ARAFURA RESOURCES LTD

ACN 080 933 455

Report ARU-12/008

Titleholder	Arafura Resources Limited
Operator (if different from above)	as above
Titles/tenements	EL 9725 & EL10136
Tenement Manager	as above
Mine/Project Name	Hammer Hill
Report title including type of report and reporting period including date	Combined Annual Report for period ending 12/02/2012; EL9725 & EL10136, Hammer Hill Project
Personal author(s)	Kelvin Hussey
Corporate author(s)	Arafura Resources Limited
Target commodities	Rare Earth Elements, Nickel, Copper, Cobalt
Date of report	26 April 2012
Datum/zone	GDA94/Zone 53
250 000 K mapsheet(s)	Huckitta (SF53-11) Illogwa Creek (SF53-15)
100 000 K mapsheet (s)	Dneiper (5952) Jinka (6052) Brahma (6051) Quartz (5951)
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INTRODUCTION

Background

This report presents the work completed on the retained portions of EL 9725 and EL 10136 at the end of the tenth year of tenure. Both tenements are part of the Hammer Hill Project and have joint reporting status. The Hammer Hill project tenements are situated within the Irindina Province of the Arunta Region and Arafura considers them to be highly prospective for REE. The project area has also been considered prospective for a number of other commodities including nickel, copper and cobalt, but these targets/commodities are not of prime interest to Arafura.

On 22 November 2005, Mithril Resources entered a Heads-of-Agreement with Arafura Resources to farm-in to the Hammer Hill Project. The first phase of the farm-in agreement was successfully completed on 26 June 2006, with Mithril Resources appointed as tenement operator on 31 July 2006. In November 2007, BHP Billiton elected to participate in a joint venture with Mithril Resources whereby BHP Billiton could earn up to 51 % of the project (leaving Mithril with 19%) by spending >$5 million on the project.

The farm-in agreement ceased in 2010 and Arafura regained control of the tenements. The BHP Billiton – Mithril covenants were designed to explore for Cu-Ni-sulphide mineralisation, which is outside of Arafura's REE focus. However, the tenure is very prospective for REE with the pegmatite-related Holsteins prospect in the project area. Therefore, an exploration programme has been designed around REE exploration. REE exploration targets were generated as part of a project review in 2010 (Dow 2010). Unfortunately significant rain events prevented Arafura's reconnaissance attempts in 2010 and activities were put on hold.

Most of the 2011 exploration activities were focussed on EL9725. Arafura acquired a detailed 100 metres-spaced, low-level N/S airborne geophysical survey in 2011 over the Holsteins REE prospect in the western part of EL9725. Apart from minor office-based studies no other work was done on EL10136 in 2011.

No on-ground field work was conducted in the project area during the previous reporting term due to extensive exploration drilling activities at Nolans Bore. Reconnaissance fieldwork to review the Holsteins REE prospect and follow up Dow's 2010 targets was initially planned for the latter part of 2011, but a significant revision and extension of the Nolans Bore drill program meant that staff and resources were not available.

Location and access

The Hammer Hill Project area is centred about 180 km northeast of Alice Springs (Figure 1). Access is via the Plenty Highway, which passes through the northernmost part of EL 10136. The main track to Indiana Station passes through EL 9725, as does the boundary fence line along the eastern part of Mount Riddock Station. Other station tracks provide reasonable access throughout the project area.

Topography and drainage

The exploration licences can be divided into two physiographic areas:

- the northern and eastern parts, which includes all of EL 10136 and most of EL 9725 is generally flat with some low relied hills. The elevation in the west area of the flatter country is about 400 m (AHD), which gradually decreases to 350 m in the east, and
- the southwestern part of EL 9725, which lies within the Harts Range and is extremely rugged

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(Figure 2). The eastern base of the Harts Range has an elevation of approximately 450 m but this rises rapidly to over 800 m with Mt Mary, Mt Long and Mt Powell reaching 909 m, 878 m and 857 m, respectively.

Numerous ephemeral gullies and deeply incised creeks drain the area with most flowing southeast to. Huckitta Creek. The western hilly area drains to the north into the Plenty River via Entire Creek. There are no permanent rivers and only a few significant water holes in the region.

Climate

The climate in the area is arid with very hot summers and cool to cold winters. Average temperatures in summer range from 22° C to 38° C, while average winter temperatures range from 4.7° C to 21.7° C. In winter, overnight frost is common. Average annual rainfall (1967–1983) is about 330 mm of which about two-thirds falls in the December to March period. Average annual evaporation is ~2900 mm.

TENURE

Mining/Mineral Rights

An application for EL 9725 was submitted on 14 October 1996 by Star Money Lenders, which later became McCleary Investments Pty Ltd. The title was granted for a six year period on 17 December 2001. On the 24 December 2001, the title was transferred to Arafura Resources NL. The original licence contained 285 sub-blocks and has been reduced four times to now consist of 49 sub-blocks. Two of these sub-blocks were relinquished at the end of 2011 and the work on these two sub-blocks is reported here.

An application for EL 10136 was submitted on 1 June 1998 by Norman McCleary. Title was granted for a six year period on 13 February 2002. On 5 March 2002, the title was transferred to Arafura Resources NL. The original tenement contained 441 sub-blocks and has been reduced twice to now consist of 111 sub-blocks.

On 22 November 2005, Mithril Resources entered a Heads-of-Agreement with Arafura Resources to farm-in to these tenements. The first phase of the farm-in agreement was successfully completed on 26 June 2006, with Mithril Resources appointed as tenement operators as of 31 July 2006.

BHP Billiton entered into a joint venture with Mithril in November 2006 whereby they can earn a 51% interest in the project through expenditure of $5M. BHP withdrew from the JV and Mithril subsequently ceased farm-in agreement activities and walked away in 2010. Consequently all exploration and expenditure commitments have returned to Arafura.

Land Tenure

The Hammer Hill project area covers three perpetual pastoral leases (PPL):

- PPL 990, Huckitta Station; new manager unknown (phone 08 8956 9676).
- PPL 1061, Indiana Station; Mr David Bird (phone 08 8956 9779).
- PPL 989, Mount Riddock Station; Mr Dick Cadzow (08 8956 9720).
- PPL 1124, Ambalindum Station; Ms Nat Edmunds (08 8956 9714)

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Native Title

Arafura Resources has negotiated and executed an Exploration Agreement with the Central Land Council (on behalf of the registered Native Title Claimants) that includes the Hammer Hill Project tenements. As a result, there are no Native Title impediments to exploration other than holding appropriate consultations, avoiding activity on identified sacred sites and paying agreed amounts of financial compensation.

The terms of the Exploration Agreement provide for continuation of exploration on the area of the proposed mining tenement while the mining agreement is being negotiated with the registered Native Title Claimants.

Site Clearances

Under the terms of the Exploration Agreement, Arafura must provide all relevant details of its proposed exploration activities in the project area. The CLC must advise if clearances are necessary and then, if required, conduct clearances and provide details of exclusion zones as advised by the Native Title holders. Under the Exploration Agreement, the CLC is required to provide all necessary Sacred Site Clearances and details of the exclusion zones to allow exploration activities to progress in a timely manner.

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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 subdivided into three distinct geological regions by the NTGS, the Ailerion, Warumpi and Irindina Provinces. The Arunta Region is unconformably overlain by sediments of the Neoproterozoic to mid-Palaeozoic Ngalia, Georgina, Amadeus and Wiso Basins.

Unmetamorphosed Neoproterozoic to Palaeozoic marine and terrestrial sedimentary rocks of the Georgina, Ngalia and Amadeus Basins surround and unconformably overly the Arunta Region. Contemporaneous Neoproterozic to Cambrian strata of the Harts Range Group (Buick *et al.,* 2001, Maidment *et al.,* 2004, Buick *et al.,* 2005) are also 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 adjacent Georgina Basin also appear to be related to the Ordovician Larapinta Event and Devonian-Carboniferous Alice Springs Orogeny.

Local Geology

(after Rich 2010)

The Hammer Hill Project area is predominantly covered by a veneer of aeolian and colluvial sand and gravel. Strongly weathered biotite, garnet-biotite and quartzofeldspathic gneiss, calcsilicate rocks and amphibolite are sporadically exposed. There are numerous ferricrete, calcrete and silcrete rises, some of which may be indicative of the targeted mafic and ultramafic rocks. No detailed mapping has been undertaken in the area with the best regional maps compiled prior to detailed aeromagnetics and the current understanding of the geological history. The NTGS has recently revised the geology of the area and new geological maps are in progress. Figure 3 shows the current 1:250,000 outcrop geology of the project area.

The area is considered prospective for Ni-Cu-PGE mineralisation associated with mafic and ultramafic intrusions. Pegmatite and vein-style REE-Th mineralisation has also been identified in the area.

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PREVIOUS INVESTIGATIONS

Numerous companies and individuals have explored in the general area covered by ELs 9725 and 10136. A summary of exploration and associated reports from Drummond and Associates is listed below:

Placer Prospecting (Australia); ATP 1991, 2277; CR70-16, 70-008

Tenement covered the eastern part of the Huckitta Dome and east to the Hammer Hill prospect. Explored for U, REE and tantalite in the known pegmatitic prospects, but without success. Low density stream sediment survey provided little encouragement. In the Valley Bore area (NTGS Prospect 3), a band of calc-silicate rocks averaging almost 3 metres in width was traced for 3km with REE found in three places. Evaluation method not discussed and no assays given.

Arcadia Minerals Ltd; ATP 2568; CR70-049

Undertook a reasonable reconnaissance programme on the ultramafic units east of Hammer Hill. Describes them as relatively large olivine-rich intrusions within a 5 x 3km zone. Individual outcrops range from a few metres to 1000 x 600m. Serpentinite and carbonate mesh textures were noted. Assays - Ni to 0.9%, Cr averaging 2000 ppm and Nb only 2 ppm. Some intrusions are plug-like, whereas others are tabular. They typically have siliceous caps.

Cogar and Felderhof; ATP 3193/EL374

Tenement covered most of EL9725 around Hammer Hill. Sampling of hillock 4km northwest of Hammer Hill, which was originally thought to be gossanous, did not return anomalous base metal values.

VAM Limited; ATP 2042; CR68-066

Small tenement covered Quartz Hill (Holstein's REE prospect) about 14km west-southwest of Hammer Hill. VAM sampled seven lodes for an average of 1.4 % combined REO, with individual assays to 3 % Ce and 5 % La. Lode sizes apparently attain 100m length by 1-3m in width. VAM points out that airborne reconnaissance highlighted numerous pegmatite reefs to the south of ATP 2042, and considered there should be good potential for discovery of more lodes. Area is reasonably exposed and well drained, so scintillometer, rockchip and stream sediment geochemistry surveys should be effective.

Otter Exploration NL; EL1581; CR78-114, 80-123, 82-367, 79-119

Tenement overlapped the northern margin of EL10136. Predominantly explored for U, Molyhill tungsten and Jervois base metal mineralisation. Most work along the Mount Sainthill Fault Zone and the granite-rich terrain to the north. Investigated the ultramafic units 8km north of the EL10136 and returned surface assays of 860 ppm Ni, 70 ppm Cu, 160 ppm Co and 1150 ppm Cr.

Hillrise Properties Pty Ltd, CRA Exploration; EL1801 & 2494; CR79-12, 81-064, 82-052, 82-061

REE pegmatites identified near Valley Bore and the western margin of EL9725. At Quartz Hill, found radiometric anomalies to be associated with silicified, barite-, chalcedony-and monazite-rich carbonate rock, possibly related to carbonatites. CRA farmed in and completed a low density stream sediment sampling programme (one sample per 8sq km) over most of EL9725 with results warranting no further work.

Parks & Athanasiou, Western Mining Corporation; EL2657; CR84-15

Originally prospecting for rubies, but then WMC farmed in searching for diamonds. Some corundum identified by prospectors. Reconnaissance sampling of the entire Entire Creek catchment to the west of EL9725 recovered a single micro-diamond and highly significant pyrope garnet.

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CRA Exploration; EL2790; CR82-043

Reconnaissance drainage sampling (one per 13.5km^2) over a portion of EL10136. Some weakly anomalous Au values peaking at 25 ppb. Streams emanating from Hammer Hill were not anomalous in Ni or Co.

Western Mining Corporation; EL3115 and EL3303; CR83-004, 83-332, 84-009, 85-045

WMC followed up the Entire Creek diamond discovery with stream sediment sampling and recovered another microdiamond and several kimberlitic pyrope garnets. Bulk sampling failed to recover any more.

BHP Minerals; EL7178, 7179, 7180 and 7470; CR92-212

Explored for Broken Hill-style base metal deposits in an area covering the eastern and northern parts of EL 9725 and 10136. Work programme was extensive, and included reprocessing aeromagnetics, EM surveys, soil, rockchip and stream sediment surveys and RC drilling.

PNC Exploration (Australia) Pty Ltd; E 8901, 8220, 8675, 7967 and 8036; CR95-298, 96-286

PNC conducted extensive uranium exploration over the Harts Range, including detailed airborne radiometrics and magnetics. Some of this exploration was within EL 9725. Discovered Yambla U prospect to the southwest of EL9725. Samples from Quartz Hill pegmatite returned 41009300 ppm U, 1300-3600 ppm Ta, 1.4-2.9 % Y and 1.8-4.0 % Nb with REE minerals noted. Visible Au was identified in a malachite-stained, limonitic vein. At Holstein's Prospect, identified a swarm of gossanous veins principally mineralised with Fe-Ba-REE-Th-S. Grab samples returned 0.110 % REE, 0.2-3 % P, 1.0-24 % Ba, 0.03-3.9 % Th, 0.05-7.0% La, 0.0712% Ce and 40-600 ppm Y.

PREVIOUS INVESTIGATIONS ON ELs 9725 &10136

Arafura Resources Exploration Activities (2001-2006)

A short reconnaissance trip was made to Hammer Hill, Holstein's and West Gimlet in 2004. Six rockchip samples were collected from Hammer Hill for geochemical analysis and 3 samples were collected for petrographic examination. From Holstein's lodes, eleven rockchip samples were collected for mineralogy and seven composite rockchip samples, one from each lode, were collected for geochemical analysis. At Holstein's and West Gimlet a spectrometer was used to measure the thorium-specific radioactivity. The presence of thorium is considered to be diagnostic of the presence of REE mineralisation.

Assay results from the Holstein's rockchips show elevated Ce, La, Ba, P, Y and Th. Low Ca abundances relative to P suggests that monazite is probably an important mineral. Difference between analytical methods show that much of the REE-Th mineralisation is recalcitrant (relatively acid insoluble).

Geochemical results and petrographic analyses from Hammer Hill samples confirmed the presence of ultramafic rocks. Elemental ratios from microprobe analysis are consistent with those of known Ni-Cu deposits.

Surveys of discrete magnetic lows at West Gimlet did not reveal anything of interest.

Mithril Resources Work 2006/07

Mithril completed a number of phases of surface geochemical sampling programs during 2006 and a number of high quality Ni/Cu/Co anomalies were detected. These were followed up with five ground

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em traverses which indicated no conductive bodies in the basement. The EM did however indicate that airborne EM would be a viable exploration tool in the region.

Mithril Resources Work 2007/08

During this reporting year a number of extensive exploration activities were completed over the project area. These included a 1325 line km VTEM survey, ground verification of targets generated followed by ground EM surveys over three targets. From this a number of high quality drill targets were identified for drill testing, specifically IVT015/016.

Mithril Resources Work 2008/09

Mithril completed Ground EM, diamond drilling, down hole EM and rock chip and stream sediment sampling during the reporting period.

Two lines of slingram EM for a total of three line km were completed over the IVT015/016 anomaly. This was completed to help further refine the drill targets. Three diamond drillholes were completed for a total of 819.3m targeting ground EM conductors. Drillholes HHDD001 and 002 intersected significant pyrrhotite>pyrite>chalcopyrite (po>py>cpy) which explains the targeted conductive bodies. The third drillhole HHDD003 failed to intersect sulphides consistent with being conductive.

Downhole EM (DHEM) was completed on all three drillholes. This work confirmed that the targeted body was intersected within HHDD001 and in HHDD002 and also confirms there is an untested offhole conductor in HHDD003. Offhole conductive bodies were also intersected in HHDD001 and HHDD002 that are considered worthy of follow-up drilling.

Mithril Resources Work 2009/10

During the reporting period Mithril completed a number of exploration activities over the Project area including ground magnetics, air core drilling and rock chip sampling/ mapping. Mithril's exploration results for the project area are presented in Rich (2010).

2010 ACTIVITIES

A thorough literature review of Mithril's exploration activities conducted as part of their aborted farm-in activities and all historic exploration was undertaken within the greater project area. This lead to desktop studies and GIS-based REE target generation which was completed in May 2010. A summary of Dow (2010) is presented below.

Dow's review (Dow 2010) was completed prior to a proposed reconnaissance sampling trip in June-July 2010. Unfortunately no on-ground exploration activity was able to be conducted at that time. An attempt was made to access the tenement however the absence of tracks, boggy ground conditions and additional rain events meant that vehicle access was not possible. The extreme wet year, ongoing rain events throughout the year and the nature of the tenement meant that 4WD access was not possible.

Dow's review of all available exploration data has revealed that little work has been completed within Arafura's tenements. The most detailed work completed to date has been Mithril's work which focused on aeromagnetic anomalies and the hunt for Ni-Cr-Cu sulphide systems associated with ultramafic +/- mafic intrusive centers (Mostly at the Hammer Hill Prospect, see Figure 4 below). The tenement has been considered prospective for several different deposit styles (Broken Hill Type, Kimberlite, FeOx Cu Au, Carbonatite REE, pegmatite-related REE and intrusion-related gold etc), however, the paucity of historic exploration is related to extensive, shallow cover rather than limited mineral prospectivity.

Key historic prospects within and proximal to the JV include: Hammer Hill (Ni-Cr), Holstein's and

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Jersey (LREE), Mt Mary (HREE) and West Gimlet (Unmineralized coarse-grained pegmatite), see Figure 4.

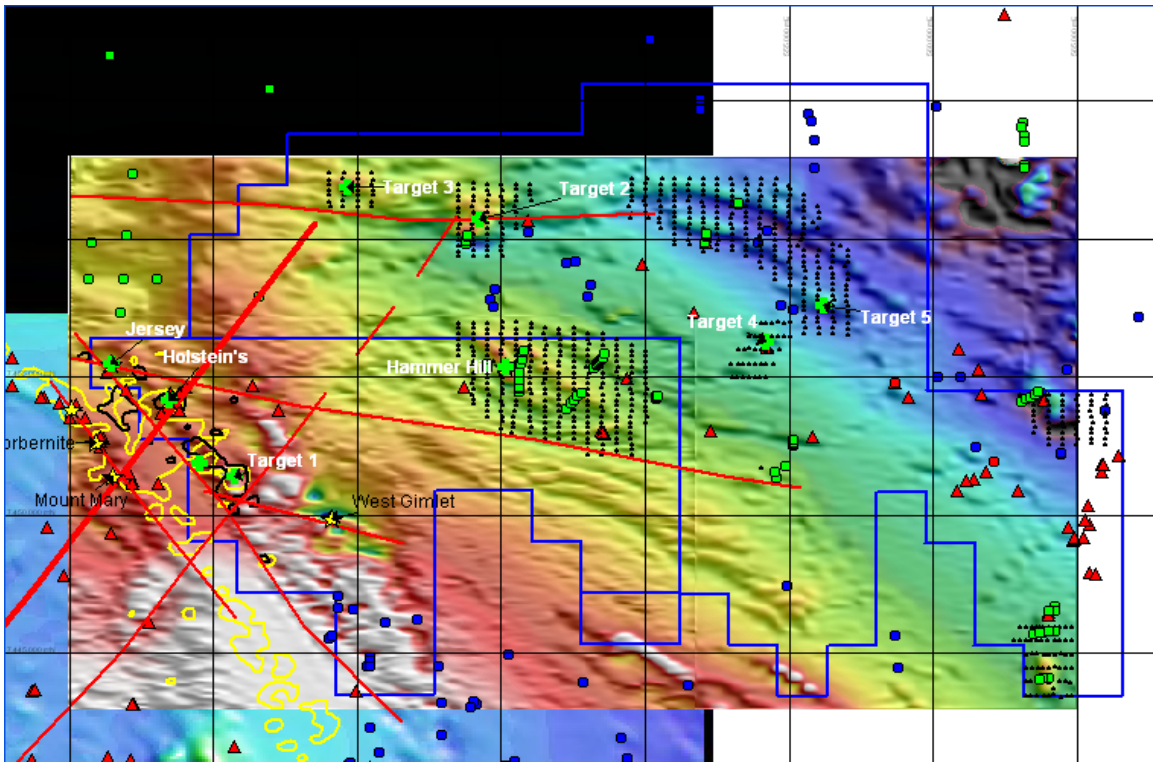

Figure 4 (from Dow 2010). Reprocessed TMI image of the Hammer Hill Project area showing previous exploration activity and proposed 2010 exploration targets. Red triangles = rock chip, Blue circles = streams, Black dots = lag grids, Green circles = drillholes. Yellow polygons = uranium anomalies, Black polygons = thorium anomalies, Red lines = key structures (requires further work) and Green crosses = target areas.

Dow proposed exploration activities at a number of previously recognised prospects, as well as five new reconnaissance REE targets. The initial reconnaissance sampling was planned as a combination of rock chip and biogeochemical sampling, with RAB/aircore drilling suggested as required possibilities for Targets 2 and 3.

Due to other project commitments, this reconnaissance work is currently scheduled for the second half of 2011.

2011 ACTIVITIES

The project and target areas were reviewed by Arafura in September 2011 and a number of blocks were subsequently relinquished (Green 2012).

Arafura acquired a detailed airborne geophysical survey in 2011 which concentrated on the Holsteins REE prospect in EL9725. The survey data, logistic report and processed imagery are provided in Appendix 1. It should be noted that the hilly terrain along the southwest margin of EL9725 has meant that some parts of the survey are “out-of-spec” but Arafura decided to accept the survey data over these problem flying areas as is.

No on-ground field work was conducted in the project area during the previous reporting term due to prolonged exploration drilling activities at Nolans Bore. Reconnaissance fieldwork to review the Holsteins REE prospect and follow-up Dow’s 2010 targets was initially planned for the latter part of 2011, but a significant revision and extension of the Nolans Bore drill program meant that staff and resources were not available. This reconnaissance program is now scheduled for mid 2012.

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