3	4	brown to green brown clay and dirty green completely decomposed serpentinite	8.30	0.432	0.073
4	5	dirty green completely decomposed serpentinite	5.38	1.210	0.067
5	6	dirty green completely decomposed serpentinite and white extremely weathered serpentinite	6.18	0.850	0.048
6	7	white to dark green very weathered serpentinite	6.76	0.435	0.014
		END OF HOLE AT 7m			

231300

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S059

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	light brown clay and ironstone gravel	2.44	0.188	0.012						
1	2	brown clay and ironstone gravel	3.50	0.353	0.017						
2	3	dark brown clay	2.52	0.720	0.027						
3	3.5	brown clay and minor white to green weathered serpentinite	1.60	0.840	0.024						
		END OF HOLE AT 3.5m									

231301

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S060

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	topsoil, red clay and ironstone gravel	2.10	0.121	0.009						
1	2	red clay and ironstone gravel	8.76	0.111	0.009						
2	3	red clay and ironstone gravel	9.20	0.141	0.010						
3	4	red to slightly green red clay	3.60	1.440	0.024						
4	5	red to slightly green red clay and weathered hard green serpentinite	7.12	1.140	0.023						
		END OF HOLE AT 5m									

231302

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S061

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	2	green brown clay (decomposed serpentinite?)	1.50	0.980	0.023						
2	3	green brown clay to dark green hard serpentinite	6.40	0.810	0.019						
		END OF HOLE AT 3m									

231303

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S062

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	topsoil and hard green weathered serpentinite	2.20	0.207	0.019						
1	2	hard green weathered serpentinite	6.02	0.342	0.014						
		END OF HOLE AT 2m									

231304

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S063

from m	to m	DESCRIPTION	mass	Ni %	Co %					
0	1	brown topsoil and clay and ironstone gravel (contaminated sample)	2.70	0.214	0.012					
1	2	red brown clay and ironstone gravel	6.06	0.050	0.006					
2	3	light brown to brown clay	4.20	0.082	0.009					
3	4	light brown clay	6.80	0.216	0.031					
4	5	light brown clay	7.56	0.177	0.014					
5	6	light brown clay	4.20	0.435	0.054					
6	7	light brown and green clay	4.40	2.66	0.241					
7	8	light brown and green clay	4.00	1.48	0.059					
8	9	green brown completely decomposed serpentinite	4.20	1.62	0.048					
9	10	dirty green completely decomposed serpentinite	3.46	1.90	0.033					
10	11	dirty green completely decomposed serpentinite	1.88	2.12	0.041					
11	12	dirty green completely decomposed serpentinite and minor hard serpentinite	2.60	1.50	0.036					
12	13	dirty green completely decomposed serpentinite	4.92	1.82	0.038					
13	14	dirty green completely decomposed serpentinite	9.26	1.60	0.032					
14	15	dirty green completely decomposed serpentinite	4.42	1.46	0.025					
15	16	light green brown completely decomposed serpentinite	9.66	1.19	0.017					
16	17	dirty green completely decomposed serpentinite	3.24	1.01	0.010					
17	18	dirty green completely decomposed serpentinite	5.44	1.17	0.012					
18	19	dirty green completely decomposed serpentinite	8.88	1.14	0.014					
19	20	light green to dark green hard weathered serpentinite	5.84	1.07	0.017					
		END OF HOLE AT 20m								

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S064

from m	to m	DESCRIPTION	mass	Ni %	Co %						
1	2	mid brown clay and sparse light green serpentinite	8.68	0.467	0.016						
2	3	tan clay and minor olive green serpentinite	3.72	0.770	0.026						
3	3.5	dark olive green to brown clay	1.70	0.810	0.031						
		END OF HOLE AT 3.5m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S065

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	topsoil, red brown clay and ironstone gravel		0.159	0.062						
1	2	red brown clay		0.245	0.075						
2	3	red brown and green brown clay		0.377	0.098						
3	4	green brown completely decomposed serpentinite		0.433	0.092						
4	5	olive green and brown green extremely weathered serpentinite		0.447	0.063						
5	6	olive green and brown green extremely weathered serpentinite		0.750	0.044						
6	7	green hard weathered serpentinite		0.356	0.026						
		END OF HOLE AT 7m									

231307

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S066

from *m*	to *m*	DESCRIPTION	mass	Ni %	Co %
0	1	red brown clay and ironstone (contaminated sample)	4.38	0.202	0.021
1	2	red brown clay and ironstone	0.88	0.075	0.012
2	3	no sample			
3	4	red brown clay and sparse white weathered serpentinite	0.88	0.242	0.021
4	5	red brown clay and sparse white weathered serpentinite	2.26	0.306	0.022
5	6	red brown clay and weathered serpentinite	6.44	0.231	0.015
		END OF HOLE AT 6m			

231308

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S067

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	red brown clay and ironstone	1.84	0.046	0.008						
1	2	red brown clay and ironstone	6.20	0.036	0.007						
2	3	red brown clay and ironstone	6.28	0.032	0.007						
3	4	red brown clay and ironstone	6.32	0.071	0.013						
4	5	red brown clay and ironstone	5.20	0.106	0.021						
5	6	red brown clay	1.04	0.271	0.056						
6	7	red brown clay to weathered green serpentinite	3.60	0.319	0.034						
		END OF HOLE AT 7m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S068

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	red brown clay and ironstone	2.72	0.309	0.037						
1	2	light brown clay and very weathered white serpentinite	3.16	0.602	0.010						
2	3	light brown to red brown clay	4.20	0.617	0.006						
3	4	light brown to red brown clay	5.20	0.835	0.011						
4	5	brown clay	4.92	0.116	0.015						
5	6	brown clay	3.60	0.289	0.086						
6	7	green and brown extremely weathered serpentinite (wet)	0.80	0.431	0.126						
		END OF HOLE AT 7m									

23310

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S069

from m	to m	DESCRIPTION	mass	Ni %	Co %
0	1	red brown clay and ironstone	2.32	0.451	0.085
1	2	red brown clay and ironstone	6.64	0.274	0.044
2	3	red brown clay and ironstone	5.16	0.035	0.010
3	4	brown clay and ironstone	11.80	0.168	0.019
4	5	light brown clay	6.18	0.069	0.007
5	6	tan clay	4.80	0.068	0.003
6	7	light brown clay	7.60	0.086	0.025
7	8	light brown clay and sparse dirty green decomposed serpentinite	5.40	0.213	0.122
8	9	light brown clay and sparse dirty green decomposed serpentinite	5.10	0.455	0.169
9	10	brown and dirty green decomposed serpentinite	4.40	0.550	0.101
10	11	brown and dirty green decomposed serpentinite to light green hard weathered serpentinite	5.20	1.710	0.116
		END OF HOLE AT 11m			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S070

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	light brown clay (contaminated sample)	2.08	0.182	0.013						
1	2	light brown and sparse white clay	4.56	0.135	0.008						
2	3	light brown and sparse white clay	2.00	0.139	0.004						
3	4	light brown clay	6.90	0.130	0.007						
4	5	light brown and minor white clay	5.96	0.142	0.010						
5	6	light brown and minor white clay	4.96	0.117	0.007						
6	7	mottled brown, red brown and white clay	6.00	0.187	0.032						
7	8	light brown clay	6.28	0.274	0.050						
8	9	light brown, green and white clay	5.88	0.315	0.108						
9	10	light brown, green and white clay	6.28	0.321	0.145						
10	11	light brown and white clay	6.56	0.297	0.136						
11	12	light brown and white clay	7.52	0.279	0.107						
12	13	light brown and white clay	6.20	0.321	0.140						
13	14	mottled orange and green brown clay	7.48	0.303	0.090						
14	15	mottled orange and green brown clay to dirty green decomposed serpentinite	6.72	0.56	0.079						
15	16	dirty green decomposed serpentinite	6.20	0.89	0.073						
16	17	dirty green decomposed serpentinite	6.72	0.83	0.097						
17	18	dirty green decomposed serpentinite	5.90	1.18	0.034						
18	19	dirty green decomposed serpentinite	4.64	1.41	0.052						
19	20	dirty green decomposed serpentinite	4.64	1.68	0.046						
20	21	dirty green decomposed serpentinite	5.00	1.27	0.029						
21	22	dirty green decomposed serpentinite	4.28	1.10	0.030						
22	23	dirty green decomposed serpentinite	4.72	1.52	0.041						
23	24	dirty green decomposed serpentinite	6.68	1.06	0.028						
24	24.5	dark green hard weathered serpentinite	1.64	0.261	0.005						
		END OF HOLE AT 24.5m									

210132

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S071

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	light brown clay (contaminated sample)	0.88	0.137	0.008						
1	2	light brown and sparse white clay	4.00	0.079	0.006						
2	3	light brown and sparse white clay	6.00	0.198	0.017						
3	4	light brown clay	7.48	0.226	0.022						
4	5	light brown and minor white clay	5.20	0.090	0.009						
5	6	light brown and minor white clay	7.80	0.178	0.119						
6	7	mottled brown, red brown and white clay	5.60	0.279	0.130						
7	8	light brown clay	4.60	0.220	0.051						
8	9	light brown, green and white clay	4.00	0.64	0.077						
9	10	light brown, green and white clay	4.48	0.84	0.280						
10	11	light brown and white clay	3.60	1.39	0.069						
11	12	light brown and white clay	3.40	1.57	0.062						
12	13	light brown and white clay	3.08	1.49	0.042						
13	14	mottled orange and green brown clay	5.80	1.26	0.068						
14	15	mottled orange and green brown clay to dirty green decomposed serpentinite	6.60	0.71	0.028						
15	15.5	dark green hard weathered serpentinite	1.44	0.73	0.016						
		END OF HOLE AT 15.5m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S072

from m	to m	DESCRIPTION	mass	Ni %	Co %
0	1	light brown clay (contaminated sample)	1.48	0.372	0.012
1	2	light brown and sparse white clay	3.00	0.058	0.004
2	3	light brown and sparse white clay	7.28	0.053	0.004
3	4	light brown clay	9.20	0.102	0.007
4	5	light brown and minor white clay	6.64	0.276	0.051
5	6	light brown and minor white clay	6.04	0.395	0.074
6	7	mottled brown, red brown and white clay	5.40	1.36	0.095
7	8	light brown clay	4.00	2.18	0.063
8	9	light brown, green and white clay	5.00	1.23	0.077
		END OF HOLE AT 9m			

231314

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S073

from m	to m	DESCRIPTION	from m	to m	mass kg	rec m	rec %	from m	to m	Ni %	Co %
0.0	1.3	red brown clay with sparse ironstone grit and pebbles	0.0	1.2	4.9	0.60	50	0.0	1.2	0.042	0.005
		contact with the next interval is gradational									
1.3	5.4	mid brown and sparse light brown clay	1.2	2.0	6.0	0.75	94	1.2	2.0	0.078	0.006
			2.0	3.1	3.6	0.45	41	2.0	3.1	0.048	0.003
		contact with the next interval is gradational	3.1	4.3	8.4	1.20	100	3.1	4.3	0.027	0.002
			4.3	5.6	4.8	1.00	77	4.3	5.6	0.038	0.002
5.4	11.2	mottled red brown and minor white clay	5.6	6.6	5.9	1.00	100	5.6	6.6	0.023	0.002
			6.6	8.1	8.8	1.50	100	6.6	8.1	0.015	0.001
		contact with the next interval is sharp but broken	8.1	9.6	9.8	1.40	93	8.1	9.6	0.027	0.002
			9.6	11.1	9.9	1.50	100	9.6	11.1	0.078	0.020
11.2	16.3	mixed mid brown, brown and orange brown clay	11.1	12.6	7.0	1.50	100	11.1	12.6	0.200	0.062
			12.6	14.1	11.6	1.50	100	12.6	14.1	0.230	0.071
		contact with the next interval is sharp but broken	14.1	15.6	8.2	1.40	93	14.1	15.6	0.314	0.105
			15.6	16.6	6.4	1.00	100	15.6	16.6	0.60	0.081
16.3	17.8	deeply weathered, completely decomposed serpentinite; rock mass is completely decomposed but rock fabric remains	16.6	17.8	4.8	1.00	83	16.6	17.8	1.36	0.053
		contact with the next interval is sharp but broken									
17.8	23.1	decomposed to partly decomposed light green serpentinite with sparse brown	17.8	19.1		1.30	100	17.8	19.0	1.30	0.020
		clayey zones, spatrse dark green serpentine as veinlets, and sparse magnetite as	19.1	20.6		1.50	100	19.0	20.0	1.43	0.019
		veinlets; rock fabric remains	20.6	21.6		1.00	100	20.0	21.0	1.24	0.018
			21.6	23.1		1.50	100	21.0	22.0	1.00	0.015
		19.15m to 19.25m: brecciated serpentinite with vivid light green nickeliferous? serpentine as veinlets; CA = 45 degrees						22.0	23.0	0.59	0.010
								23.0	24.0	0.267	0.009
		contact with the next interval is gradational	23.1	24.1		1.00	100	24.0	25.0	0.210	0.009
			24.1	25.2		1.10	100	25.0	26.0	0.220	0.010
23.1	30.0	slightly weathered massive light green serpentinite with sparse, partly acicular,	25.2	25.8		0.60	100	26.0	28.0	0.218	0.009
		magnetite as veinlets,sparse very dark green serpentine as veinlets, and trace	25.8	27.4		1.60	100	27.0	28.0	0.245	0.010
		orange clay on joints	27.4	28.9		1.50	100	28.0	29.0	0.288	0.011
			28.9	30.0		1.10	100	29.0	30.0	0.304	0.010
		END OF HOLE AT 30.0m									

231315

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S074

from m	to m	DESCRIPTION	from m	to m	mass kg	rec m	rec %	from m	to m	Ni %	Co %
0.0	0.5	topsoil and grey quartz gravel	0.0	2.6	12.7	2.00	77	0.0	1.5	0.020	0.009
		contact with the next interval is gradational									
0.5	4.0	mid brown to red brown clay with sparse ironstone grit and pebbles	2.6	4.0	10.8	1.40	100	1.5	2.6	0.046	0.080
								2.6	4.0	0.082	0.071
		contact with the next interval is gradational									
4.0	5.4	light brown clay	4.0	5.2	8.4	1.20	100	4.0	5.2	0.088	0.043
		contact with the next interval is gradational									
5.4	10.9	red clay and dark green to brown completely decomposed serpentinite; rock fabric barely visible	5.2	6.2	4.1	0.80	80	5.2	6.2	0.094	0.029
			6.2	7.7	8.0	1.40	93	6.2	7.7	0.336	0.055
			7.7	9.2	6.0	1.00	67	7.7	9.2	0.52	0.073
		contact with the next interval is gradational	9.2	10.6	7.7	1.20	86	9.2	10.6	0.73	0.091
10.9	14.9	dark green, dirty white and brown completely decomposed serpentinite with sparse magnetite and haematite as veinlets, and sparse dark green serpentine as veinlets; rock fabric remains	10.6	12.1	5.0	1.00	67	10.6	12.1	0.99	0.168
			12.1	13.6	6.4	1.50	100	12.1	13.6	0.59	0.032
			13.6	15.1	7.6	1.50	100	13.6	15.1	0.61	0.027
		contact with the next interval is gradational									
14.9	20.5	light green to khaki very weathered , partly decomposed serpentinite with trace magnetite as veinlets	15.1	16.6	10.2	1.50	100	15.1	16.6	0.65	0.033
			16.6	17.8	4.6	1.10	92	16.6	17.8	0.84	0.024
			17.8	18.7		0.90	100	17.8	19.0	0.61	0.028
		contact with the next interval is sharp but broken	18.7	19.3		0.60	100	19.0	20.0	0.87	0.012
			19.3	20.6		1.30	100	20.0	21.0	0.68	0.028
20.5	23.8	dark brown and green completely decomposed serpentinite with sparse dark green serpentine as veinlets, and sparse magnetite and haematite as veinlets; rock fabric remains	20.6	22.1		1.40	93	21.0	22.0	1.17	0.048
			22.1	23.7		1.60	100	22.0	23.0	0.850	0.038
								23.0	24.0	1.02	0.061
		contact with the next interval is sharp but broken									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S074

from m	to m	DESCRIPTION	from m	to m	mass kg	rec m	rec %	from m	to m	Ni %	Co %
23.8	30.0	green grey massive serpentinite with sparse light green serpentine as veinlets, and trace disseminated haematite	23.7	25.1		1.30	93	24.0	25.0	0.257	0.012
			25.1	25.9		0.80	100	25.0	26.0	0.142	0.010
			25.9	27.1		1.20	100	26.0	27.0	0.192	0.010
		END OF HOLE AT 30.0m	27.1	27.7		0.60	100	27.0	28.0	0.294	0.010
			27.7	29.0		0.90	69	28.0	29.0	0.152	0.009
			29.0	30.0		0.80	80	29.0	30.0	0.133	0.009

231317

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S075

from m	to m	DESCRIPTION	from m	to m	mass kg	rec m	rec %	from m	to m	Ni %	Co %
0.0	0.9	ironstone gravel and topsoil	0.0	1.3	3.0	0.40	31	0.0	1.3	0.48	0.041
		contact with the next interval is sharp but broken									
0.9	3.5	light brown to mid brown clay with common light green serpentinite fragments	1.3	2.2	3.2	0.70	78	1.3	2.2	0.77	0.051
			2.2	3.7	5.7	1.50	100	2.2	3.7	0.91	0.040
		contact with the next interval is gradational									
3.5	11.0	very weathered light green partly decomposed serpentinite with sparse haematite	3.7	5.7	12.5	1.90	95	3.7	5.7	0.73	0.024
		and brown clay on some joints, sparse dark green serpentine as veinlets, and trace	5.7	7.8	7.5	1.90	90	5.7	7.8	0.453	0.008
		disseminated magnetite	7.8	8.2	3.5	0.40	100	7.8	8.2	0.300	0.005
			8.2	9.4	9.7	1.20	100	8.2	8.6	0.373	0.005
		contact with the next interval is gradational	9.4	10.6	10.5	1.20	100	8.6	9.4	0.419	0.007
			10.6	11.3		0.70	100	9.4	10.6	0.314	0.005
11.0	15.0	massive light green serpentinite with sparse magnetite as veinlets and	11.3	12.0		0.70	100	10.6	11.0	0.334	0.006
		disseminations, and sparse white fibrous serpentine as veinlets.	12.0	15.0		3.00	100	11.0	12.0	0.27	0.006
								12.0	13.0	0.24	0.007
		END OF HOLE AT 15.0m						13.0	14.0	0.206	0.007
								14.0	15.0	0.212	0.007

231318

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S076

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	red topsoil and clay and ironstone	0.50	1.820	0.066						
1	2	dark brown clay (contaminated sample?)	7.00	0.640	0.041						
2	3	dark brown to red brown clay	5.20	1.290	0.156						
3	4	dark brown to red brown clay	6.80	0.900	0.158						
4	5	dark brown to red brown clay	3.00	0.880	0.106						
5	5.5	dark green hard weathered serpentinite	1.60	0.650	0.027						
		END OF HOLE AT 5.5m									

23319

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S077

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	light brown clay (contaminated sample)	3.80	0.302	0.022						
1	2	light brown and sparse white clay	7.20	0.181	0.011						
2	3	light brown and sparse white clay	4.72	0.487	0.042						
3	4	light brown clay	6.40	0.446	0.088						
4	5	light brown and minor white clay	3.40	0.87	0.029						
5	6	green white clay (decomposed serpentinite)	2.40	0.79	0.023						
6	7	green white clay (decomposed serpentinite) and sparse serpentinite fragments	6.20	0.451	0.012						
7	7.5	dark green weathered hard serpentinite	3.40	0.56	0.021						
		END OF HOLE AT 7.5m									

231320

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S078

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	pale brown clay	2.00	0.190	0.008						
1	2	tan clay	5.00	0.098	0.005						
2	3	tan clay to green brown decomposed serpentinite	4.60	0.278	0.153						
3	4	green brown decomposed serpentinite	4.80	0.85	0.096						
4	5	green brown decomposed serpentinite to green and white very weathered serpentinite	4.60	0.67	0.073						
		END OF HOLE AT 5m									

231321

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S079

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	pale brown clay	0.20								
1	2	tan clay	5.40	0.492	0.034						
2	3	pale green weathered soft serpentinite	4.64	0.65	0.049						
3	3.5	white talcy serpentinite	3.40	0.476	0.038						
		END OF HOLE AT 3.5m									

231322

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S080

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	light brown clay	3.80	0.051	0.007						
1	2	very pale brown clay	7.20	0.007	0.003						
2	3	very pale brown clay and grey quartzite	7.00	0.008	0.002						
3	4	very pale brown clay and grey quartzite	10.80	0.021	0.004						
4	5	grey brown clay and grey quartzite	10.20	0.019	0.004						
5	6	grey brown clay and grey quartzite	8.80	0.021	0.004						
6	7	grey quartzite and siltstone	8.40	0.012	0.003						
7	8	dark grey siltstone	8.40	0.007	0.003						
8	9	dark grey siltstone	3.40	0.006	0.003						
9	10	dark grey siltstone	8.80	0.006	0.003						
10	11	dark grey siltstone	10.80	0.009	0.004						
		END OF HOLE AT 11m									
		This hole was drilled in Cabbage Tree Formation									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S081

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	dirty green decomposed serpentinite	1.80	0.119	0.019						
1	2	grey hard weathered serpentinite	4.24	0.247	0.016						
		END OF HOLE AT 2m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S082

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	red brown clay	4.00	0.244	0.020						
1	2	light green weathered hard serpentinite	7.40	0.421	0.014						
2	3	light green weathered hard serpentinite	8.40	0.194	0.010						
		END OF HOLE AT 3m									

231325

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S083

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	grey clay	3.00	0.065	0.011						
1	2	brown clay	3.60	0.054	0.0151						
2	3	brown clay	0.80	0.066	0.010						
3	4	brown clay	1.00	0.075	0.013						
4	5	grey siltstone	1.60	0.068	0.015						
5	6	grey siltstone	7.80	0.043	0.009						
6	7	dark grey siltstone	4.40	0.029	0.007						
7	8	dark grey siltstone	10.00	0.014	0.004						
8	9	dark grey siltstone	6.80	0.002	0.002						
9	10	dark grey siltstone	4.60	0.008	0.002						
10	10.5	dark grey siltstone	1.00	0.001	0.002						
		END OF HOLE AT 10m									
		This hole could possibly have been drilled in Permian siltstone									

231526

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S084

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	grey clay	0.52								
1	2	brown clay	2.80								
2	3	brown clay	4.00								
3	4	brown clay	7.20								
4	5	dark grey siltstone	8.20								
5	6	dark grey siltstone	10.00								
6	7	dark grey siltstone	13.00								
7	8	dark grey siltstone	10.00								
8	9	dark grey siltstone	9.20								
9	10	dark grey siltstone	8.20								
10	11	dark grey siltstone	8.00								
11	12	dark grey siltstone	7.00								
12	12.5	dark grey siltstone	2.00								
		END OF HOLE AT 12.5m									
		This hole could possibly have been drilled in Permian siltstone									

231323

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S085

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	grey clay	2.00	0.003	0.002						
1	2	tan siltstone	4.40	0.002	0.001						
2	3	tan siltstone	6.20	0.000	0.001						
3	4	tan siltstone	7.00	0.001	0.001						
4	5	tan siltstone	8.00	0.001	0.001						
5	6	pale brown siltstone	10.20	0.002	0.002						
6	7	pale brown siltstone	9.00	0.002	0.002						
7	8	grey siltstone	8.40	0.004	0.009						
8	9	grey siltstone	10.40	0.012	0.053						
9	10	grey siltstone	9.20	0.009	0.007						
10	11	grey siltstone	8.80	0.022	0.019						
11	12	green brown decomposed serpentinite and minor grey siltstone	4.60	0.61	0.042						
12	13	green brown decomposed serpentinite	3.40	0.71	0.040						
13	14	green brown decomposed serpentinite	4.40	0.66	0.033						
14	15	green brown decomposed serpentinite	3.60	0.447	0.023						
15	16	green brown decomposed serpentinite to weathered hard serpentinite	2.40	0.203	0.011						
		END OF HOLE AT 16m									
		This hole probably passed from Permian siltstone to serpentinite									

231328

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S086

from m	to m	DESCRIPTION	mass	Ni %	Co %						
0	1	topsoil and grey weathered siltstone	1.00	0.164	0.012						
1	2	pale brown siltstone	7.20	0.047	0.005						
2	3	tan siltstone	4.40	0.010	0.003						
3	4	brown siltstone	6.80	0.009	0.003						
4	5	brown grey siltstone	6.60	0.016	0.020						
5	6	grey siltstone	9.60	0.225	0.014						
6	7	grey siltstone	5.80	0.016	0.012						
7	8	grey siltstone	9.20	0.008	0.005						
8	9	grey siltstone	10.00	0.009	0.004						
9	10	grey siltstone	10.40	0.015	0.004						
10	11	grey siltstone	10.80	0.007	0.003						
11	11.5	grey siltstone	4.80	0.011	0.004						
		END OF HOLE AT 11.5m									

231329

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S087

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	green grey decomposed serpentinite	3.60	0.81	0.082
1	2	green grey decomposed serpentinite	4.60	1.43	0.109
2	3	green grey decomposed serpentinite	6.20	1.75	0.091
3	4	red brown clay	6.60	1.09	0.063
4	5	grey decomposed serpentinite with hard serpentinite fragments	4.80	0.89	0.055
5	6	mottled brown and white clay	9.20	0.281	0.016
6	7	mottled brown and white clay	5.40	0.277	0.006
7	8	green and minor white weathered hard serpentinite	6.60	0.210	0.006
8	9	green and minor white weathered hard serpentinite	10.80	0.396	0.013
9	10	green and minor white weathered hard serpentinite	5.20	0.447	0.016
10	11	green white weathered hard serpentinite	5.20	0.332	0.019
		END OF HOLE AT 11m			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S088

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	2	red brown clay	10.00	0.141	0.020						
2	3	green black decomposed serpentinite	6.40	0.266	0.196						
3	4	green brown decomposed serpentinite	5.00	0.268	0.043						
4	5	weathered hard green serpentinite	5.80	0.223	0.016						
5	6	weathered hard green serpentinite	3.60	0.277	0.016						
		END OF HOLE AT 6m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S089

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red brown clay	0.80	0.365	0.052						
1	2	weathered green to grey hard serpentinite	6.20	0.256	0.011						
2	3	weathered green to grey hard serpentinite	6.00	0.194	0.010						
3	4	weathered green to grey hard serpentinite	1.20	0.282	0.014						
		END OF HOLE AT 4m									

231332

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S090

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red brown clay and ironstone gravel	1.60	0.119	0.012						
1	2	red brown clay and ironstone gravel	3.80	0.086	0.018						
2	3	red brown clay and ironstone gravel	3.00	0.103	0.013						
3	4	red brown clay and ironstone gravel	2.00	0.114	0.029						
4	5	green weathered hard serpentinite	3.40	0.352	0.053						
5	6	green weathered hard serpentinite	1.20	0.279	0.048						
		END OF HOLE AT 6m									

COMPANY *Allegiance Mining NL*
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S091

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red brown clay and ironstone gravel	2.20	0.117	0.014						
1	2	chocolate brown clay	5.60	0.136	0.118						
2	3	chocolate brown clay	6.20	0.228	0.158						
3	4	red brown to chocolate brown clay	3.20	0.236	0.153						
4	5	red brown to chocolate brown clay	3.40	0.252	0.126						
5	6	red brown to chocolate brown clay	1.60	0.298	0.091						
6	7	mottled brown and lesser white clay	3.40	0.350	0.052						
7	8	dark green weathered hard serpentinite	8.00	0.286	0.033						
		END OF HOLE AT 8m									

733132

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S092

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red brown clay	0.80	0.148	0.014						
1	2	chocolate brown clay	2.60	0.324	0.118						
2	2.5	dark green weathered hard serpentinite	1.80	0.730	0.158						
		END OF HOLE AT 2.5m									

231335

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S093

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	red brown clay and ironstone gravel	0.80	0.154	0.021
1	2	red brown clay and ironstone gravel	3.60	0.066	0.010
2	3	red brown clay and ironstone gravel	10.10	0.029	0.005
3	4	red brown clay and ironstone gravel	5.80	0.050	0.007
4	5	red brown to brown clay	8.40	0.130	0.023
5	6	brown clay	8.00	0.134	0.094
6	7	brown clay	7.20	0.249	0.085
7	8	brown clay	6.40	0.384	0.076
8	9	red brown to slightly green brown clay	3.80	0.69	0.063
9	10	no sample			
10	11	slightly green brown clay	1.20	0.46	0.065
11	12	slightly green brown clay	8.80	0.73	0.057
12	13	slightly green brown clay	8.40	0.481	0.054
13	14	slightly green brown clay	6.40	0.482	0.048
14	15	dirty green clay	6.20	0.70	0.051
15	16	slightly green brown clay and green decomposed serpentinite	3.20	0.80	0.044
		END OF HOLE AT 16m			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S094

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	brown quartz gravel and topsoil	1.00	0.080	0.007
1	2	brown quartz gravel	3.80	0.039	0.004
2	3	brown quartz gravel	4.20	0.041	0.004
3	4	brown quartz gravel	10.40	0.051	0.005
4	5	brown quartz gravel	8.80	0.055	0.004
5	6	brown quartz gravel and light brown clay	5.80	0.074	0.005
6	7	light brown to dark brown clay	6.00	0.090	0.006
7	8	dark brown clay	4.60	0.163	0.011
8	9	dark brown clay	3.60	0.166	0.015
9	10	green weathered hard serpentinite	5.60	0.203	0.015
		END OF HOLE AT 10m			

231337

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S095

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	no sample									
1	2	brown quartz gravel	0.60	0.016	0.001						
2	3	brown quartz gravel	0.80	0.031	0.002						
3	4	light brown soil and quartz gravel	2.80	0.019	0.002						
4	5	light brown soil and quartz gravel	0.80	0.023	0.002						
5	6	brown and white clay	9.80	0.061	0.006						
6	7	brown clay	3.00	0.257	0.016						
7	8	dark green brown clay	3.80	0.346	0.022						
8	9	dark green brown clay	5.80	0.283	0.020						
9	10	dark green brown clay	1.80	0.477	0.040						
10	11	dirty green completely decomposed serpentinite	3.00	0.64	0.005						
11	11.5	dirty green completely decomposed serpentinite	2.00	0.84	0.064						
		END OF HOLE AT 11.5m									

231338

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S096

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	brown clay and green grey weathered hard serpentinite	6.60	0.343	0.037						
1	2	green grey weathered hard serpentinite	5.80	0.155	0.009						
2	2.5	green serpentinite and common white fibrous serpentine	1.00	0.208	0.012						
		END OF HOLE AT 2.5m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S097

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	brown clay and green weathered serpentinite	1.80	0.102	0.011						
1	2	slightly green brown clay and green weathered hard serpentinite	4.60	0.203	0.021						
2	3	green weathered hard serpentinite	5.20	0.158	0.022						
		END OF HOLE AT 3m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S098

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red brown clay	3.20	0.074	0.014						
1	2	brown clay	5.00	0.203	0.023						
2	2.5	green weathered hard serpentinite	0.80	0.243	0.023						
		END OF HOLE AT 2.5m									

143136

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S099

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red brown clay	1.80	0.113	0.019						
1	2	red brown clay	6.00	0.111	0.072						
2	3	brown clay	7.60	0.174	0.040						
3	4	brown clay	4.80	0.318	0.059						
4	5	brown clay and minor white decomposed serpentinite	5.00	0.454	0.062						
5	5.5	green weathered hard serpentinite	1.00	0.483	0.061						
		END OF HOLE AT 25.5m									

23134 2

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S100

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	very dark brown clay	2.40	0.204	0.074						
1	2	tan to red brown clay	5.00	0.160	0.103						
2	3	red brown clay	5.60	0.166	0.079						
3	4	brown clay	4.00	0.299	0.055						
4	4.5	green hard weathered serpentinite	8.40	0.407	0.049						
		END OF HOLE AT 4.5m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S101

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red brown clay	3.20	0.121	0.021						
1	2	red brown clay	6.40	0.275	0.066						
2	3	green brown clay and sparse hard serpentinite	6.60	0.330	0.045						
3	3.5	green weathered hard serpentinite	2.80	0.355	0.037						
		END OF HOLE AT 3.5m									

23134

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S102

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red brown clay and ironstone gravel	1.00	0.073	0.009						
1	2	red brown clay	6.60	0.134	0.103						
2	3	red brown to brown clay	5.40	0.167	0.039						
3	4	brown clay	7.20	0.369	0.054						
4	5	slightly green brown clay	4.80	0.422	0.024						
5	6	brown clay	4.40	0.88	0.030						
6	7	dark green completely decomposed serpentinite	6.40	0.437	0.034						
7	8	green and white completely decomposed serpentinite	7.00	0.437	0.034						
8	9	dark brown clay	4.00	0.286	0.024						
9	10	green and white very weathered serpentinite	6.00	0.344	0.026						
10	11	green weathered hard serpentinite	7.20	0.270	0.020						
		END OF HOLE AT 11m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S103

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	brown and white clay	2.00	0.059	0.043						
1	2	light brown clay	4.60	0.048	0.063						
2	3	light brown clay	4.60	0.134	0.114						
3	4	light brown clay	7.80	0.149	0.050						
4	5	light brown and minor white clay	5.40	0.170	0.043						
5	6	dark brown clay	2.40	0.295	0.044						
6	7	dark slightly red brown clay	5.80	0.75	0.039						
7	8	green and white completely decomposed serpentinite and green weathered hard serpentinite	6.80	0.99	0.018						
		END OF HOLE AT 8m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S104

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	red brown clay	2.00	0.303	0.024
1	2	green serpentinite	9.60	0.059	0.039
2	3	brown clay	8.00	0.117	0.010
3	4	off white serpentinite	6.80	0.051	0.024
4	5	light brown clay	8.60	0.090	0.010
5	6	light brown clay	5.40	0.094	0.008
6	7	green serpentinite (rock chips)	4.00	0.122	0.018
7	8	green serpentinite (rock chips) and light brown clay	6.00	0.118	0.011
8	9	light brown and minor white clay	12.60	0.124	0.012
9	10	pale brown clay	7.40	0.095	0.006
10	11	pale brown clay and hard green serpentinite	8.40	0.057	0.006
11	12	brown clay and hard green serpentinite	9.00	0.108	0.011
12	13	green brown completely decomposed serpentinite	7.80	0.116	0.014
13	14	very dark green decomposed serpentinite and hard green serpentinite	4.00	0.255	0.029
14	14.5	hard green serpentinite	3.00	0.281	0.023
		END OF HOLE AT 14.5m			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S105

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	no sample			
1	2	weathered green hard serpentinite	3.20	0.254	0.024
2	3	red clay	3.20	0.350	0.031
3	4	dirty green decomposed serpentinite	4.40	0.320	0.029
4	5	weathered hard green serpentinite	0.60	0.326	0.022
		END OF HOLE AT 5m			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S106

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	pale brown clay	1.00	0.210	0.019						
1	2	tan clay	6.20	0.043	0.005						
2	3	light grey quartz gravel	6.00	0.013	0.002						
3	4	slightly green grey clay (after siltstone)	5.20	0.016	0.002						
4	5	slightly green grey clay (after siltstone)	7.40	0.022	0.003						
5	5.5	black siltstone	2.40	0.019	0.002						
		END OF HOLE AT 5.5m									
		This hole was drilled through Quaternary sediments into Permian? siltstone									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S107

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red clay and ironstone gravel	3.80	0.089	0.063						
1	2	red clay	6.60	0.126	0.089						
2	3	dirty green completely decomposed serpentinite	4.80	0.439	0.052						
3	4	dirty green decomposed serpentinite	3.00	0.84	0.047						
4	5	very dark green decomposed serpentinite	4.20	0.69	0.030						
5	6	dark green weathered hard serpentinite and decomposed serpentinite	7.20	0.394	0.030						
6	7	very dark green decomposed serpentinite	4.60	1.02	0.043						
7	8	dark green weathered hard serpentinite and decomposed serpentinite	6.80	0.70	0.034						
8	8.5	green weathered hard serpentinite	0.80	0.428	0.027						
		END OF HOLE AT 9m									

231250

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S108

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	red clay and ironstone gravel	1.80	0.107	0.010
1	2	red clay	5.00	0.087	0.008
2	3	red clay	7.40	0.139	0.093
3	4	red brown clay	5.60	0.250	0.065
4	5	red brown clay	4.20	0.385	0.055
5	6	light olive green decomposed serpentinite	6.40	0.339	0.027
6	7	light olive green decomposed serpentinite	4.20	0.280	0.020
7	8	light olive green serpentinite rock	3.80	0.290	0.018
		END OF HOLE AT 9m			

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S109

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red clay and minor weathered green serpentinite	3.80	0.226	0.073						
1	2	red clay	8.00	0.187	0.061						
2	3	green clay and green weathered hard serpentinite	5.60	0.371	0.071						
		END OF HOLE AT 3m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S110

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red clay and ironstone gravel	1.40	0.094	0.016						
1	2	red clay	6.80	0.259	0.035						
2	3	red clay	3.80	0.175	0.016						
3	4	green and white weathered serpentinite	5.80	0.288	0.056						
4	4.5	green and white hard weathered serpentinite	2.40	0.252	0.032						
		END OF HOLE AT 4.5m									

231353

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S111

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	no sample									
1	2	red brown clay	1.80	0.138	0.073						
2	3	red brown clay	12.00	0.165	0.050						
3	4	dark red brown clay	7.20	0.131	0.064						
4	5	tan clay	4.20	0.155	0.072						
5	6	green weathered hard serpentinite	2.20	0.247	0.047						
		END OF HOLE AT 6m									

COMPANY Allegiance Mining NL
PROJECT *Anderson's Creek Exploration Licence*
HOLE NUMBER S112

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red clay and ironstone gravel	2.00	0.130	0.016						
1	2	red and sparse orange clay	5.40	0.130	0.019						
2	3	dark brown clay	4.60	0.116	0.019						
3	4	light brown and white clay	5.60	0.105	0.013						
4	5	very pale brown clay	3.80	0.107	0.012						
5	6	green weathered hard serpentinite	4.40	0.206	0.015						
		END OF HOLE AT 6m									

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S113

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	red clay and ironstone gravel	1.20	0.108	0.171
1	2	red clay	5.00	0.382	0.060
2	3	dark red clay	5.20	0.349	0.111
3	4	dark red clay	5.40	0.246	0.087
4	5	dark red clay	7.00	0.197	0.086
5	6	brown clay	5.60	0.287	0.073
6	7	light brown clay	12.00	0.442	0.055
7	8	dark green decomposed serpentinite	5.00	0.497	0.029
8	9	dark green decomposed serpentinite	6.40	0.99	0.038
9	9.5	green weathered hard serpentinite	2.60	0.471	0.017
		END OF HOLE AT 9.5m			

231356

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S114

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red clay and ironstone gravel	2.20	0.272	0.094						
1	2	red clay	3.60	0.427	0.045						
2	3	red and sparse green clay	3.80	0.415	0.040						
3	4	red clay	3.60	0.80	0.058						
4	5	red clay	8.40	0.365	0.046						
5	6	red brown clay	4.60	0.274	0.055						
6	7	red clay	6.40	0.264	0.041						
7	8	red clay and minor white weathered serpentinite	5.20	0.229	0.021						
8	9	green weathered hard serpentinite	5.20	0.201	0.015						
		END OF HOLE AT 9m									

23135?

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S115

from m	to m	DESCRIPTION	mass kg	Ni %	Co %					
0	1	light brown clay	3.00	0.289	0.036					
1	2	dark brown clay	8.60	0.92	0.082					
2	3	very dark brown clay	4.60	1.30	0.079					
3	3.5	green and white weathered hard serpentinite	2.40	1.28	0.088					
		END OF HOLE AT 3.5m								

23135 8

COMPANY *Allegiance Mining NL*
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S116

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red clay and ironstone gravel	0.60	0.243	0.035						
1	2	red brown clay	3.20	0.102	0.015						
2	3	brown clay	3.20	0.135	0.017						
3	4	green and green brown clay	4.20	0.109	0.015						
4	5	dirty green clay	1.60	0.075	0.009						
5	6	red clay	5.40	0.144	0.027						
6	7	red clay	6.60	0.150	0.061						
7	8	dark red clay	4.20	0.93	0.041						
8	9	red brown and minor green clay	5.00	0.98	0.037						
9	10	red clay	3.80	0.92	0.031						
10	11	red and sparse white clay	7.80	0.62	0.038						
11	11.5	green weathered hard serpentinite	2.20	0.484	0.017						
		END OF HOLE AT 11.5m									

231359

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S117

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	brown clay	1.40	0.088	0.008
1	2	dark green weathered hard serpentinite	3.00	0.424	0.022
2	3	green serpentinite	3.60	0.342	0.011
3	4	dark and minor light brown clay	3.20	0.407	0.027
4	5	dark and minor light brown clay	5.00	0.392	0.019
5	6	pale brown clay	6.20	0.296	0.021
6	7	very pale brown clay	4.80	0.224	0.017
7	8	pale green weathered serpentinite	7.60	0.157	0.013
8	9	pale green weathered serpentinite	10.60	0.096	0.007
9	10	pale green weathered hard serpentinite	9.60	0.059	0.005
		END OF HOLE AT 10m			

231360

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S118

from m	to m	DESCRIPTION	mass kg	Ni %	Co %
0	1	grey green weathered serpentinite	4.60	0.164	0.034
1	2	pale green weathered serpentinite	7.20	0.281	0.020
2	3	brown green weathered serpentinite	7.60	0.259	0.013
3	4	pale green weathered serpentinite	7.00	0.245	0.013
4	5	light brown weathered serpentinite	8.40	0.195	0.011
5	6	very pale brown weathered serpentinite	9.00	0.157	0.011
6	7	light brown weathered serpentinite	6.80	0.280	0.020
7	8	light brown weathered serpentinite	7.20	0.201	0.015
8	9	very pale brown weathered serpentinite	10.20	0.151	0.009
9	10	green weathered hard serpentinite	8.00	0.141	0.009
		END OF HOLE AT 10m			

231361

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S119

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	red brown clay and ironstone gravel	2.20	0.013	0.002						
1	2	light brown clay	6.40	0.050	0.015						
2	3	brown clay	7.00	0.062	0.015						
3	4	brown and minor white clay	5.00	0.258	0.186						
4	5	dark red brown clay	5.80	0.064	0.011						
5	6	dark brown clay	7.80	0.055	0.024						
6	7	dark brown clay	7.40	0.234	0.281						
7	8	slightly green brown clay	7.60	0.178	0.275						
8	9	dark brown clay	5.40	0.164	0.250						
9	10	brown and sparse orange brown clay	7.00	0.138	0.144						
10	11	red brown clay	1.20	0.118	0.074						
11	12	dark green and sparse white decomposed serpentinite	2.60	0.331	0.043						
12	13	red clay and white to green decomposed serpentinite	2.40	0.403	0.029						
13	14	green weathered hard serpentinite	3.20	0.455	0.017						
		END OF HOLE AT 14m									

231362

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S120

from m	to m	DESCRIPTION	mass kg	Ni %	Co %						
0	1	topsoil, red clay and ironstone gravel	3.4	0.021	0.004						
1	2	red clay	8.8	0.065	0.007						
2	3	red brown clay	8.0	0.053	0.005						
3	4	brown clay	7.4	0.028	0.004						
4	5	brown and sparse white clay	5.2	0.056	0.005						
5	6	brown clay	5.2	0.069	0.004						
6	7	brown clay	3.2	0.080	0.006						
7	8	red clay	9.0	0.085	0.005						
8	9	red brown clay	4.6	0.209	0.027						
9	10	brown, green brown and sparse white decomposed serpentinite	4.2	0.393	0.130						
10	11	brown, green brown and sparse white decomposed serpentinite	4.6	0.341	0.089						
11	12	dirty green and white decomposed serpentinite	4.8	0.446	0.025						
12	12.5	green weathered hard serpentinite	12.4	0.434	0.016						
		END OF HOLE AT 12.5m									

231363

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S121

from m	to m	DESCRIPTION	from m	to m	mass kg	rec m	rec %	from m	to m	Ni %	Co %
0.0	0.7	red brown clay and common ironstone grit and pebbles	0.0	0.7		0.50	71	0.0	0.7	0.044	0.003
		contact with the next interval is gradational									
0.7	4.8	orange brown clay	0.7	1.5		0.40	50	0.7	1.5	0.062	0.007
			1.5	2.0		0.10	20	1.5	2.8	0.059	0.007
		contact with the next interval is gradational	2.0	2.8		0.70	88	2.8	5.0	0.067	0.010
			2.8	4.6		0.20	11	5.0	5.9	0.070	0.030
4.8	7.1	mottled red, orange brown and sparse white clay	4.6	5.9		1.00	77	5.9	7.1	0.266	0.125
			5.9	7.1		0.60	50				
		END OF HOLE AT 7.1m									
			0.0	0.7	2.8						
			0.7	1.5	1.7						
			1.5	2.8	4.1						
			2.8	5.0	3.1						
			5.0	5.9	2.8						
			5.9	7.1	3.3						

231364

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S121A

from m	to m	DESCRIPTION	from m	to m	mass kg	rec m	rec %	from m	to m	Ni %	Co %
0.0	1.1	red brown clay and common ironstone grit and pebbles	0.0	0.6		0.10	17	0.0	0.6	0.040	0.005
			0.6	1.2		0.40	67	0.6	1.2	0.052	0.006
		contact with the next interval is gradational									
1.1	3.8	orange brown clay	1.2	1.8		0.50	83	1.2	2.2	0.070	0.008
			1.8	2.2		0.00	0	2.2	3.8	0.072	0.007
		END OF HOLE AT3.8m	2.2	2.5		0.10	33				
			2.5	3.8		0.10	8				
			0.6	1.2	3.1						
			1.2	2.2	3.0						
			2.2	3.8	0.5						

231365

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S122

from m	to m	DESCRIPTION	from m	to m	mass kg	rec m	rec %	from m	to m	Ni %	Co %
0.0	2.9	red brown clay and common ironstone	0.0	0.6		0.50	83	0.0	0.6	0.028	0.003
			0.6	1.4		0.40	50	0.6	1.4	0.046	0.005
		contact with the next interval is gradational	1.4	2.3		0.40	44	1.4	2.3	0.041	0.004
			2.3	2.9		0.60	100	2.3	2.9	0.036	0.024
2.9	4.8	light brown clay	2.9	4.4		1.10	73	2.9	4.4	0.063	0.010
			4.4	4.9		0.30	60	4.4	4.9	0.124	0.022
		contact with the next interval is gradational									
4.8	7.6	brown and green completely decomposed serpentinite	4.9	6.0		1.00	91	4.9	6.0	0.260	0.051
			6.0	7.4		0.50	36	6.0	7.4	0.348	0.037
		contact with the next interval is gradational	7.4	8.9		1.50	100	7.4	8.2	0.80	0.037
								8.2	8.9	0.75	0.019
7.6	10.0	light green and dark green completely decomposed serpentinite	8.9	10.0		0.90	82	8.9	10.0	0.96	0.025
		contact with the next interval is sharp but broken									
10.0	13.1	extremely broken, generally slightly weathered, light green serpentinite with	10.0	11.0		1.00	100	10.0	11.0	0.82	0.018
		dark green serpentine veinlets, and sparse magnetite as veinlets; completely	11.0	12.6		1.60	100	11.0	12.2	0.88	0.018
		decomposed in part	12.6	13.1		0.50	100	12.2	12.6	0.70	0.014
								12.6	13.1	0.64	0.012
		END OF HOLE AT 13.1m									
			0.0	0.6	3.1						
			0.6	1.4	2.2						
			1.4	2.3	2.5						
			2.3	2.9	3.3						
			2.9	4.4	6.2						
			4.4	4.9	2.0						
			4.9	6.0	5.2						
			6.0	7.4	2.2						
			7.4	8.2	3.1						
			8.2	8.9	4.0						
			10.0	10.0	3.0						
			11.0	11.0	5.0						
			12.2	12.2	5.8						
			12.6	12.6	2.1						
			13.1	13.1	3.5						

231366

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S123

from m	to m	DESCRIPTION	from m	to m	mass kg	rec m	rec %	from m	to m	Ni %	Co %
0.0	1.7	red clay and common ironstone grit and pebbles	0.0	0.7	1.9	0.30	43	0.0	0.7	0.038	0.003
			0.7	1.7	2.8	0.40	40	0.7	1.7	0.037	0.002
		contact with the next interval is gradational									
1.7	4.3	light brown and minor red clay	1.7	2.5	0.8	0.20	25	1.7	2.5	0.047	0.001
			2.5	3.2	4.1	0.60	86	2.5	3.2	0.062	0.002
		contact with the next interval is gradational	3.2	4.4	3.5	1.20	100	3.2	4.4	0.125	0.054
4.3	7.5	mottled brown and white clay	4.4	5.0	3.2	0.60	100	4.4	5.0	0.130	0.039
			5.0	6.2	4.0	0.90	75	5.0	6.2	0.206	0.051
		contact with the next interval is sharp but irregular	6.2	7.2	4.2	1.00	100	6.2	7.2	0.158	0.073
			7.2	8.7	6.1	1.20	80	7.2	8.7	0.074	0.013
7.5	8.7	mottled white, green and blue clay									
		contact with the next interval is sharp but irregular									
8.7	9.6	red brown to brown clay	8.7	9.6	3.1	0.60	67	8.7	9.6	0.182	0.048
		END OF HOLE AT 9.6m									

231367

COMPANY Allegiance Mining NL
PROJECT Anderson's Creek Exploration Licence
HOLE NUMBER S124

from m	to m	DESCRIPTION	from m	to m	mass kg	rec m	rec %	from m	to m	Ni %	Co %
0.0	1.3	red brown clay and sparse ironstone grit and pebbles	0.0	2.7		2.00	74	0.0	2.7	0.031	0.073
		contact with the next interval is gradational									
1.3	4.6	brown clay	2.0	3.7		0.60	35	2.7	3.7	0.070	0.009
			3.7	4.7		0.50	50	3.7	4.7	0.072	0.010
		contact with the next interval is gradational									
4.6	11.1	dark red clay	4.7	5.7		0.50	50	4.7	5.7	0.130	0.039
			5.7	6.7		0.80	80	5.0	6.7	0.206	0.051
		contact with the next interval is sharp but broken	6.7	7.7		0.50	50	6.2	7.7	0.158	0.073
			7.7	8.6		0.70	78	7.2	8.2	0.074	0.013
11.1	20.0	light green to dark green, completely decomposed to very weathered serpentinite with sparse green serpentine as veinlets, and trace magnetite as disseminations and veinlets	8.6	9.1		0.50	100	8.2	9.1	0.177	0.320
			9.1	10.4		0.60	46	9.1	10.4	0.095	0.024
			10.4	11.1		0.30	43	10.4	11.1	0.249	0.103
			11.1	12.4		0.90	69	11.1	12.4	0.66	0.015
		END OF HOLE AT 20.0m	12.4	13.1		0.70	100	12.4	13.1	0.87	0.015
			13.1	14.7		1.10	69	13.1	14.7	0.92	0.022
			14.7	15.5		0.80	100	14.7	15.5	0.73	0.015
			15.5	16.2		0.70	100	15.5	16.5	0.60	0.012
			16.2	18.0		1.20	67	16.5	18.0	0.62	0.016
			18.0	19.1		1.10	100	18.0	19.0	0.422	0.015
			19.1	20.0		0.90	100	19.0	20.0	0.397	0.016
			0.0	2.7	5.1						
			2.7	3.7	7.8						
			3.7	4.7	3.0						
			4.7	5.7	1.5						
			5.7	6.7	2.8						
			6.7	7.7	2.0						
			7.7	8.2	4.0						
			8.2	9.1	6.0						
			9.1	10.4	4.2						
			10.4	11.1	2.0						
			11.1	12.4	5.5						
			12.4	13.1	4.8						


SCOTTS HILL RESOURCE
MT VULCAN RESOURCE
BARNES HILL RESOURCE
BARNES HILL SOUTH RESOURCE
Tattersalls Road
Greens Beach Road
Hinds Road
E.L. 10/95
T. Parish and R. Gregory 22m/92
1397m/M – Boral
Bee Tree Area
Dans Hill
Scotts Hill
Mt. Vulcan
Barnes Hill
Simmonds Hill
Hillwood Road
5 440 000mN
5 439 000mN
5 438 000mN
5 437 000mN
5 436 000mN
5 435 000mN
479 000mE
480 000mE
481 000mE
482 000mE
483 000mE
LEGEND
Geology
Young secondary cover rocks
Qa Quaternary alluvium and marsh
Qa Gravel talus
Cc Tertiary poorly sorted consolidated conglomerate
Ts Tertiary sand, clay, gravels
Weathered Cpy ?
TPI Pisolitic ironstone
Older cover rocks
P Permian sandstone, mudstone, siltstone
Oct Ordovician Cabbage Tree Formation
Єs Cambrian Slate
pЄ Precambrian sandstone, slate, phyllite
Cpy Andersons Creek Ultramafic Complex Serpentinite, localised pyroxenite gabbron norite
ms Included septa of metamorphic rocks
Geological Boundary
Fault
Drilling–Testing
25 Proposed borehole
2 BHP Boreholes (1967)
35 King Island Scheelite DDH (1967–68)
A16 Allstate DDH (1970)
SH1 BHP DDH (1966)
Enterprise Exploration borehole
DOM DDH (1960)
AC2 DOM DDH (1970)
PBRR6 DOM DDH (1980)
BHP test pits (1967)
BHP excavations (1967)
Pre resource Ni Co mineralisation boundaries ? – indicates directions for possible extension of mineralisation
New resource
98-4171
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NEWNHAM EXPLORATION AND MINING SERVICES
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ALLEGIANCE METALS N.L.
E.L. 10/96
ANDERSONS CREEK AREA
GEOLOGY, DRILL HOLES AND NEW RESOURCE BOUNDARIES
DRAWN: L.A. Newnham
DATE : June 1996
DRAWN : G.M.B.
REVISIONS :
FILE No.
FIGURE No. 1
SCALE 1:5000
0 100 200 m

APPENDIX E

231371

E.L. 10/96

ANDERSONS CREEK PROJECT

TASMANIA

PROPOSED DRILLING PROGRAM

MARCH 1998

Prepared by

MICHAEL V. McKEOWN

BSc (Melbourne), Grad Dip Mining (Ballarat),
Ass Dip Ag Bus Man (Launceston), Fellow AusIMM

for

McKEOWN MINING PTY LTD
RIDGLEY, TASMANIA
(phone 03 6435 7560)

on behalf of

ALLEGIANCE MINING N.L.

231372

CONTENTS

1 INTRODUCTION

When considering the future exploration of the Andersons Creek Exploration Licence, there are four key points which arose from the recent drilling program:

- the Inferred Mineral Resource on the Andersons Creek Exploration Licence is estimated to be 12,000,000 tonnes at 0.94% Ni and 0.05%Co

- metallurgical testwork suggests that over 90% of the contained nickel is recoverable using a high temperature, high pressure, sulphuric acid leach (PAL)

- the last drilling program increased the resource by just over 23%

- 6,500,000 tonnes, about 55% of this resource, occurs in an area of just over 60ha at Barnes Hill

The metallurgical testwork indicates that the nickel could be successfully recovered using the PAL process. However, given the relatively high capital cost of establishing a PAL plant, it is likely that the resource needs to be increased by a factor of at least 2. A drilling program is proposed to determine the possibility of such a quantum increase in the resource.

At the completion of this proposed drilling program, probably at the completion of the first stage, it should be possible to evaluate the likelihood of significantly increasing the Mineral Resource.

2 PROPOSED DRILLING PROGRAM

A broadly spaced drilling pattern has been designed to test the laterite over the whole of the unexplored part of the Exploration Licence where the Andersons Creek ultramafic Complex (ACC) is known to exist. The program could be completed in two stages, so that the most prospective areas for the occurrence of a Barnes Hill type of laterite, that is relatively thick laterite (up to16 metres vertically) over a small area (about 60ha), are tested first.

In the first stage, the more prospective areas to be drilled include laterite on three hills in the south of the Licence, and on Barnes Hill itself:

- Simmonds Hill, which lies to the south-west of Barnes Hill
- the Boral Quarry area, a hill to the north of Barnes Hill
- south of Mt Vulcan, including a significant hill to the north-west of Barnes Hill
- Barnes Hill: an untested area remains on the north-west of the defined resource

The first stage of the program includes 29 holes in these areas, for a total estimated length of 580m.

The existing geological maps show that some of these areas are covered by Quaternary sediments. However, field examination reveals that some of this sediment is in fact ironstone gravel, presumably overlying laterite. This is the case, for example, on the hill to the south of Mt Vulcan. In other areas of Quaternary gravel, for example at the Boral Quarry, laterite should underlie the Quaternary quartz sands and gravels at shallow depths.

If the results of the first stage indicate significant increases to the resource, then the second stage of the drilling would include:

- Mt Vulcan
- Scotts Hill
- north-west of Scotts Hill
- east of Scotts Hill
- Dans Hill
- Dans Hill to the Boral Quarry

The second stage of the program includes 21 holes in these areas, for a total estimated length of 300m.

3 THE PRE-DRILLING TASKS

The execution of the program would follow the same pre-drilling sequence as the previous two programs:

1 **board approval**: this is required from Allegiance Mining.

2 **access agreements**: these are required from the landowners involved: Boral and the appropriate Beams brothers.

3 **site selection**: all sites have been planned on existing tracks where possible, or in cleared areas.

4 **site marking**: most, if not all, sites could be marked without the services of a surveyor.

5 **statutory approvals**: these will be required from Mineral Resources Tasmania (MRT) before drilling can commence; this would include field inspection of the sites by MRT.

6 **site surveying**: following the granting of the statutory approvals the sites should be picked up by a surveyor.

7 **drilling quotes**: a formal quote for the drilling will be sought, the only rig in Tasmania which is suitable for the work being owned by Diamond Drilling (Tas) Pty Ltd.

8 **analytical quotes**: formal quotes for the analytical work involved will be sought from Analabs, Burnie and AMDEL, Adelaide.

4 THE DRILLING PROGRAM

Reverse circulation (RC) drilling using an air core bit is recommended. This is the method used for nearly all the holes drilled by Allegiance so far. Diamond drilling is both more expensive, and as experience in the previous program showed, less successful in delivering an adequately sized sample.

Samples should be taken each metre. A sub-sample of about one kilogram should be taken from this sample and sent for analysis. Each sample should be analysed for Ni and Co.

All unused samples should be stored undercover, with the samples from the previous programs, at the Beaconsfield storage facility.

A geologist and sampler will be required to supervise the program, collect, split and transport the samples.

5 THE POST-DRILLING TASKS

Sub-samples will be assayed either at Analabs laboratory in Burnie, or at the AMDEL laboratory in Adelaide.

The results of the drilling will be plotted using CAD.

A new Mineral Resource estimate will be made and a Mineral Resource report will be written.

If the program is successful, further mineralogical and metallurgical testwork may be warranted.

Some limited drill site rehabilitation may be required. However, nearly all holes have been planned on existing tracks and this feature, combined with best-practice drilling, should preclude the necessity for extensive rehabilitation work.

6 BUDGET

The budget below is presented in two stages, reflecting the proposed two stage drilling program. Note that some of the costs in the second stage are covered by the costs listed in the first stage.

First stage

	$
drilling	
total length 580m @ $40 per metre	23,200
drill mobilisation/demobilisation	
transporting the rig to and from the area	3,000
drill site preparation	
site preparation will be minimal, however, some limited track housekeeping and some limited site rehabilitation may be required	2,000
site surveying	
cost of surveying	3,000
landowner compensation	
20 holes @ $50 per hole	1,000
consumables	
sample bags, flagging tape etc 580 samples @ $2 per sample	1,160
analyses	
580 samples @ $20 per sample	11,600
management pre-drilling	
gaining approvals, site marking, negotiations with landowners etc 1 week	2,500
management during drilling	
2 people full time, 2 to 3 weeks	9,750
management post drilling	
data compilation, report writing 1 week	2,500
drafting, 1 week	3,000
other expenses	
shed hire	700
sample freight	500
vehicle hire 4000km @ 35c per km	1,400
accommodation, 2 to 3 weeks	1,500
SUB-TOTAL	**$66,810**

Second stage

	$
drilling	
total length 300m @ $40 per metre	12,000
drill mobilisation/demobilisation	
transporting the rig to and from the area	included above
drill site preparation	
site preparation will be minimal, however, some limited track housekeeping and some limited site rehabilitation may be required	2,000
site surveying	
cost of surveying	included above
landowner compensation	
20 holes @ $50 per hole	included above
consumables	
sample bags, flagging tape etc 300 samples @ $2 per sample	600
analyses	
300 samples @ $20 per sample	6,000
management pre-drilling	
gaining approvals, site marking, negotiations with landowners etc 1 week	included above
management during drilling	
2 people full time, 1 to 2 weeks	6,500
management post drilling	
data compilation, report writing 1 week	included above
drafting, 1 week	included above
other expenses	
shed hire	included above
sample freight	500
vehicle hire 3000km @ 35c per km	1,050
accommodation, 1 to 2 weeks	1,000
SUB-TOTAL	**$29,650**
TOTAL BOTH STAGES	**$96,460**

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