Report ARU-08/006

FINAL REPORT FOR EL 10214
JERVOIS PROJECT, NORTHERN TERRITORY, AUSTRALIA

by

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BSc (Hons)
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INTRODUCTION

Background

Previous investigations have identified a range of mineral commodities throughout the Jervois project area and its immediate surrounds. The most notable being a group of abandoned base metal deposits in the Jervois Mining District (e.g. Green Parrot, Reward, Attutra, Skyes, Cox’s, and Bellbird) hosted by the Palaeoproterozoic Bonya Schist. These deposits lie outside of Arafura’s tenements. Occurrences of base metals and tungsten hosted by the Bonya Schist and associated units, also occur in the Bonya Hills region and elsewhere within ELs 10214 and 10215. Recent airborne geophysical data acquired by the Northern Territory Geological Services (NTGS) in 2004 indicates that Bonya Schist is also present under shallow cover in parts of ELs 10214 and 10215 within the Jervois Project area.

Ti-V-rich magnetite occurrences, some with anomalous Cu-Pt-Pd-Au are known within the Attutra Metagabbro in northeastern parts of EL 10215. Past exploration efforts have not fully evaluated the extents of these occurrences and have been a major focus of Arafura’s exploration activities in the Jervois project area.

The 2004 NTGS airborne radiometric survey highlighted a series of uranium anomalies within the Jervois project area. This survey identified a large uranium anomaly in the western Jervois Range, the Lucy Creek Prospect which extends from EL 10215 into adjacent EL 24516 (Lucy Creek) also held by Arafura and subsequently transferred to NuPower. Previous investigations in this area had focussed on testing the lateral undercover extensions of the Mount Baldwin/Arthur Creek Formations for uranium and phosphate (Menzies and Palmer, 1994). Outcrops in the immediate vicinity of the airborne uranium anomalies received limited attention. Numerous other uranium anomalies were also evident in this area.

Additional uranium anomalies were also identified in the NTGS airborne radiometric dataset in EL 10214. These have not been evaluated by previous exploration activities.

Location and Access

(Modified after Lindsay-Park, 2005)

Exploration licence 10214 is located approximately 260 kilometres east north-east of Alice Springs in the Jervois district (Figure 1). The granted tenement is located south of the Jervois Stock Route which passes through the Jervois pastoral property.

Access to the general area is via the well formed but mostly unsealed Plenty Highway that intersects the Stuart Highway 68 kilometres north of Alice Springs. The road distance from Alice Springs is about 360 kilometres. Following heavy rain, the Plenty Highway can be closed to all traffic or have weight provisions applied.

The Plenty Highway passes through the initial tenement area. Vehicular access tracks within EL 10214 are generally restricted those tracks servicing bores and fence lines however most areas are generally accessible by four-wheel drive vehicles.

Active dirt airstrips are located near the Jervois homestead and at Baikal.
Topography and Drainage
(Modified after Lindsay-Park, 2005)

The topography within the licence area is dominated by extensive flat sandy plains areas dissected by river systems and associated with the flood plains. Bonya Creek transects the initial tenement area, flowing to the southeast. The flat sandy plains area areas of sheet wash and drain to the south and east. Areas of low-relief hills mainly occur in the east and northeast of the tenement area. The Marshall River runs west to east near the southern boundary of the tenement.

Climate
(Modified after Lindsay-Park, 2004)

The climate prevalent in the licence area is best described as mainly dry all year round with hot summers and cool to cold winters. 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. Overnight frosts are common some winters.
SUMMARY AND CONCLUSIONS

Several airborne radiometric uranium targets were evident in the 2004 NTGS regional geophysical dataset which covered EL 10214 and surrounding tenements. However reconnaissance of these targets did not commence until higher priority targets within Arafura’s adjacent ELs in the Jervois project area had been fully investigated.

NuPower Resources completed reconnaissance sampling and mapping of an airborne radiometric target area in EL 10214 in October/November 2007 (late in year 6 of grant). An extension was sort to allow time to fully evaluate the exploration results from these low priority uranium targets.

Reconnaissance mapping and sampling of radiometric anomalies in El 10214 was disappointing. The uranium assay results indicate that there is enough uranium to cause the airborne and ground radiometric anomalies but nothing of economical value was identified in this target area.

No significant field works were undertaken in EL 10214 by Arafura during the period of grant.

EL 10214 was part of a larger tenement package in Arafura’s Jervois project area. During the period of grant, Arafura’s exploration activities principally focused on exploration targets outside of EL 10214. These were

- Exploration programs at the Unca Fe-Ti-V prospect (EL 10215)
- Exploration of a large prominent radiometric target, the Lucy Creek uranium prospect in ELs 10215 and 24716
TENURE

Exploration Licences

Exploration licence 10214 was applied for by Arafura Resources NL on the 29th October 1998 and was granted on the 6th December 2001 for a period of 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 was reduced to 80 blocks on 6 December 2004, and further reduced to 40 blocks on 6 December, 2005. EL 10214 was again reduced to 4 blocks on 6 December 2006 in year 6.

A two-year extension to the standard 6 year term was sort and approval was granted by the Mining Registrar for the 4 blocks remaining in EL 10214. The tenement was surrendered 12 May 2008.

The initial and final areas of EL 10214 are shown in Figure 1.

Land Tenure

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

PPL 962 Jervois Pastoral Company
Jervois Pastoral Company PMB 36, Alices Springs NT 0871

PPL 1119 Jinka 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.

In the absence of an Exploration Agreement, Native Title issues are addressed in accordance with Item 18 of the Schedule 2 Conditions which attach to the grant documents for both licences. This requires that Arafura convene a meeting with registered native title claimants before commencing exploration activities other than reconnaissance. As there are no registered native title claimants at present there is no compulsion to convene such a meeting.

The licence does not include 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 queried by Capricorn Mapping and Mining Title Services Pty Ltd on 15 May, 2005, for the area of all of Arafura’s titles and applications on the Jervois 100,000 sheet. This was prior to the Company undertaking reconnaissance activities in the area in 2005.

No exploration was conducted in the vicinity of the sites identified in the register.
GEOLOGICAL SETTING


Regional Geology

The Arunta Region contains more than 200,000 km$^2$ of metamorphic rocks in the southern parts of the NT and has been recently subdivided into three distinct geological regions by the NTGS, the Aileron, Warumpi and Irindina Provinces (Figure 2).

The Aileron Province largely consists of Palaeoproterozoic (1865-1500 Ma) sedimentary and igneous rocks that have undergone greenschist to granulite facies metamorphism. The majority of the preserved metasedimentary and igneous rock units in this region were deposited or emplaced prior to the 1740-1690 Ma Strangways Orogeny (e.g. Scrimgeour 2003, Hussey et al., 2005, Claoué-Long et al., in prep a, b). This event appears to have affected the entire Aileron Province to some degree, as opposed to the 1590-1570 Ma Chewings Event that appears to be localised within the central and southern(?) parts of Aileron Province (e.g. Hand and Buick, 2001, Fraser, 2004). The 1810-1800 Ma Stafford and 1790-1770 Ma Yambah Events also appear to be present throughout the Aileron Province, with extensive bimodal igneous activity, associated sedimentation and localised Low Presssure-High Temperature metamorphism.

Most of the eastern parts of the Aileron Province, including the Jervois district, have been metamorphosed at upper greenschist or lower amphibolite facies conditions in the Strangways Orogeny, with an apparent abundance of 1810-1700 Ma igneous activity and deformation. Regions of the Aileron Province have also been subject to younger (1640-1500 Ma) periods of magmatism, but these are not known to occur in the Jervois region.

Current views on the depositional and tectonic setting of the Aileron Province are based on recent geochemical, isotopic and igneous studies and the contained mineral systems. These favour a rifted continental crust or evolving backarc setting in the early parts of the depositional history [e.g. Hussey et al., 2005, Hoatson et al., 2005 Matthew Cobb (PhD student, Curtin University) pers. comm., 2005], with a prolonged tectonothermal convergent event in the Strangways Orogeny. Hussey et al. (2005) and Hoatson et al. (2005) argue for contiguous sedimentation and bimodal igneous activity during Stafford Event. This Event is thought to be responsible for the development of localised(?) deep-marine basins in the Arunta Region, as opposed to contemporaneous subaerial to shallow-water volcanism and sedimentation in the adjacent Davenport Province.

The Aileron Province contains contemporary equivalents of the gold-bearing Granites-Tanami and Tennant Creek Regions and regional aeromagnetic data indicate lateral continuity between these Regions. The Aileron Province is therefore regarded as part of the North Australian Craton, however, localised facies variations and differences in sedimentary environments are evident (e.g. Hussey et al., 2005).

The Warumpi Province in the south and southeast of the Arunta Region (Figure 2) contains a younger package of metasedimentary and volcanic rock types with protoliths in the range 1690-1600 Ma (Scrimgeour et al., 2003). The Province was variably metamorphosed in the 1640 Ma Leibig Orogeny, 1570 Ma Chewings and the 1150 Ma Teapot Events.
Unmetamorphosed Neoproterozoic to Palaeozoic marine and terrestrial sedimentary rocks of the Georgina, Ngalia and Amadeus Basins surround and unconformably overlie the Arunta Region. Contemporaneous Neoproterozoic to Cambrian strata of the Harts Range Group (Buick et al., 2001, Maidment et al., 2004, Buick et al., 2005) are also caught up within the eastern parts of the Arunta Region in the newly defined Irindina Province (Scrimgeour, 2003). This revision and reinterpretation of the Arunta Region has significant geological implications and has come about largely as a result of several extensive chronological, metamorphic and metallogenic studies in the eastern Arunta Region (eg Miller et al., 1998, Mawby et al., 1998, 1999, Hand et al., 1999a, b, Buick et al., 2001, Scrimgeour and Raith, 2001, Hussey 2003, Maidment et al., 2004, Buick et al., 2005, Claoué-Long and Hoatson, 2005, Close et al., 2005, Hussey et al., 2005).

Geochronological and metamorphic studies have shown that the rocks of the Harts Range Group in the Irindina Province are variably metamorphosed to transitional granulite facies in the (480-450 Ma) Ordovician Larapinta Event. This high-grade event is followed by lower-grade Devonian to Carboniferous deformation and granite and pegmatite intrusion. Interestingly, the high-grade Larapinta Event appears to have had little influence on the thermal history of the surrounding rocks of the Aileron Province, and apart from rare exceptions appears to be largely restricted to the Irindina Province (Maidment 2004, Close et al., 2005, Hussey et al., 2005, Claoué-Long and Hoatson, 2005).

Many of the fault bounded contacts between the various units within the Arunta and surrounding regions are attributed to the (390-300 Ma) Devonian-Carboniferous Alice Springs Orogeny. Most of the fault movements within the Georgina Basin also appear to be related to the Ordovician Larapinta Event and Devonian-Carboniferous Alice Springs Orogeny.

Dissected remnants and buried Tertiary Basins overlie the Arunta Region and surrounds with deeply weathered rocks common near the unconformity surface.

**Local Geology**

The reader is referred to Freeman (1986), Freeman et al. (1989), Zhao and Bennett (1995), Maidment (2004), Hoatson et al. (2005), Claoué-Long and Hoatson (2005), Dunster et al. (2006) for details on the geology and geochronology of the region. These were last summarised in Hussey (2008).

Figure 3 details the surface geology in the vicinity of the EL 10214. The geological map is from a geo-located scanned copy the HUCKITTA 1:250 000 Geological Map Sheet (Freeman 1986).

The last remaining part of EL 10214 is entirely within the Aileron Province and includes a mapped remanent of deeply weathered overlying Tertiary Basin units (Freeman 1986). This mapped Tertiary unit is intensely silicified and flanks a uranium airborne radiometric anomaly (Figure 4). Due to Arafura’s and NuPower’s target priorities in the Jervois project area, no other targets within this tenement were investigated. Prior to statutory reductions EL 10214 also included parts of the Georgina Basin and Irindina Province.
PREVIOUS INVESTIGATIONS

Other Parties

A detailed investigation of the previously completed exploration in the Jervois project area (largely EL 10214 and 10215) was 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 as in Lindsay-Park (2005). 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\textsubscript{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 uraninite 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.

Work carried out included additional airborne reconnaissance radiometric surveys, ground reconnaissance mapping and scintillometer surveys, and detailed mapping and sampling. 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 anomalism 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 anomalism 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 cumulate 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 anomalism 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 sub-cropping Bonya Schist rocks; and between Bonya Creek and Marshall River over outcropping and sub-cropping 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.
RESULTS OF EXPLORATION ACTIVITIES IN EL 10214

Arafura completed a review of all of the past exploration data available for the area covered by the Jervois project area in 2004. The review included compilation of airborne magnetic and radiometric data and the various forms of stream, soil and rock chip geochemistry. Several areas of interest emerged and work programs for these target areas were proposed.

A number of exploration targets were generated from this review, including several lower priority uranium targets within EL 10214. Arafura’s exploration activities concentrated on evaluating higher priority Fe-Ti-V in EL 10215 and uranium targets within the adjacent ELs 10215 and 24716. Limited fieldwork was undertaken on EL 10214 because the highest priority exploration targets were within the adjacent EL 10215. The report on the Jervois project area were Lindsay-Park (2005) and Hussey (2006, 2007, 2008).

Arafura completed a brief reconnaissance of a low priority uranium target area in EL 10214 in 2006 (Hussey 2007). This target area was investigated and sampled for assay by NuPower Resources in 2007 to evaluate the uranium potential of this area (Appendix 9 in Hussey 2008). An extract of NuPower’s report is reproduced below.

NuPower Resources completed a five day reconnaissance program targeting anomalous airborne uranium signatures in the Jervois project area in late October/early November, 2007. The program was designed to investigate these anomalies to determine future potential for these sites. Techniques used for this determination included field observations, taking rock samples and using an Exploranium GR-135G Plus scintillometer to take counts per minute (cpm) and to identify K-U-Th ratios.

The first part of the reconnaissance program was located within the southern parts of EL 10214 at Bonya Creek and was designed as a follow up investigation on four small, previously identified anomalies which display airborne uranium signatures accumulating within the tenement. A total of six rock samples and 50 K-U-Th scintillometer assays were taken on outcrops and scree.

The remainder of Nupower’s reconnaissance program was within EL 10215.

Bonya Creek

The four small anomalies retained within EL 10214 correspond to silicified rock units mapped as Tertiary sediments by Freeman (1986). For ease of reporting, these anomalies have been separated (figure 5). A total of six rock samples and 50 K-U-Th scintillometer assays were taken on outcrops and sediments. Assay and rock sample locations are listed in Table 1 and Table 2 below.

Table 1: Bonya Creek scintillometer assay locations.

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<tr>
<th>Anomaly No.</th>
<th>Assay No.</th>
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<th>Assay surface</th>
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<td>Elevation (m)</td>
<td>Description</td>
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<td>Scree on top of rise (quartz and silcrete)</td>
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<td>Stream Sediments</td>
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Table 2: Bonya Creek rock sample locations.

<table>
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<tr>
<th>Sample No.</th>
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<th>Rock Type</th>
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<td>Less silicified rock</td>
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<td>7469584</td>
<td>Cemented fragments of silcrete</td>
</tr>
<tr>
<td>10224</td>
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<td>Silcrete</td>
</tr>
<tr>
<td>10225</td>
<td>628668</td>
<td>7470189</td>
<td>Silcrete with black fragments</td>
</tr>
<tr>
<td>10232</td>
<td>628681</td>
<td>7470191</td>
<td>Silcrete with black fragments</td>
</tr>
<tr>
<td>10233</td>
<td>629038</td>
<td>7469889</td>
<td>Less silicified rock</td>
</tr>
</tbody>
</table>

NuPower’s assay data for these samples are reproduced in Appendix 1.

Anomaly 1

The landscape seen around anomaly 1 is typically comprised of undulating plains cut by small alluvial depressions. Small hills are also scattered throughout the landscape and usually have outcropping quartz associated with them. A total of 16 scintillometer assays and two rock samples were taken.

Within the alluvial depressions, two distinguishable units with higher uranium assays are outcropping (figure 4). The first unit is more common over the entire area and is an intensely silicified rock unit. The maximum assay reading for this unit was at BC009 with 1034 cpm (total). According to the assay the rock sample (10223) taken at this location contained 32.7 ppm uranium. The other unit with a high reading was a much less silicified sediment. The maximum assay reading for this unit was at BC007 with 1034 cpm (total) recorded. This correlates with a rock sample taken at the same location which contains 85.9 ppm which is high compared to other samples. These sparse outcrops and higher readings are constrained to an approximately 15-20 m wide and 80-100 m long zone. From the assay results it is evident that the less silicified rock contained higher concentrations of uranium.

The sediments found in the area are comprised of red-brown fine and coarse grained sands, with angular quartz and silcrete scree. Most readings within the sediments were approximately 400-500 cpm (total).

Anomaly 2

This anomaly sits within predominately low areas of the landscape, with one low hill towards the south-east. Alluvial depressions are very common within the area and alluvium consisting of quartz and silcrete has high scintillometer assay results compared to the surrounding sediments. A total of 15 scintillometer assays and three rock samples were taken.

The maximum radiometric measurement on the alluvium in creek beds was at BC021 with 1182 cpm recorded however, alluvium typically had readings of 600-700 cpm. A rock sample (10224) was taken at an outcrop close to this source and the assay revealed the rock contained 49 ppm uranium.

Sparse outcropping of silicified rocks also had elevated radiometric measurements between 800-900 cpm. Readings taken over other sediments in the area ranged between 300 to 400 cpm. Two rock samples which were both silcretes with black nodules were taken which had differing results. Sample 10225 contained only 21.8 ppm uranium whilst sample 10232 contained 44.5 ppm uranium.

Anomaly 3

Anomaly 3 is a very small 100 m by 100 m anomaly. No outcropping was evident throughout this area to account for the anomaly. However, compared to surrounding sediments, higher readings were recorded from
alluvium consisting of silicified rocks and quartz which had accumulated within alluvial depressions. Readings within the depressions were 400-500 cpm and the surrounding sediments were 300-350 cpm.

Anomaly 4

This anomaly appears to be associated with the same sediments as anomaly 1 and 2. The silicified sediments are again sparsely outcropping within the banks of alluvial depressions. Once again readings taken at outcrops are higher with the maximum reading being at BC047 with 1003 cpm. A rock sample (10233) was taken at BC047 which corresponded to a value of 48 ppm uranium. Most readings were however between 400 and 600 cpm.

A summary of these target anomalies by NuPower states the following.

Rock sample assay results indicate that there is enough uranium to cause the anomalies but nothing of economical value was found therefore, there is no reason for further investigation.

Kelvin J Hussey BSc(Hons) MAIG
PRINCIPAL GEOLOGIST
13 August 2008
REFERENCES / SOURCES OF INFORMATION


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


