ANNUAL REPORT FOR EL 10214 AND EL 10215
JERVOIS PROJECT, NORTHERN TERRITORY

by

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for

ARAFURA RESOURCES NL

1:100,000 – Jervois Range 6152
1:250,000 - Huckitta SD53-11

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INTRODUCTION

Background

Exploration licences 10214 and 10215 are owned 100 percent by Arafura Resources NL. They lie in the eastern portion of the Arunta Block where previous investigations have identified a range of mineral commodities. The most notable of these are the base metal deposits around the dormant Jervois mine. However, this is not included in Arafura’s tenement. Small occurrences of tungsten, copper and base metals are common in the exposed Proterozoic rocks within the titles.

Arafura’s interest in the tenements stems from the potential of the area to host:

- Ni-Cu and Pt-Pd mineralisation associated with mafic intrusions;
- Broken Hill style base metal mineralisation in the metamorphosed Arunta sequence,
- Mary Kathleen style uranium mineralisation in the metamorphosed Arunta sequence,
- carbonate-hosted base metal mineralisation in the basal Georgina Basin sediments, and
- a range of other commodities associated with intrusives such as carbonatites, kimberlites and pegmatites.

Location and Access

Exploration licences 10214 and 10215 lie in the eastern Arunta province approximately 260 kilometres east north-east of Alice Springs (Figure 1). Access to the general area of the licences is reasonably good via the well formed but unsealed Plenty Highway which intersects the Stuart Highway 68 kilometres north of Alice Springs. The road distance from Alice Springs to the titles is about 360 kilometres. Following heavy rain the Plenty Highway can be closed to all traffic or have weight provisions applied.

Within the licences vehicular access is restricted to a few station tracks and fence lines. Movement away from the tracks is difficult in places due to the rocky nature of the land.

Topography and Drainage

The Jervois Range runs northeast through EL 10215 and creates a drainage divide. The range rises approximately 125m above the level of the flood plains (Figure 1).

Numerous ephemeral gullies and deeply incised creeks drain the area. South of the Jervois Range most of these contribute to the Plenty and Marshall rivers which flow (intermittently) to the east into the Georgina Basin. North and west of the Jervois Range the main drainage is provided by Arthur Creek which also drains ultimately to the Georgina Basin. There are no permanent rivers and only a few significant water holes in the region.

The topography within the licence area falls into three main categories that generally correspond to the underlying geology:

- Extensive flat sandy areas in the south and east of the tenements, especially in most of EL 10214, are associated with the flood plains of the Plenty and Marshall Rivers and areas underlain by the Cainozoic Waite Formation.
Northwest of the Jervois Range, areas of rolling hills are typically associated with areas of folded Cambrian dolomitic and calcareous rocks and Proterozoic schist.

Steep-sided ranges rising from the plains typically by 80 metres but up to 250 metres are related to crystalline calc-silicates and gneisses of the Arunta Group to the east of the Jervois Range in the northeast part of EL 10215; and in the Bonya Hills in the western half of EL 10215.

Climate

The climate prevalent in the licence area is best described as mainly dry all year round and either hot or cold depending on the season. Average annual rainfall (1967–1983) is 330 millimetres of which about two-thirds falls in the period December to March. Average annual evaporation is approximately 2900 millimetres. Average minimum and maximum temperatures in summer are 22°C and 38°C degrees while corresponding winter average temperatures range at 4.7°C and 21.7°C with overnight frosts common.
SUMMARY

In the third year of tenure Arafura Resources NL has completed a comprehensive review of the previous exploration activities and made a short field visit to the area. The data review has demonstrated the area’s potential to host a wide range of elemental and mineral products.

Exploration proposals will be finalised as soon as the results of the NTGS Arunta Project geophysical and mapping programmes are to hand.

CONCLUSIONS

Arafura’s compilation of the existing exploration data has demonstrated that the area covered by ELs 10214 and 10215 has the potential to host several commodities in several different deposit styles. A multi-element exploration program with set exploration models will be required to successfully explore this complex region.

RECOMMENDATIONS

Incorporate the latest information derived from the NTGS Arunta Project prior to finalising exploration models and programs.
TENURE

Exploration Licences

Exploration licences (EL) 10214 and 10215 were applied for by Arafura Resources NL on the 29th October 1998. They were granted on the 6th December 2001. Both were granted for six years.

EL 10214 initially contained 319 graticular blocks for a total area of 957.4 sq km. On 6 December, 2003 the licence was reduced to 160 blocks and again reduced to 80 blocks on 6 December 2004.

EL 10215 was granted as 355 blocks (1074 sq km) and then reduced to 177 blocks on 6 December, 2003, and to 88 blocks on 6 December 2004.

The reduction in the number of blocks held is a compulsory condition of the licence being granted.

Land Tenure

The exploration licences lie on parts of three perpetual pastoral leases (PPL). These are:

- PPL 1007 Lucy Creek Station
  Fogarty, E.D and K.M, Lucy Creek Station Via Alice Springs NT 0870

- PPL 962 Jervois Pastoral Company
  Jervois Pastoral Company PMB 36, Alice Springs NT 0871

- PPL 1119 Jervois Station
  Broad, M.J PMB 36, Alice Springs NT 0871

Native Title

There are no registered native title claims over the land which is the subject of the licences.

In the absence of instructions to the Central land Council from potential native title claimants in the area, the licences are not subject to an existing Native Title Exploration Agreement between the Arafura Resources and the CLC in respect of exploration titles in other areas of the Northern Territory.

The licences are separated by the Jervois Stock Route which is the subject of Aboriginal Land Claim 82.

Aboriginal Sacred Sites

The Sacred Site register of the Aboriginal Areas Protection Authority was inspected prior to the Company undertaking reconnaissance activities in the area in 2004.
GEOLOGICAL SETTING

Regional Geology

The regional geology in the vicinity of the Jervois licences is illustrated in Figure 2. Geological details in this diagram is drawn from digital copies of the HUCKITTA (SF 53-11) 1:250,000 Geological Series published by Geoscience Australia (GA - formerly the Bureau of Mineral Resources, BMR). Lithological labelling in Figure 2 is derived from the published maps.

The basement rocks of central Australia consist of crystalline metamorphic and igneous rocks of the Arunta Province. The crystalline basement is overlain by Proterozoic aged metamorphic and sedimentary rocks of the Granites-Tanami and Tennant Creek Inliers. Palaeozoic marine and terrestrial sedimentary rocks of the Georgina, Ngalia and Amadeus Basins overly the Proterozoic and basement units.

According to the web-site of the NTGS (December, 2004) basement rocks of the Arunta Region comprise part of:

“... a complex basement inlier in central Australia that has undergone a prolonged history of sedimentation, magmatism and tectonism extending from the Palaeoproterozoic to the Palaeozoic. The Arunta Region can be subdivided into the three, largely fault bounded terranes with distinct geological histories: the Aileron, Warumpi and Irindina Provinces.

The Aileron Province comprises greenschist to granulites facies metamorphic rocks with protolith ages in the range 1865-1710 Ma. It forms part of the North Australian Craton and is geologically continuous with the gold-bearing Tanami and Tennant Regions to the north.

In contrast, the Warumpi Province comprises amphibolite to granulite facies rocks with protolith ages in the range 1690-1600 Ma, and is interpreted to be an exotic terrane that accreted to the southern margin of the North Australian Craton at 1640 Ma.

The Irindina Province in the Harts Range region comprises Neoproterozoic to Cambrian metasediments that formed in a major depocentre within the Centralian Superbasin. It underwent high-grade metamorphism and deformation during Ordovician (480 - 450 Ma)".

The Jervois titles encompass parts of the Aileron and Irindina Provinces. In the absence of more detailed publications which describe these provinces, older publications will be relied on to provide an insight to the regional geological setting.

Previously, the Arunta Province (domain) was generally divided into three major subdivisions based on coarse structural and stratigraphic considerations, (NTGS Explanatory Notes SF53-11). The three structural provinces are referred to as the Northern, Central and Southern Domains and are separated by major east-west tectonic zones. In the eastern Arunta area (ELs 10214, 10215) the Delny-Mount Sainthill Fault Zone separates the Northern from the Central Tectonic Domain.

The stratigraphic division of the Arunta Province also defines three groups which are referred to as Division 1, 2 and 3. Division 1 comprises felsic and mafic granulites distributed in the Southern Tectonic Domain. These rocks are thought to represent metamorphosed felsic and mafic volcanogenic rocks with minor pelitic and calcareous sediments. The Division 2 rocks are the most widely distributed and consist of schistose pelitic metasediments and quartzo-feldspathic gneisses. Division 3 is restricted to the northern and southern edge of the Arunta Province and consists of schistose, pelitic metasediments and metaquartzite.
The metamorphic grade in the three domains is also different. The Southern zone is mostly at amphibolite facies while the Central zone is predominantly granulite and the Northern zone is upper greenschist facies.

The majority of the structures in the Arunta Province were developed in the middle Proterozoic when a major tectonic event metamorphosed and dislocated the rocks into numerous fault bounded domains. In the Carboniferous the Alice Springs Orogeny reactivated these faults.

Sedimentation in the Georgina, Ngalia and Amadeus basins began in the Neoproterozoic and continued through to the Cambrian. Initially argillites, arenites, tillites and carbonates were deposited. After the Neoproterozoic, carbonates were the dominant lithology deposited. During deposition localised uplift saw the erosion of the sediments and the basement and a series of unconformities developed.

Sedimentation ceased in the Devonian and since then Central Australia has been an area of erosion.

Local Geology

Exploration licences 10214 and 10215 lie in the south east of the Huckitta 1:250,000 map sheet and occupy the area of the Jervois Range 1:100,000 sheet. The published geological mapping in the area of the tenements (Figure 2) shows that there are three basic subdivisions present.

In the south east the area is essentially flat to gently sloping and covered by Quaternary sediments. The central zone is rugged hills made up of units belonging to Division 2 of the Arunta Complex. The northern area is comprised of hills of Neoproterozoic and Cambrian arenites and dolomitic and calcareous sediments.

Excluding the Quaternary cover the basement rocks become younger from the south to the north with Arunta Division 1 outcrops in the south overlain by Division 2 in the central area and these in turn overlain by the Neoproterozoic and Cambrian units in the north.

The oldest units present occur in the south of the tenement area and belong to the Strangways Metamorphic Complex (Arunta Division 1; p-Cd in Figure 2)). These units are described as quartzo-feldspathic gneisses, biotite gneisses and schists. The geological mapping in the area indicates that the distribution of these units is fairly restricted however the airborne magnetic data, (Figure 3a) shows that the Division 1 and Division 2 rocks continue to the south under a thin Quaternary cover.

The central portion of the licence area is geologically very complex consisting of several types and ages of felsic and mafic intrusives, gneisses and schists. What was previously interpreted to be the oldest units present are the Harts Range Group gneisses described as biotite and leucocratic garnet-muscovite gneiss, calc-silicates, amphibolite schists and quartz rich metasediments.(These rocks are now interpreted to be much younger – Neoproterozoic and Cambrian - and are assigned to the Irindina Province).

The most extensive units ‘overlying’ the Harts Range Group are the Mascotte Gneiss Complex and the Bonya Schist (p-Cm and p-Co respectively in Figure 2). The Mascotte Gneiss Complex consists of quartzo-feldspathic and granitic gneiss and minor amphibolite. The Bonya Schist is described as muscovite-biotite schist with some sillimanite, andalusite or garnet, meta-pelitic and meta-acid
volcanic rock. Both the Mascotte Gneiss and the Bonya Schist (Arunta Division 2) and similar units have been intruded by the mafic Attutra Metagabbro and several granites (-Pge/x/u, Pps).

The Attutra Metagabbro (-Pda) occurs in outcrops to the east of the Jervois mine (Figure 2) as a series of low hills. The unit is described as altered gabbro, dolerite, norite and magnetite rock.

The named granites intruding the area are the Jervois Granite (-Pge) and Unca Granite (-Pgu) along with the Samarkand Pegmatite (Pps) and outcrops of undifferentiated granite (-Pg). The Jervois Granite is described as a biotite granodiorite and the Unca Granite as a cream-pink foliated lucogranite.

Lying unconformably on the intrusives and the Division 2 schists and gneisses are the units of the Mopunga Group. The Group forms the spine of the Jervois Range and consists of the Elyuah Formation (shale and silty sandstone), the Grant Bluff Formation (quartz arenite and quartz-wacky), and the Elkera Formation (siltstone, sandstone and dolostone).

The northern third of the licence area is dominated by variably dolomitic and calcareous Cambrian sediments. The most extensive of these are the Arthur Creek Formation and the Arrinthrunga Formation. These Formations unconformably overlie the Mopunga Group and are again unconformably overlain by Quaternary sand, soil, eluvium and colluvium.

Structurally the area of the tenements is complex and shown to consist of five fault bounded blocks. The southern most block is the Ambalindum Block which is separated from the northern blocks by the EW trending Mount Sainthill Fault Zone. The northwestern-most block is the Jinka Block which is separated from the central Bonya Block by the NW trending Charlotte Fault Zone. The Bonya Block is separated from the eastern Jervois Block by the NS trending Bonya and Jervois Faults. It is the movement on the block bounding faults and erosion that has led to the exposure of the Arunta Division 1 and 2 rocks and the units of the Mopunga Group.
PREVIOUS INVESTIGATIONS

A detailed investigation of the previously completed exploration in ELs 10214 and 10215 has been compiled by Andrew Drummond and Associates as part of the Independent Geologist’s Report included in the prospectus for Arafura Resources NL’s initial public offering of shares in 2003. The relevant part of Drummond’s original detailed report is reproduced here. An abbreviated version appeared in the final prospectus document.

Drummond reported as follows (edited):

Exploration programmes and results relevant to an appraisal of Arafura’s Jervois area are as follows.

(a) **Central Pacific Minerals N L (1970-1972) ATP 2283 & 3156. CR72-013, 78-104**

Tenements overlaid the north-western part of the Jinka Granite and generally west of EL10215. Work was concentrated at the Nabarloo North fluorite prospect, which lies about 15 km west of EL10215, where a resource (pre JORC) of 360 000 short tons (326 000t) at 40% fluorite to a depth of 30 metres was estimated - and apparently open under cover to the east. A later estimate of 123 000t @ 44.5% CaF$_2$ is presented in the NTGS Huckitta Mineral Deposit Data Series (Prospect 54). They indicate the potential for the hosting of bodies in the eastern Jinka Granite within EL10215, where it is generally concealed under alluvial cover. A separate report on the Bonya Bore area gives a good description of the geology of the various deposits in the Bonya field in EL10215 - including notes on the mineralisation, alteration, structure and a genetic model. However size, grade and resource data are too limited to obtain an impression of potential for a discovery of sufficient size to be economic for Arafura.

(b) **Dampier Mining Co Ltd (1976-1977) EL1118. CR77-064**

The tenement covered the north-eastern part of EL10215 - the latter consisting of reasonably well outcropping Neoproterozoic and Cambrian sediments of the Georgina Basin. The target was lead-zinc mineralisation in the Cambrian units. Cores and cuttings from previous BMR and oil exploration drilling were examined and some Pb and Zn mineralisation was noted. Surface reconnaissance defined favourable sediments and structures. However there is no available record of any follow-up work.

(c) **Otter Exploration N L (1977-1980) EL1583. CR80-174, 78-116**

That tenement covered the western halves of Arafura’s tenements including the Bonya Tungsten Field. The licence area was originally considered to be prospective for W and Mo mineralisation. Copper and scheelite shows are located to the north of the licence area, and the Molyhil W-Mo deposit was being mined to the west of the licence area at that time.

Subsequently it was realised that the licence area was also prospective for U mineralisation. Traces of uranium mineralisation were discovered at Molyhil in 1977, and a number of strong anomalies were recorded in the course of a reconnaissance radiometric survey, including one recorded near Thring Bore in the south-west part of the licence area.

Results were discouraging and the tenement was relinquished.

(d) **Otter Exploration N L (1977 - 1980) EL1584. CR78-117, 80-121**

The tenement covered the eastern half of EL10114, except for its north-eastern corner: it is an area mapped as underlain by granites and Georgina Basin sediments. As for EL1583, Otter's exploration began for Molyhil style tungsten and molybdenum, but was expanded to uranium. A detailed radiometric survey delineated anomalisism near Mt Cornish. Ground follow-up revealed that they were associated with ferruginous and silicified zones in weathered granite near the unconformity with the Neoproterozoic Georgina Basin sediments. The zones may represent a regolith, or fossil soil profile, associated with a pre-Georgina weathering event. The radiometric anomalies were found to be due to Th minerals in the basement granites.
(e) Otter Exploration N L (1977 - 1980) EL1585. CR80-252

The tenement covered the north-eastern section of EL10214 and the eastern half of EL10215. It included the Jervois Mine area, exclusive of the claims pegged over the actual deposits.

Systematic airborne spectrometer surveying revealed 24 anomalies. A follow-up field work programme included evaluation of 22 of them, scintillometer traversing of the Arunta Basement/Georgina Basin unconformity, orientation work in the Jervois Mines area, reconnaissance mapping and sampling for U and scheelite mineralisation, and evaluation of selected scheelite prospects. Two of the anomalies proved to be due to concentrations of uranium.

Orientation work in the Jervois Mines area resulted in the discovery of some coffinite U mineralisation in a core sample obtained from the Marshall deposit. Scintillometer work in the Mines area and creek sediment sampling throughout the north-west of the licence area failed to disclose any additional U mineralisation. Several scheelite shows situated outside the main mineralised zone at Jervois (the 'J' structure), were evaluated by means of sampling and magnetometer surveys but results were considered disappointing. Samples (rock and creek sediment) were also analysed for Cu and Zn. An area of apparently fault controlled Zn, W and Cu anomalous was located north of the Jervois Mines. The anomaly lies within the area around the mines excluded from Arafura's tenements, but indicates the applicability of the method.

(e) Hunter Resources Ltd (1987 - 1989) EL5171. CR89-630

The tenement was taken out to cover the Attutra Metagabbro, a mafic intrusive which outcrops irregularly over a 20x10km area east of the Jervois Mine in both Arafura leases. Work included mapping, an orientation geochemical survey, stream and rock chip sampling and ground magnetics. Sampling was biased towards magnetite-rich rocks and metapyroxenite lenses, as they were considered to have had the best potential to have accumulated PGEs.

Although much of the target area is overlain by younger alluvials, Hunter considered that the cumulative phases which could host PGEs seemed to be only size-restricted lenses unlikely to hold large bodies of ore grade platiniferous rock. Drummond notes that although maximum Pt assay was only 28 ppb, palladium assayed to 215 ppb and so is considerably more encouraging, especially considering its current strong price. Follow-up of magnetic anomalies generated by the NTGS airborne survey may be a worthwhile avenue for Arafura.

(f) Rosequartz Mining N L and Zapopan N L (to 1991) EL6260. CR89-816

The tenement essentially covered the Bonya Schists west of the Jervois Mine and hence much of the western half of EL10215. It was acquired because the area had not previously been explored for Au despite it having been noted at the Jervois Mine and the Bonya workings, and because it was considered to have potential for Broken Hill-style Pb-Zn mineralisation. It covers the Bonya Tungsten Field.

The main exploration technique was stream sediment sampling for BLEG Au and for base metals, together with rock chips and geological traverses. Zapopan's mapping indicated that mineralisation in the licence area was evident at two stratigraphic levels: Cu-mineralisation was located lower in the sequence associated with garnet quartzites, calc-silicates and quartz flooding; W-mineralisation was located higher in the sequence associated with amphibolites and calc-silicates. Neither seems likely to host an economic deposit. Lead-zinc values were uniformly low. The drainage values highlighted three principal areas of anomalous Au. The two strongest anomalies also have coincident drainage Cu anomalies and elevated Zn.

Drummond considers that the BLEG results are moderately encouraging in that the anomalous values are explicable and average sample spacing is very wide. However the absolute level of anomalousism is low as the maximum result from 60 samples was only 0.51 ppb Au. The sampled area has a high degree of outcrop and relatively high topographic relief contrast. It is considered that a major outcropping Au deposit should exhibit a greater BLEG response.

(g) Johannsen (1988 - 1989) EL6326. CR90-221

The tenement was located in the south-western Bonya Hills and hence in the south-western part of EL10215. Johannsen aimed to find apatite-hosted REE mineralisation. Two occurrences of apatite were located by traversing, but the REE assays are too low to be of interest. Nonetheless, Drummond considers the results do
indicate potential in that district. Arafura's intended study of the recently flown NTGS airborne radiometrics seems well justified.


The northern sector of EL6993 essentially covered those parts of ELs 10214 and 10215 which lie east of the Jervois Mine. The southern sector covered interpreted Arunta Block metamorphics under widespread alluvial cover in south-eastern EL10214. The western part of EL7287 covered the eastern-most salient of EL10214. EL7505 covered Bonya Schist around the Bonya Tungsten Field.

Normandy applied for the tenements to target sediment-hosted Broken Hill style mineralisation within Division 2 of the Proterozoic Arunta Group.

The exploration highlighted the Hamburger Hill area where Cu, Pb, Zn and Ag mineralisation was intersected. It lies 3-4km east of the Jervois workings, but outside EL10215. Normandy spent $1.4 million on its project, of which it seems about half was expended on ground now the subject of Arafura's applications. A massive data base has been created, and Drummond considers that a rigorous appraisal of it by Arafura, in combination with other data available to it, should indicate anomalous areas worthy of follow-up. The Normandy programmes and results away from Hamburger Hill are summarised below, with comments where appropriate on apparent avenues for Arafura.

During 1990, a reconnaissance trip was made to assess the area and determine the most appropriate sampling methods. A series of soil and rock traverses were conducted over areas of shallow sand/soil cover and outcrop. These traverses were located over magnetically high areas or geologically interesting or complex areas. Soil sample traverses were conducted along roads and tracks to assess the suitability of this method in areas of transported cover.

In 1991, a bedrock auger drilling programme was conducted along a series of traverses over similar areas to the initial reconnaissance. The three areas targeted for auger drilling were: east of Jervois Mines in south-east EL10215; south of the Plenty Highway in eastern EL10214; and north of Jervois Homestead in EL10214. The aim of the programme was to test the bedrock beneath variable thicknesses of sand/soil cover. In addition to the auger traverses, rock chip samples were collected during general reconnaissance of the area. Stream development was sufficient for representative stream samples to be collected in south-western EL10215, the Bonya Bore area.

Two areas were targeted for lag sampling; east of the Jervois Mine Leases, over outcropping and subcropping Bonya Schist rocks; and between Bonya Creek and Marshall River over outcropping and subcropping gneiss. The lag sampling was confined to the hills and ridges and areas of isolated outcrop. East of Jervois Mine the sample grid extended approximately 20 km north-south and averaged 4-5 km east-west: the length of individual lines depended on the landform. Evaluation of the lag sample results highlighted a coincident Cu, Pb, Zn, Ag, Cd, Co, As and Mo anomaly which defined Hamburger Hill. Drummond notes that although follow-up was concentrated upon this major anomaly, other anomalous areas were also indicated: they have received less intense follow-up.

In western EL10215, there are numerous Cu and W mineral occurrences and old mines. The majority of the mineralisation is hosted within or near the Kings Legend Amphibolite Member of the Bonya Schist and in the pegmatites. The aim of Normandy's programme there was to detect mineralisation outside the known prospects. The target area was the contact zone between the Mascotte Gneiss and Bonya Schist. Normandy's tenement was sampled with a total of 250 samples collected from second and third order streams. Assessment of the data did highlight any anomalous areas requiring follow-up.

An airborne EM survey was flown over selected areas. Anomalies were ground checked and soil sampled, with one area returning a Cu anomaly. A vacuum drilling programme was taken over two prospects 6 km south-east of the Jervois Mine, and within eastern EL10215.

In 1994, regional RAB drilling was completed in the Mt Cornish area of EL10214. The holes were drilled on a 1x1 km grid. The aim of the programme was to provide information on bedrock and to delineate prospective rock types, namely schists or mafic gneisses. The holes intersected granite, quartz-feldspathic gneiss, amphibolite and unmetamorphosed Mt Cornish Formation sediments. A major NNW-SSE trending magnetic
feature also runs through the area and was tested by a line of close spaced holes. RAB drilling was also carried out over anomalies defined by earlier investigations.

A further EM and magnetic survey was flown in 1994 covering Bonya Schist east of the Jervois Mine area and around the Bonya Tungsten Field. Anomalies were interpreted at the former and tested by vacuum drilling. Earlier airborne EM anomalies were followed up by a ground SIROTEM survey and then by RAB drilling in 1995. That drilling programme also tested anomalies which Normandy considered had not been assessed previously.

Drummond re-iterates that Arafura has yet to process and re-interpret the wealth of Normandy's data submitted to the NTDME, and it is beyond a reasonable scope for this Report to do so. However, given the geological setting; the extent of known mineralisation and of cover; the areal limits of several aspects of Normandy's exploration; and Normandy's justified concentration upon its Hamburger Hill discovery, Drummond would be reasonably confident of Arafura's ability to sift out some areas worthy of follow-up from the data it now has at hand.

(i) Aztec/Normandy (to 1993) Various Mineral Leases and Claims.
CR93-234, 94-160, 94-161, 94-203

Mineral Lease S71 (1973 - 1993) It covered a small molybdenum and tungsten show, of the Bonya Hills skarn type, located about 6 km east of the Jervois Mine. Although no substantial work was done on it, Aztec considered it had no potential. Drummond considers its significance is as a further indicator of mineralisation beyond the main J curve of old workings.

Mineral Lease S14 (1947 - 1993) The lease covered the old Bonya Mine workings. It was considered that the general host, a calc-silicate unit, is the same as that which hosts the Jervois workings. It was estimated for Aztec that there was a potential for 10 000t of secondary Cu ores and chalcopyrite in a quartz reef structure. Grade was not indicated. Apparently no confirmatory work was undertaken, and Drummond stresses that this tonnage figure cannot be regarded as a JORC resource estimate.

Mineral Claims S1-5 (1983-1993) They covered some of the old Bonya Hills Cu-tungsten workings. Work seems to have been confined to inspection of the old workings contained therein.

(j) CRA Exploration Pty Ltd (1993 - 1994) EL8116. CR94-588

The tenement covered the Georgina Basin sediments in the central and north-eastern part of EL10215. CRA considered it prospective for unconformity hosted Cu-U-phosphate mineralisation. During the period of tenure the following exploration programmes were undertaken:

- Airborne radiometric and TM Imagery data acquisition, processing and interpretation.
- Collection and multi-element analysis of 42 reconnaissance rock chip samples.
- Geological mapping and air photo interpretation.
- Drilling of six scout percussion holes (aggregate metreage of 530 metres) 500 metres apart.
- Multi-element analysis of percussion drill samples.

CRA concluded that:

- Airborne radiometric and TM anomalies delineate the phosphatic, organic-rich Arthur Creek Formation/Mount Baldwin Formation Middle Cambrian disconformity.
- Reconnaissance rock chip sampling of that disconformity surface reported assay values of up to 2.08% Cu, 100 ppm U and 11.4% P along a 4 km strike length of turquoise mineralisation.
- Wide spaced scout drill testing of the gently dipping disconformity surface returned no significant assay values.
- A 10-15 metre thick calcareous unit, weakly anomalous in Zn (up to 520 ppm), delineates the base of Arthur Creek Formation.
- The Mount Baldwin Formation is characterised by low order base metal values and has limited potential for stratabound Cu mineralisation.
Drill testing of the disconformity (six percussion holes for a total of 530 metres, drilled 500 metres apart) failed to suggest the presence of substantive zones of Cu-U phosphate mineralisation. Drummond views the work as being essentially first pass, localised and reasonably encouraging.

(k)  Solbec Pharmaceuticals (previously Britannia Gold NL)/MIM Exploration Pty Ltd. Jervois Mines Leases, EL9518 and ELa10419. 2000-Present.

This joint venture has been exploring the tenements which host the known Jervois mining field and its principal known trend of mineralisation - the J structure. Its public reports via Solbec/Britannia indicates the following results of relevance to Arafura.

• While there has previously been an exploration model based on an association between magnetite and base metal mineralisation, Mobile Metal Ian geochemical surveys has indicated potential for deeper mineralisation not associated with magnetite.

• A proprietary MIM Induced Polarity geophysical technique generated new drill targets away from known areas of mineralisation.

• Drilling adjacent to and below old mining areas has returned encouraging results and Britannia noted that at the Marshall-Reward lode that mineralisation was increasing at depth. The mineralisation is apparently more extensive along strike and at depth than had previously been known. This enhances the possibility of the eventual discovery of a large deposit.

• Drilling of the new geophysical targets which had no surface expression has generated success, e.g. hole J3 was reported as intersecting the following copper mineralisation:

  4m @ 2.32%  from 202m downhole
  2m @ 1.49%  from 252m downhole
  9m @ 0.46%  from 261m to bottom of the hole

• While Cu is presumed to be the main target, the drilling has returned interesting levels of Au, Pb, Zn and Ag which may lead to eventually more favourable economics.
EXPLORATION ACTIVITIES COMPLETED, 2004

Data Compilation

In the last year, Arafura has completed a comprehensive review of all of the past exploration data available for the area covered by ELs 10214 and 10215. The review has included compiling the airborne magnetic and radiometric data and the various forms of stream, soil and rock chip geochemistry. Several areas of interest have emerged and work proposals for these areas are being finalised.

Of particular interest is the area to the east northeast of the Jervois Mine and east of the outcrops of Attutra Metagabbro where there appears to be a repeat of the Jervois mine stratigraphy as mapped by the magnetic data (Figure 3). Examination of Figure 3 shows that approximately 6 km to the east northeast of Jervois Mine there is a magnetically similar package of rocks bounded by the Lucy Creek Fault to the east and another fault to the south that runs from the Jervois Mine area.

Several discrete magnetic highs have been identified within the otherwise magnetically depressed Attutra Metagabbro. These magnetic features reportedly correspond to mapped (NTGS) exposures of magnetite rock (K Hussey, pers. com.). Limited previous work on these rocks by Hunter Resources indicated the presence of platinum group elements. Additional work to define the tenor of this mineralisation is being planned.

The work programs will be implemented as soon as the new mapping and tectonic modelling completed as part of the Arunta Project by the NTGS is available.

Field Reconnaissance

A short reconnaissance trip was made to the area in late March 2004 by the author and the Arafura’s Exploration Manager, John Goulevitch. The purposes of the trip were

- to meet with the local pastoralists and Aboriginal representatives,
- to gain an impression of the land forms, access and logistics prior to commencing substantial work,
- to collect a suite of rock samples suitable for providing background information,
- to inspect the rea of the dormant Jervois mines, and
- to inspect stream sediment and soil development prior to commissioning geochemical sampling programs.

Petrolology

A suite of nine rock samples from exposures in the vicinity of the Attutra Metagabbro were collected and sent for petrographic description (thin polished sections) by Charter Mathison at the University of Western Australia.
RESULTS AND DISCUSSION

The data compilation and short field visit has confirmed initial thoughts that the Eastern Arunta area within ELs 10214 and 10215 has the potential to host significant concentrations of several elements and mineral products. Work done by previous explorers has identified but not thoroughly tested areas anomalous in copper, lead, zinc, uranium, gold, nickel, tungsten and PGE’s. Mineral commodities such as vermiculite, garnet and magnetite are also present as are pegmatite dykes containing minor amounts of tantalum and rare earth elements.

Several areas identified as geochemically anomalous by previous workers have been assessed with respect to their geophysical expression and genetic models for the various commodities developed. The NTGS over the past few years has been studying the Arunta Province and will soon publish the results of their geological interpretation. Arafura is well positioned to incorporate the latest geological thoughts on the area into an exploration model so that well focused exploration can be undertaken.

The petrographic report (Appendix 1) identifies the samples which were collected as felsic gneisses, calcisilicates, metagabbroids and metadolerites. The petrographic information will be used to provide a framework in which the results of exploration for nickel and platinum group elements (PGE’s) can be judged.
EXPENDITURE STATEMENT, YEAR 3

Table 1: Expenditure Statement Year 1, ELs 10214-10215

<table>
<thead>
<tr>
<th>Activity</th>
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</thead>
<tbody>
<tr>
<td>Period 1/12/03-31/03/04</td>
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</tr>
<tr>
<td>Exploration – Geological Consultant</td>
<td>801.22</td>
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<tr>
<td>Exploration – Geophysical Interpretation of NTGS Data</td>
<td>697.52</td>
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<tr>
<td>Exploration – Geological Reconnaissance</td>
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</tr>
<tr>
<td>Exploration – Tenement Management</td>
<td>130.94</td>
</tr>
<tr>
<td>Exploration – Tenement Expenses</td>
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<tr>
<td>Period 1/04/04-30/11/04</td>
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</tr>
<tr>
<td>Exploration – Geological Consultant</td>
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<tr>
<td>Exploration – Geochemistry</td>
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</tr>
<tr>
<td>Exploration – Petrology</td>
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</tr>
<tr>
<td>Sub-Total</td>
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<tr>
<td>Administration Costs (15%)</td>
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<tr>
<td>Total</td>
<td>11599.54</td>
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</tbody>
</table>

* Computerised cost accounting introduced 1 April, 2004

Of this total **$4,639.81 is attributable to EL 10214** and **$6,959.72 is attributable to EL 10215**.

The Expenditure Covenant for Year 3 for EL 10214 of $19,000 was not satisfied.

The Expenditure Covenant for Year 3 for EL 10215 of $30,550 was not satisfied.
PROPOSED EXPLORATION AND EXPENDITURE, YEAR 4

Table 2: Proposed Exploration Programmes and Expenditure, Year 4, EL 10214

<table>
<thead>
<tr>
<th>ACTIVITY</th>
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</thead>
<tbody>
<tr>
<td>Geological Reconnaissance</td>
<td>5,000</td>
</tr>
<tr>
<td>Systematic Reconnaissance Soil Sampling (0.5x0.5 km spacing)</td>
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</tr>
<tr>
<td>Analytical Services</td>
<td>3,000</td>
</tr>
<tr>
<td>Tenement Maintenance and Preliminary Native Title Meeting</td>
<td>4,000</td>
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<tr>
<td>Reporting</td>
<td>3,000</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
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</tr>
<tr>
<td><strong>ADMINISTRATION COSTS (approx 15%)</strong></td>
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</tr>
<tr>
<td><strong>TOTAL (Year 4)</strong></td>
<td><strong>31,000</strong></td>
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</table>

Table 3: Proposed Exploration Programmes and Expenditure, Year 4, EL 10215

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<thead>
<tr>
<th>ACTIVITY</th>
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</thead>
<tbody>
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<tr>
<td>Systematic Reconnaissance Soil Sampling (0.5x0.5 km spacing)</td>
<td>18,000</td>
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<tr>
<td>Analytical Services</td>
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<tr>
<td>Tenement Maintenance and Preliminary Native Title Meeting</td>
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<tr>
<td>Reporting</td>
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<tr>
<td><strong>Sub-Total</strong></td>
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<tr>
<td><strong>ADMINISTRATION COSTS (approx 15%)</strong></td>
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<tr>
<td><strong>TOTAL (Year 4)</strong></td>
<td><strong>42,500</strong></td>
</tr>
</tbody>
</table>

The proposed expenditure covenant for Year 4 for **EL 10214** is $30,000.

The proposed expenditure covenant for Year 4 for **EL 10215** is $40,000.
REFERENCES / SOURCES OF INFORMATION

Andrew Drummond and Associates, Independent Consulting Geologists Report for Arafura Resources NL.


Dampier Mining, 1977, Lucy Creek, N.T. Report for year ending 1-3-77. CR1977-0064.

Fortowski, D; Kojan, C J, 1980, 1979 report, Northern Territory EL 1581 EL 1582 EL 1583 EL 1584 EL 1585 EL 1444 EL 1445 EL 1450 EL 1451 EL 1702 EL 2200, Otter Exploration; C E G B Exploration Australia. CR1980-0252.


APPENDIX 1

Petrology Report – Charter Mathison
DESCRIPTIONS OF POLISHED THINSECTIONS  ARAFURA RESOURCES

Note: information is presented under the following headings:-
Sample no, composition, fabric (texture/microstructure), rock name, origin

**JN 2**

- 50% epidote
- 25% quartz
- 15% cloudy cryptocrystalline ?sericitised plagioclase
- 10% green amphibole (?actinolite)
- 1% limonite (after sulphide?)
- tr sphene

heterogeneous at 5cm scale – mostly very fine grained (less than 0.05mm) hornfels-like texture, massive, with some coarser somewhat poikiloblastic epidote-rich domains, and with sparse, crudely concentrically banded epidote-rich segregations (pisolite-like) – a most unusual feature

epidote-rich calcsilicate rock

possibly derived from an impure limestone by low to medium grade ?thermal metamorphism and possibly minor metasomatism (possibly related to JS 2, also a fine-grained epidote-bearing calcsilicate rock)

**JN 3**

- 15% plagioclase (phenocrysts, completely sericitised)
- 30% sericitised plagioclase (groundmass)
- 50% green amphibole (hornblende?)
- 5% magnetite (+ hematite lamellae)
- ilmenite (mostly leucoxenised)
- chlorite (from ?biotite)
- epidote
- tr sulphide (chalcopyrite?)

massive /no preferred orientation, homogeneous at 1-2 cm scale, glomeroporphyritic clusters (2-3 mm) of sericitised plagioclase phenocrysts occur in a fine grained 0.5 mm groundmass with relict plagioclase laths and granular amphibole completely replacing former pyroxene (i.e. relict doleritic texture)

amphibolitic metadolerite

originally a mafic ?dyke which has experienced medium grade low-strain metamorphism, probably followed by partial retrogressive metamorphism/alteration (similar to JN 6)

**JN 4**
50% plagioclase (An 60 approx., slightly sericitised)
45% green amphibole (actinolite +/- minor hornblende?)
2% biotite + chlorite
2% Fe-Ti oxides (partly leucoxenised ilmenite)
1% quartz

massive – lacking preferred orientation, homogeneous at about 5 cm scale with clusters of pale green amphibole up to 20mm wide (mostly 5mm) with thin rims of darker green amphibole, all in a matrix of relict plagioclase laths (1-3mm), thus representing a relict gabbroid texture in which original pyroxene has been amphibolised

amphibolised metagabbroid  (amphibolitic metagabbronorite?)

probably part of a layered mafic (+/- ultramafic?) intrusion that has been incompletely altered/metamorphosed at low to medium grade and low strain

JN  5

50% plagioclase ( strongly sericitised)
40-45% green amphibole (actinolite +/- hornblende?)
3% biotite
3% epidote
1% ilmenite + leucoxene
tr quartz
tr chalcopyrite?

massive – lacks preferred orientation, homogeneous at 5 cm scale, amphibole-rich clusters up to 15 mm, but grains mostly less than 5mm, thin darker green amphibole rims with a partial rim of minor biotite, and relict plagioclase laths 2-3mm i.e. well-preserved relict gabbroid texture (amphibolised pyroxene), very similar to JN 4

amphibolised metagabbroid  (amphibolitic metagabbronorite)

origin similar to JN 4  (alteration more intense in JN 5)

JN  6

55% amphibole (mostly green, some darker – hornblende?)
40% plagioclase (completely sericitised)
5% magnetite (minor hematite lamellae) + leucoxenised ilmenite
tr pyrite?, epidote

homogeneous at 1cm scale, massive/structureless, relict dolerite or chilled microgabbro equigranular texture with 0.3mm relict outlines of plagioclase laths and granular hornblende replacing original pyroxene

amphibolitic metadolerite  (similar to JN3 but aphyric )

origin as for JN3 – medium grade, low strain metamorphism and alteration of mafic ?dyke
JN 7

60% plagioclase (partly sericitised)
30% quartz
5-10% biotite (+ minor chlorite)
1% magnetite + leucoxenised ilmenite
tr epidote, apatite

homogeneous at 1-2 cm scale, weakly layered with alternating lenses or layers of strained quartz alternating with feldspar-richer layers 1-2 mm thick, the latter with wavy, schistose biotite flakes at a low angle to the gneissic layering (some plagioclases somewhat lathlike suggesting an igneous parent rock)

felsic gneiss (biotite quartz plagioclase gneiss)

probably derived from a granodioritic intrusive parent rock by medium grade regional metamorphism under high strain, followed by further high stain deformation and some retrogression

JS 1

35% microcline
30% Ca pyroxene (salite)
10-15% plagioclase
10% quartz
7% scapolite
5% green amphibole (hornblende or actinolite)
    sphene, tourmaline

homogeneous at 1 cm scale, massive/structureless, uniform fine grained (0.5mm or less), granoblastic granular assemblage

calcsilicate granulite

medium to high grade metamorphism of an impure limestone parent rock, possibly with some metasomatic modification of bulk composition (e.g. scapolite); parent rock may have been similar to other calcsilicate rocks JS 2, JN 2 (but JS 1 represents higher grade metamorphism)

JS 2

35% epidote
25% quartz
20% carbonate (calcite?)
15% plagioclase
5% green amphibole (actinolite?)

very fine-grained (0.1-0.2mm) granular, hornfels-like texture with very weak preferred orientation (amphibole); section shows a wavy contact between two very similar compositional domains, one richer in carbonate and poorer in plagioclase (paler coloured domain)

calcsilicate rock (?hornfels)

probably derived from an impure limestone by low to medium grade, possibly thermal metamorphism (broadly similar to JN 2)

JS 3

50% green amphibole (hornblende?)
40% sericitised plagioclase
7% magnetite + leucoxenised ilmenite
3% chlorite (after biotite?)

homogeneous at cm scale, weakly schistose with random to aligned amphibole variably overprinting weak relict doleritic texture

amphibolitic metadolerite

probably represents a mafic dyke? which has been metamorphosed at low to medium grade metamorphism and moderate strain (sericitisation of groundmass plagioclase simultaneous, or due to later alteration?)
similar to JN3 and JN 6 but more deformed (somewhat schistose)

SUMMARY (Edited to Jervois samples only, JG – 17/02/05)

The samples in this batch fall roughly into the following broad categories, listed in approximate possible order of relative geological ages:

1. felsic gneisses  JN7
2. calcsilicate rocks  JN2  JS2 (lower grade)  JS1 (higher grade, in group 2?)
3. metagabbroids  JN4  JN5
4. metadolerites  JN3  JN6  JS3

Assuming these rocks come from a similar regional area and are broadly related (may not apply as two batches of samples), the following tentative ideas can be suggested about their possible relationships.
The oldest rocks probably represent older metamorphic basement composed of felsic gneisses (possibly originally granodioritic intrusions into unknown country rocks) and mafic granulites (precursors uncertain), the latter probably including JS1. All these rocks experienced high grade regional metamorphism (amphibolite to granulite facies). The relationship of the lower grade calc-silicate rocks JS1 and JN2 is uncertain – they may not belong to this older metamorphic group.

The metagabbroids may be younger than the high grade metamorphic rocks discussed above, and may intrude them and be associated with the ultramafic rocks in a composite layered ultramafic/mafic intrusion. Dolerite dykes may have intruded some or all of the previous rocks, followed by a low to medium grade regional metamorphism and alteration affecting most of the rocks in groups 4, 5, and 6, and perhaps also some of the older rocks.

Obviously, this is only one possible interpretation, and takes no account of actual field relationships.

Charter Mathison
29 June 2004