



ARAFURA RESOURCES LTD

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Report ARU-13/004

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
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Personal author(s)	Kelvin Hussey
Corporate author(s)	Arafura Resources Limited
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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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ABSTRACT

This report presents the work completed on the retained portions of EL 9725 and EL 10136 at the end of the eleventh 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 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. Therefore, an exploration program was 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 EL 9725. 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 EL 9725. No on-ground field work was conducted in the project area during 2011 as efforts were focussed on extensive exploration drilling activities at Nolans Bore.

Arafura was issued Sacred Site Clearance Certificate number C2012-061 for reconnaissance field work activities on 29 June 2012. Reconnaissance fieldwork was conducted in 2012 to review the potential of the Holsteins REE prospect and follow up the highest priority targets of Dow (2010). In addition reconnaissance exploration was conducted over a distinct geophysical feature in the Holsteins airborne survey.

Unfortunately the main part of the Holsteins REE prospect is excluded from exploration activity under Sacred Site Clearance Certificate number C2012-061. Despite this set-back to planned activities, reconnaissance exploration was conducted over the remainder of the Holsteins prospect. Reconnaissance exploration and prospecting activities confirmed the previously reported distribution of REE mineralisation and failed to locate any additional mineralisation in this area. The mineralised Lodes are low-grade and light REE-enriched, relatively thin, widely-spaced veins that are subvertical with preference for down-dip structural extensions. Hence, there is little evidence to suggest a potential for substantial REE-mineralised tonnages per vertical metre. These factors along with the mineralogy and the remoteness of the site all suggest that Holsteins is uneconomic at present.

Three other buried geophysical targets within the project were evaluated via biogeochemistry. These samples failed to highlight any evidence for significant REE mineralisation but suggest there may be locally elevated Zn, Cu and Mo. The meaningfulness of these elevated results is yet to be determined.

INTRODUCTION

Background

This report presents the work completed on the retained portions of EL 9725 and EL 10136 at the end of the eleventh 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.

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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 relief 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 (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 most falls in the December to March period. Average annual evaporation is ~2900 mm.

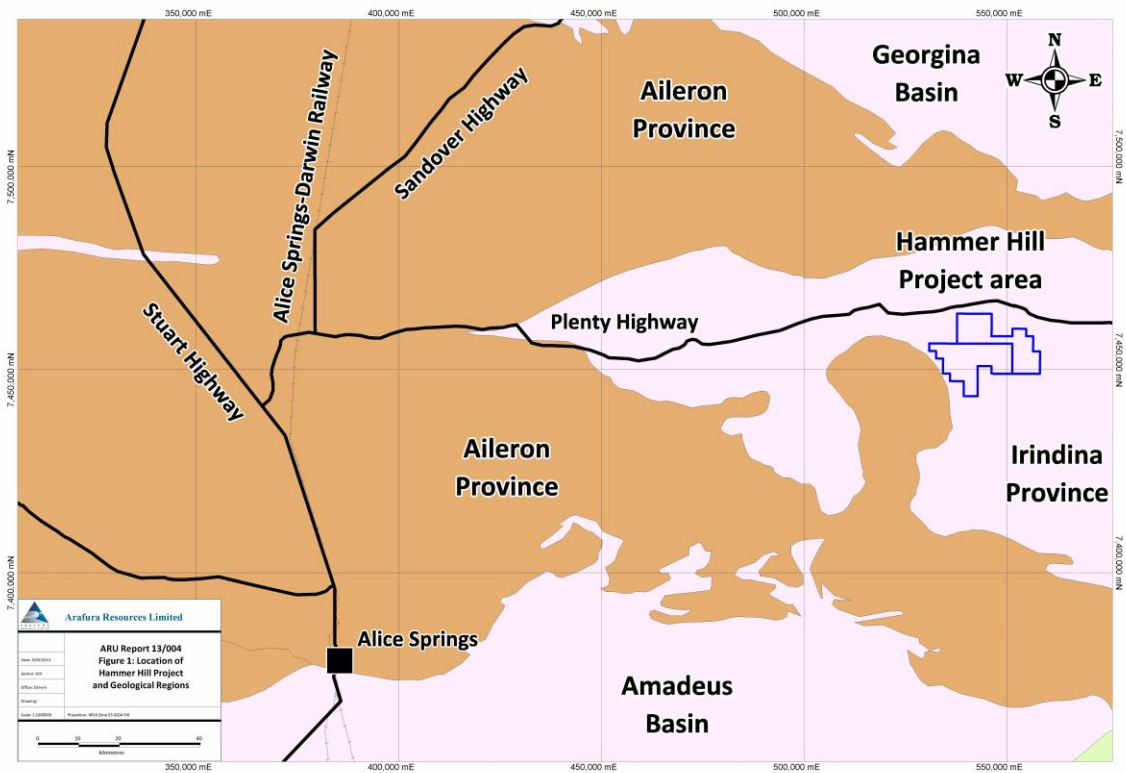


Figure 1: Location of Hammer Hill Project and Geological Regions

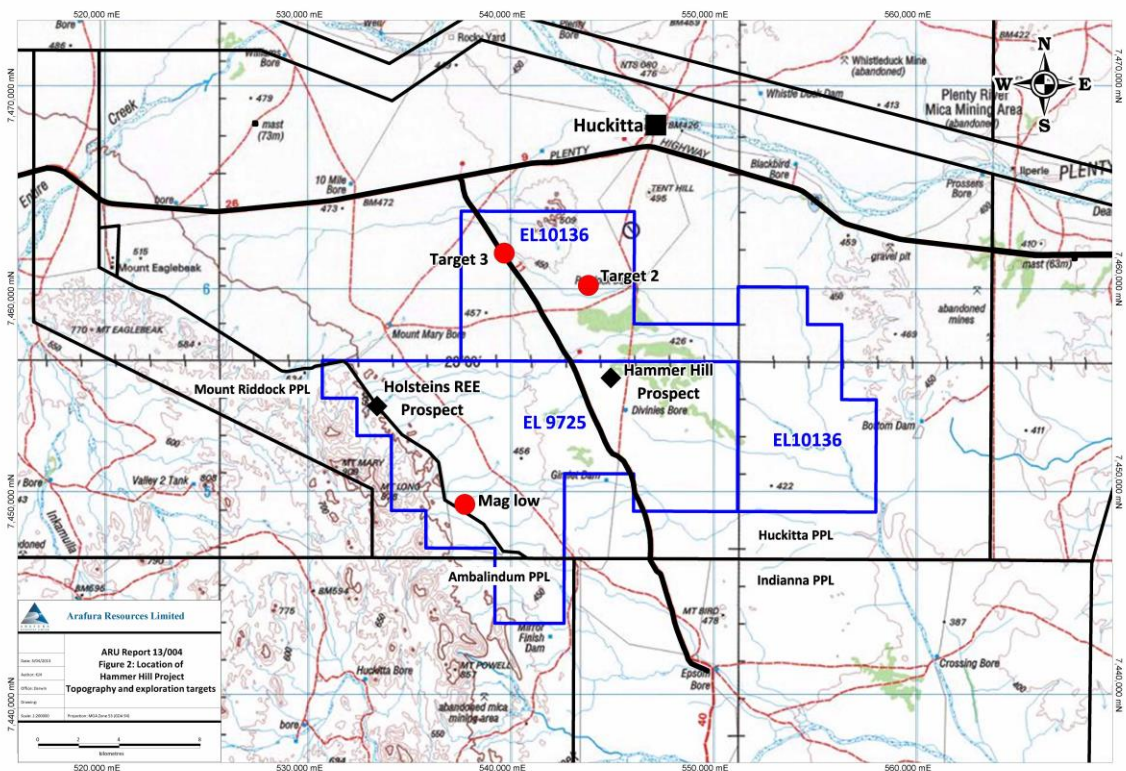


Figure 2: Topography and tenement status showing the 2012 exploration targets and the main prospects in the Hammer Hill Project area.

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)

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.

GEOLOGICAL SETTING

Regional Geology

The Arunta Region contains more than 200 000 km² of metamorphic rocks in the southern parts of the NT and has been subdivided into three distinct geological regions by the NTGS, the Aileron, 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 Neoproterozoic 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 aeromagnetism 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.

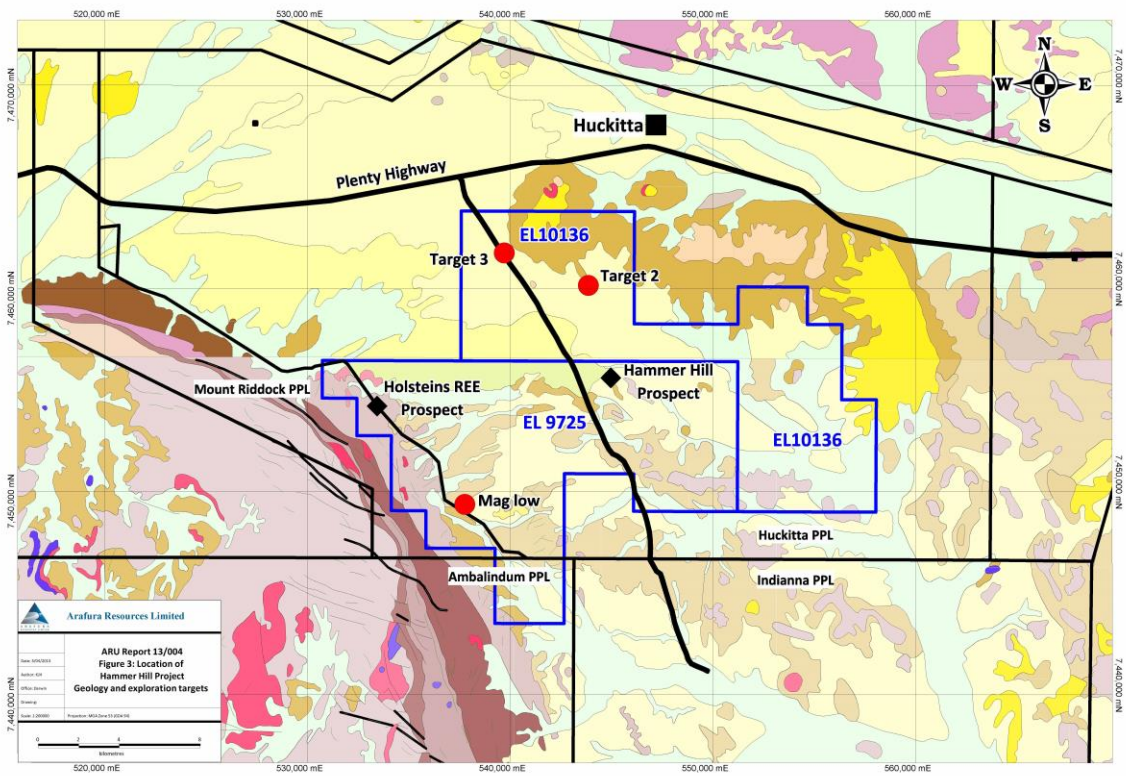


Figure 3: Regional geology and the current tenement status showing the main prospects and exploration target areas in the Hammer Hill Project area.

HISTORIC 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.

CRA Exploration; EL2790; CR82-043

Reconnaissance drainage sampling (one per 13.5km²) 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 Yambula 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 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 Jersey (LREE), Mt Mary (HREE) and West Gimlet (Unmineralized coarse-grained pegmatite), see Figure 4.

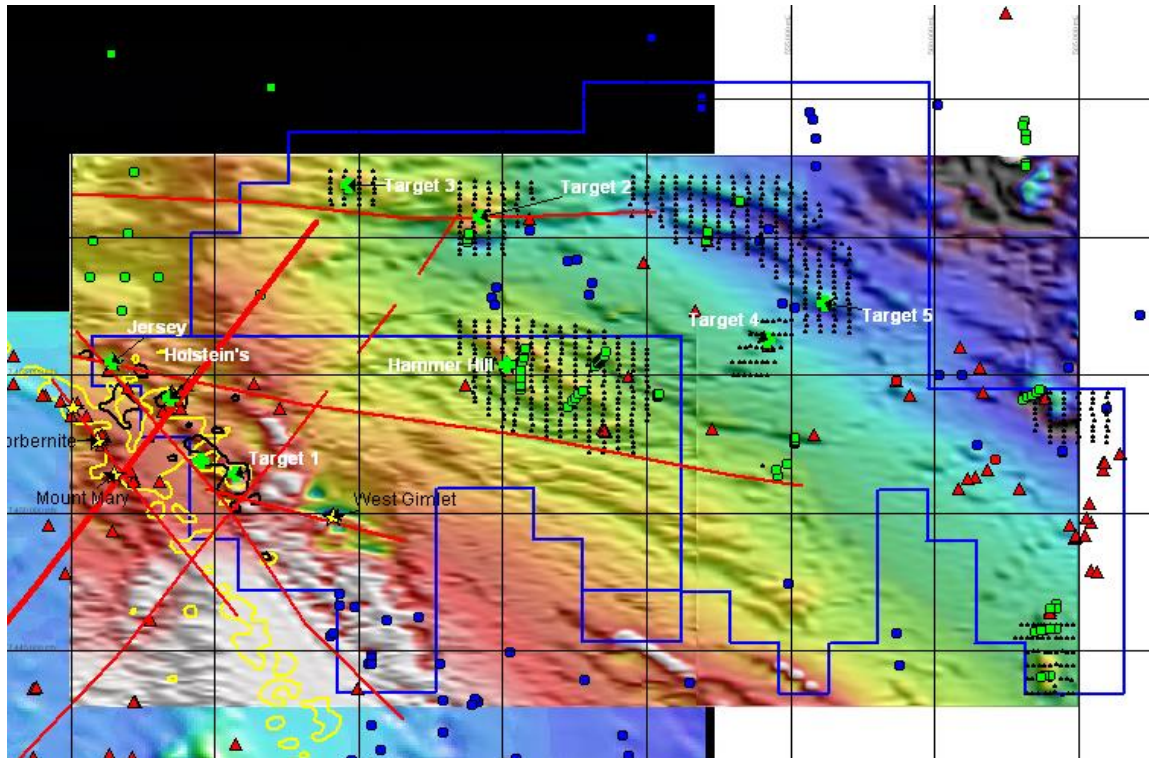


Figure 4 (from Dow 2010). Reprocessed TMI image of the Hammer Hill Project area showing previous exploration activity and proposed 2010 exploration targets. Red triangles = rock chip, Blue circles = streams, Black dots = lag grids, Green circles = drillholes. Yellow polygons = uranium anomalies, Black 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 EL 9725. The survey data, logistic report and processed imagery are provided in Hussey (2012a). It should be noted that the hilly terrain along the southwest margin of EL 9725 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.

2012 ACTIVITIES

Arafura's main interest in this project area is the Holsteins REE prospect. Exploration activities were proposed for 2012 to determine the nature, extent and size potential of this prospect based on its surface expression. The aim was to drill test Holsteins if economic mineralisation is deemed promising.

As per Arafura's Exploration Agreement with the CLC and the Native Title Holders, Arafura submitted and obtained clearance for reconnaissance exploration over a number of previously proposed targets in 2012 (see Dow 2010, Figure 4). Sacred Site Clearance Certificate number C2012-061 was issued to Arafura Resources on 29 June 2012.

Unfortunately the area to west of the Huckitta Station boundary fence line, which represents most known outcrops of the Holsteins REE prospect, is excluded from exploration activity. This large exclusion zone limits REE exploration at Holsteins as most of the known mineralised surface outcrops are out-of-bounds. It is possible that future exploration may be permissible in parts of this exclusion area as the clearance was based solely on a desktop study rather than a detailed on-ground assessment. However it is also possible that this exclusion may remain in place after detailed on-ground clearance. The Jersey REE prospect to the northwest of Holsteins is also within this exclusion zone. Access was granted to Dow's other targets, 2-5 inclusive on EL 10136 (see Figure 4). Given access limitations in the western part of the project area, Arafura decided to concentrate its 2012 reconnaissance exploration activities on the highest priority targets available (ie eastern part of Holsteins, and targets 2 and 3). In addition to these, a discrete geophysical target identified in the new airborne geophysical survey was also investigated.

Holsteins (EL 9725)

To aid exploration in the Holsteins area, a detailed high-resolution satellite image (GeoEye-1) was acquired from Geoimage in 2012 (Figure 5, Appendix 1). The detailed data covers a slightly larger area than the Holsteins airborne geophysical survey (see Green 2012).

Arafura investigated the known mineralisation at the Holsteins REE prospect east of the fence in 2012 (Figure 6, Lode C and F, see Lindsay-Park 2005 for detailed map). The geological setting of these Lodes and their surrounds were re-examined in light of the proposed development of the world-class Nolans Bore REE deposit.

The mineralised rocks at Lodes C and F are dense rocks (ie. high SG) that are distinctly darker than the surrounding leucocratic gneissic and pegmatitic country rocks. The lodes have an overall black/brown 'blocky/cherty' appearance and white barite is typically present in variable amounts (up to 50%) and averaging about 10%. Scree derived from Lodes C and F is readily discernible suggesting that new surface lodes might be easily observed if present by geological prospecting and detailed ground traverses.

Lodes C and F crop out on the sides of small hills and are relatively well exposed. Thin superficial scree and transported quartz-rich gravels and collovium are present throughout most of the area and even occurs on the top of the rises. Despite the thin superficial transported cover, the underlying bedrock geology is weakly weathered and readily observed in most places (Figure 6). The extents of Lodes C and F were traced out along their entire length and mineralised outcrops ceased before moving into areas of thicker cover. To ensure a full assessment of each Lode, the local nearby cross-cutting drainage lines were also prospected to check for extensions or new mineralisation.

Lodes C and F are veins/breccias that are typically less than a metre in width but pinch and swell to a local apparent maximum width of 2 metres. Lode C is a subvertical planar vein which Lode F is subvertical and curvilinear. Both Lodes show evidence for structural down-dip potential with limited strike extensions evident.

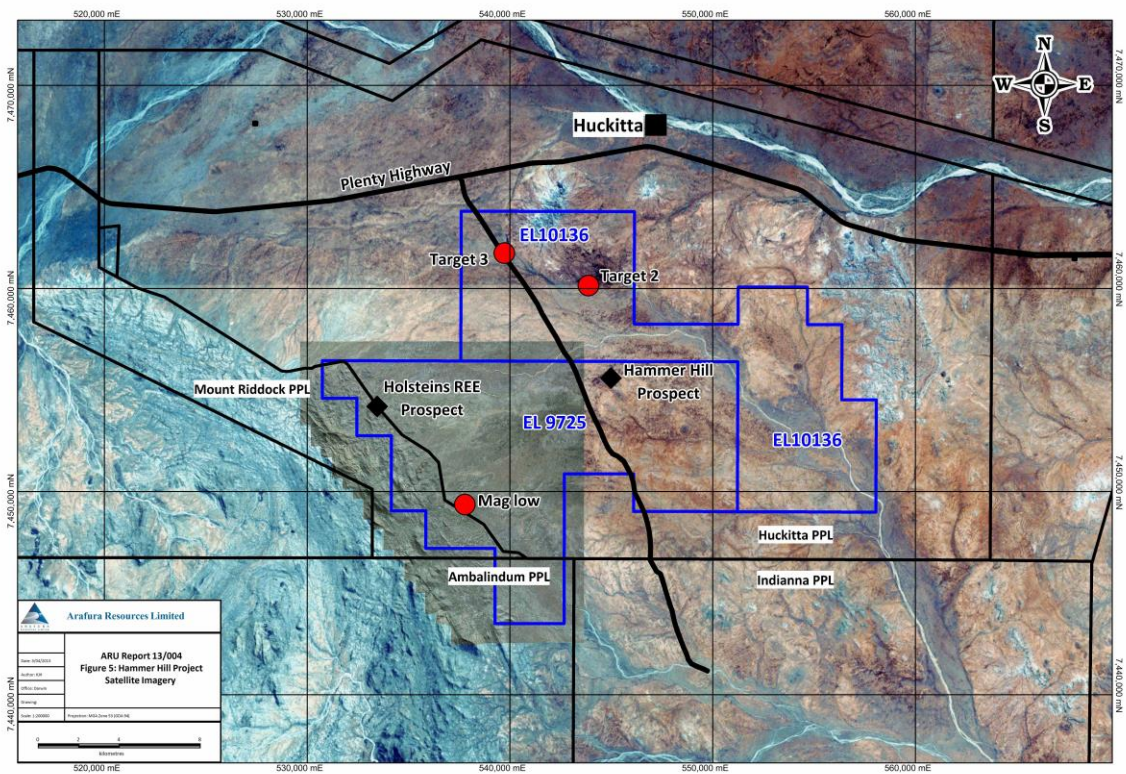


Figure 5: "Natural" false-colour satellite image of the Hammer Hill Project area. This image highlights the high-resolution GeoEye-1 data in the western part of EL 9725 in contrast to lower resolution Landsat 7TM data.

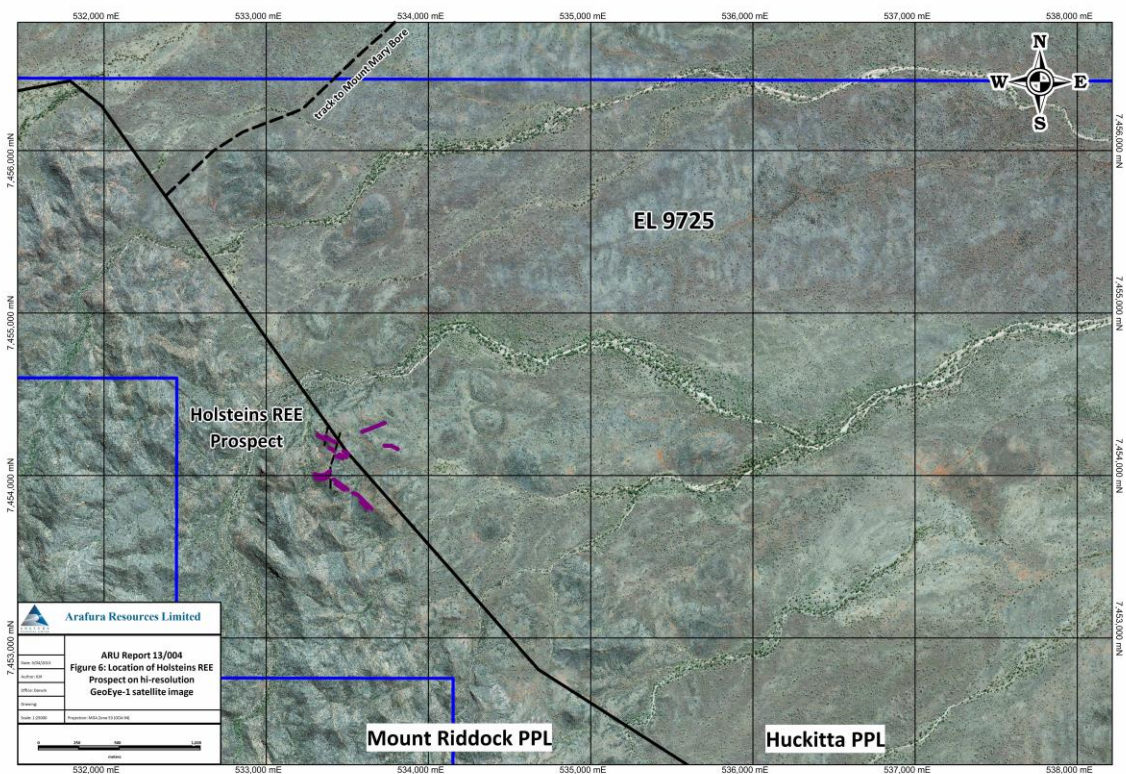


Figure 6: Location of Holsteins REE Prospect on the high-resolution GeoEye-1 image.

The mineralisation at Lodes C and F show a subtle but distinct radiometric signature (emitting about 0.7-2.5 $\mu\text{Sv/hr}$) compared to the surrounding gneissic country rock ($<0.3 \mu\text{Sv/hr}$). The entire area of the known mineralised lodes at Holsteins coincides with a significant Th and U airborne radiometric high in Arafura's detailed airborne survey data (Figures 7 and 8, respectively). Systematic Geiger traverses and prospecting was conducted on foot across the region to the east of the fence within about 250 metres of each lode. These observations are consistent with the detailed airborne radiometric survey and failed to locate new radiometric targets or new mineralised lodes outside of the known Lodes. A total of five representative samples from Lodes C and F were collected as check assays. The new assay results are provided in Appendix 2 and are in line with previous results reported by Lindsay-Park (2005). However given the presence of barite it should be noted that the reported Ba result will be erroneously low using a 4-acid digest; an XRF analysis is required to determine to true Ba content of these rocks.

Based on Lodes C and F, and the geological maps of mineralisation to the west of the fence (Lindsay-Park 2005, Figure 6), the Holsteins REE prospect appears to have minimal economic potential. This is supported by the absence of additional airborne radiometric anomalies/targets in outcropping or shallow subcropping areas in the immediate vicinity of Holsteins (Figures 7 and 8). Also the known mineralisation does not coincide with an obvious magnetic feature in the Holsteins airborne survey (Figure 9) and hence there appears to be no simple targeting method to locate additional mineralisation. Most dis-concerning is that compared to the Nolans Bore deposit, the known veins at Holsteins are typically lower grade, narrower, widely-spaced, and the REE-mix is more strongly LREE-enriched making it less valuable. Given the veins are widely-spaced and subvertical with preference for down-dip structural extensions, there is little evidence to suggest substantial REE-mineralised tonnages per vertical metre. These factors along with a different mineralogy and the remoteness of the site all suggest that Holsteins is uneconomic at present.

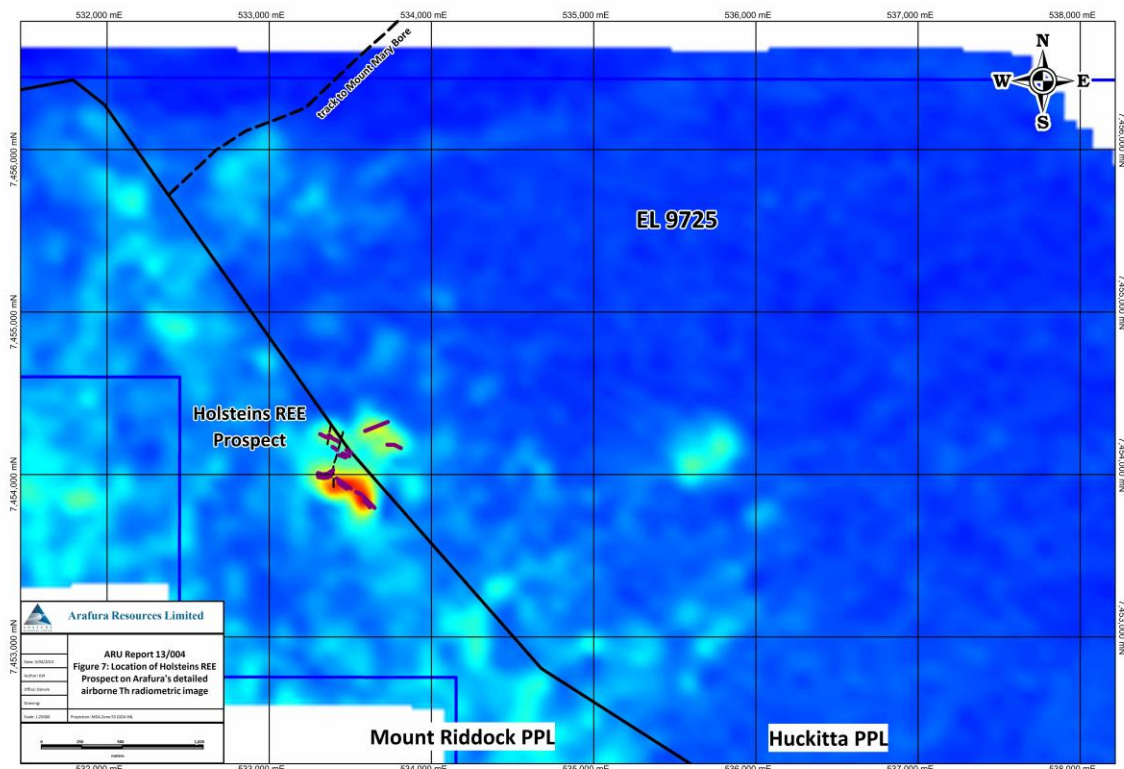


Figure 7: Location of Holsteins REE Prospect on Arafura's detailed airborne Th radiometric image. Same area as Figure 6.

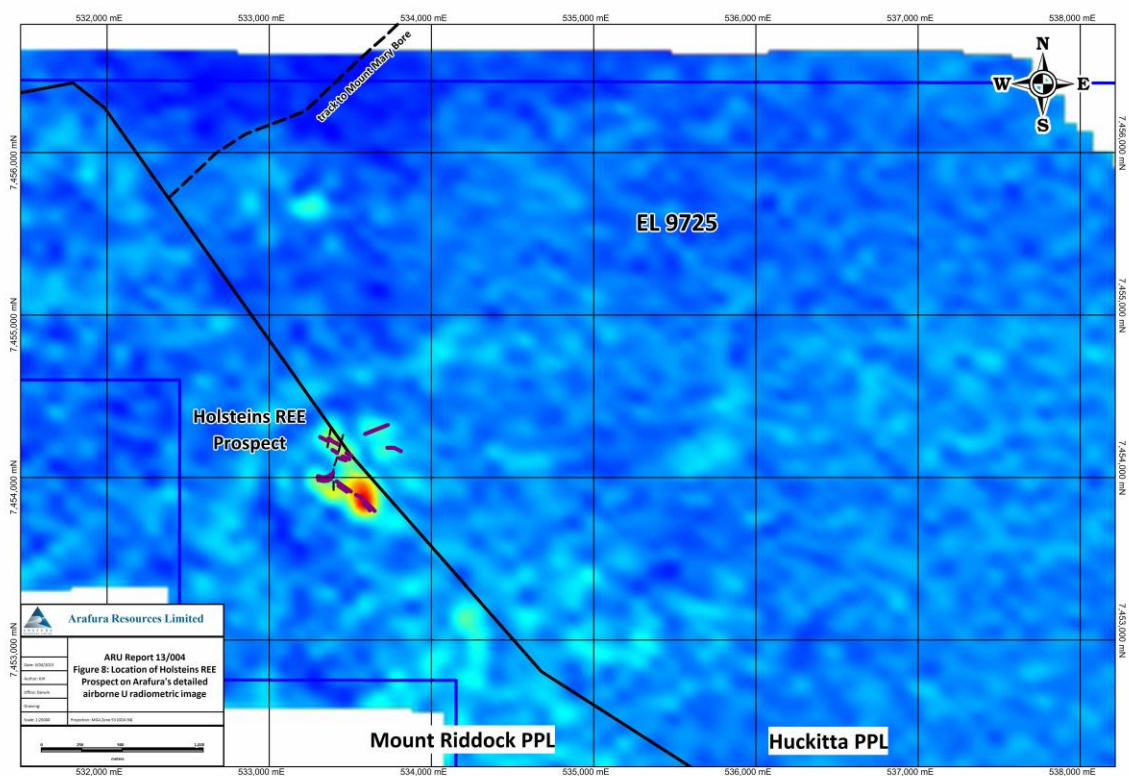


Figure 8: Location of Holsteins REE Prospect on Arafura's detailed airborne U radiometric image. Same area as Figure 6.

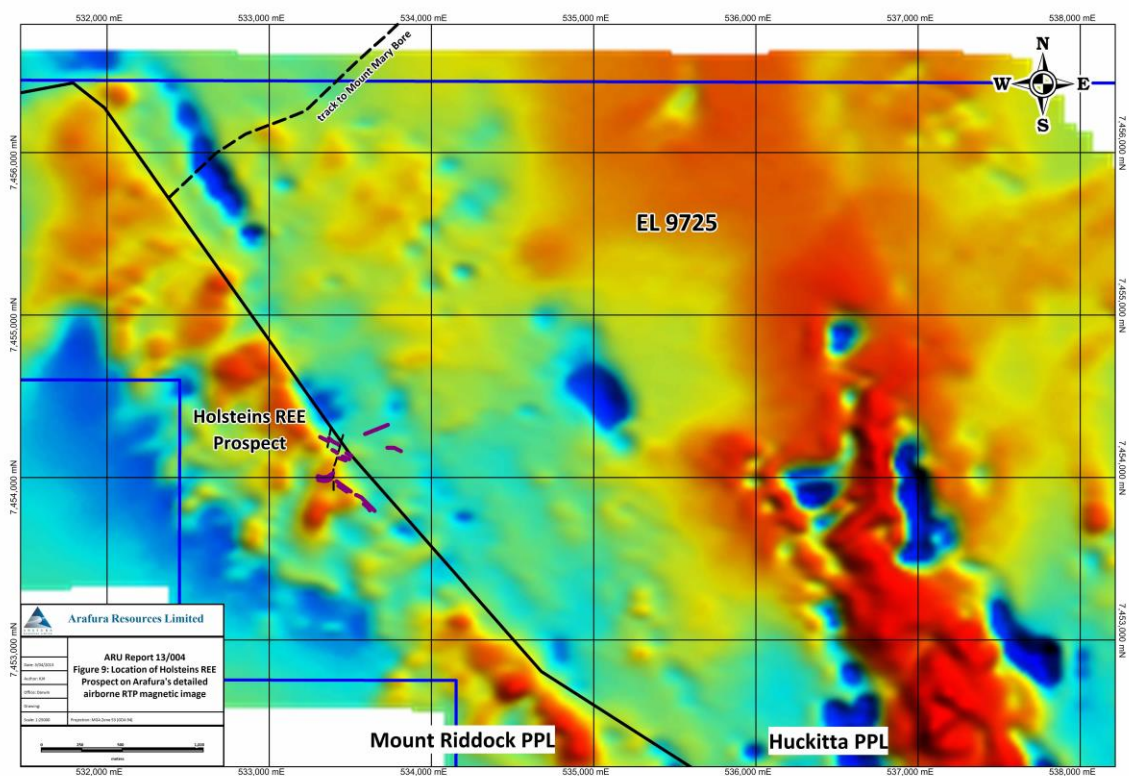


Figure 9: Location of Holsteins REE Prospect on Arafura's detailed airborne RTP magnetic image. Same area as Figure 6.

Target 2 (EL 10136)

Target 2 was selected because Mithrill's previous drilling results were deemed worthy of a follow up from a REE perspective. Target 2 is a prominent magnetic high identified by Mithrill's VTEM survey, proximal to a regional east-west magnetic structural lineament on EL 10136. This magnetic feature was targeted as a possible carbonatite or alkaline igneous rock, not intersected by drilling, with the potential for REE mineralisation or alteration. Given this magnetic target had been previously tested by four shallow drill holes (HHAC049-052), a more regional reconnaissance approach was deemed necessary to evaluate if there was any significant REE potential. If present, subsequent follow up drilling was planned.

Rich (2010) suggested the exploration drill results at Target 2 may suggest *the presence of REE/skarn? mineralisation possibly associated with a magnetic intrusive body not intersected in the drilling*. Drill hole HHAC52 was drilled directly over the main magnetic feature and yielded an interval with elevated Ag, La, P, Sr and Th results. The La result alone is of interest and suggests the two-metre drill interval might contain about 1-2% REE. The presence of Ag and the absence of U and Ba suggest the REE enrichment/mineralisation is different to the nearby Holsteins REE prospect (see above). Basement clays were logged in HHAC50 from 8-38 metres and the assay data in Rich (2010) indicated this interval contains 2-3 times more La than the underlying basement rocks. The elevated Al, Ba, P and Sr in this clay-rich interval were deemed to be of REE interest as they suggested a potential for supergene phosphate or aluminium-phosphate minerals, some of which could host REE (eg monazite, xenotime and crandallite group minerals), and made Target 2 a high priority for REE exploration.

Previous drilling indicated there is about 2-10 metres of transported cover in the vicinity of Target 2. A geological inspection of the area confirms the absence of outcropping basement and the transported nature of the cover in this area. As such biogeochemistry was chosen an appropriate media for reconnaissance REE sampling over this target. Unfortunately most of the area is recovering from a bush fire and the planned traverse had to be moved slightly to the east. Biogeochemical samples were collected along a north-south traverse across the entire magnetic feature (Figure 10) at 50 metres interval to see if a regional REE enriched signature could be detected. A number of biogeochemical samples were also collected at the previous drill holes directly above and surrounding the anomalous drill results to assist with evaluating the biogeochemical samples.

The target area is best described as an Acacia open-woodland with a grassy understory developed on a red sandy soil plain with localised subtle depressions and rises. The shallow drainage lines and sheetwash locally exposes calcareous hardpan soils with calcrete nodules. Patches of vegetation in this area was in the process of recovering from a significant but patchy bushfire with relatively fresh new growth evident in the burnt out parts. One part of the sample traverse was extensively burnt and had not recovered with only two adjacent 50 metres spaced samples collected over a 300 metre interval. Large mature stands of *Acacia georginae* (Gidgee) dominate the northern part of the sampling traverse with *Acacia estrophiolata* (Ironwood) more prominent in the south. A total of 33 samples were collected at Target 2. These samples included two field duplicates and comparative species duplicates with adjacent *Atalaya hemiglauca* (Whitewood) and *Acacia aneura* (Mulga). Depending on their localised distribution, the foliage from the two dominant trees was systematically sampled. All assay results and sample descriptions are presented in Appendix 2.

The very low Zr and Al contents of the foliage samples from Target 2 indicate there is no significant dust contamination and that the overall metal uptake is therefore mostly biological. Significant biogeochemical inter-species differences are observed for the essential biological elements with Ca, K, Mg and S typically higher in the *Acacia georginae* population. Of these, the difference in S is greatest (about 10-20 times higher) and indicates that *Acacia georginae* is strongly S-specific. The higher S content is consistent with the strong smell emitted by these plants. Lithium also appears to be slightly higher in the *Acacia georginae* samples. Apart from these major essential element differences, most assayed metals of economic interest are generally low or below their detection limit.

The REE assays are typically low for all samples from Target 2 with one significantly higher, anomalous sample in the overall sample population (ARA5298, total REE about 3.6 ppm). Whilst elevated, the REE contents and ratios in ARA5298 are distinctly different to samples collected over REE mineralisation elsewhere and suggest substantial REE mineralisation is unlikely at Target 2.

Interestingly, La is low and no Ag was detected in ARA5301 which directly overlies a weakly mineralised drill interval of 2 metres at 9 ppm Ag and 3580 ppm La.

Of potential economic interest, five samples from four sites have Mo values greater than 1 ppm and appear anomalous when compared to the sample population. Sample ARA5313 and its duplicate ARA5314 have the highest Mo contents for biogeochemical samples from Target 2 however the highest value in the project area (3.3 ppm) occurs in sample ARA5294 at Target 3. In addition to these, four samples (ARA5302, ARA5310, ARA5316, and ARA5319) show Zn values greater than 30 ppm and are anomalous amongst the general sample population. The highest Zn value (40 ppm) in the project area occurs in sample ARA5302 at northern end of the traverse across Target 2. The meaningfulness of these subtle but anomalous biogeochemical signatures is not understood and is yet to be fully evaluated.

The absence of significantly anomalous REE in Target 2 samples and the previous drill results downgrades its REE mineral potential and Arafura's interest in this target.

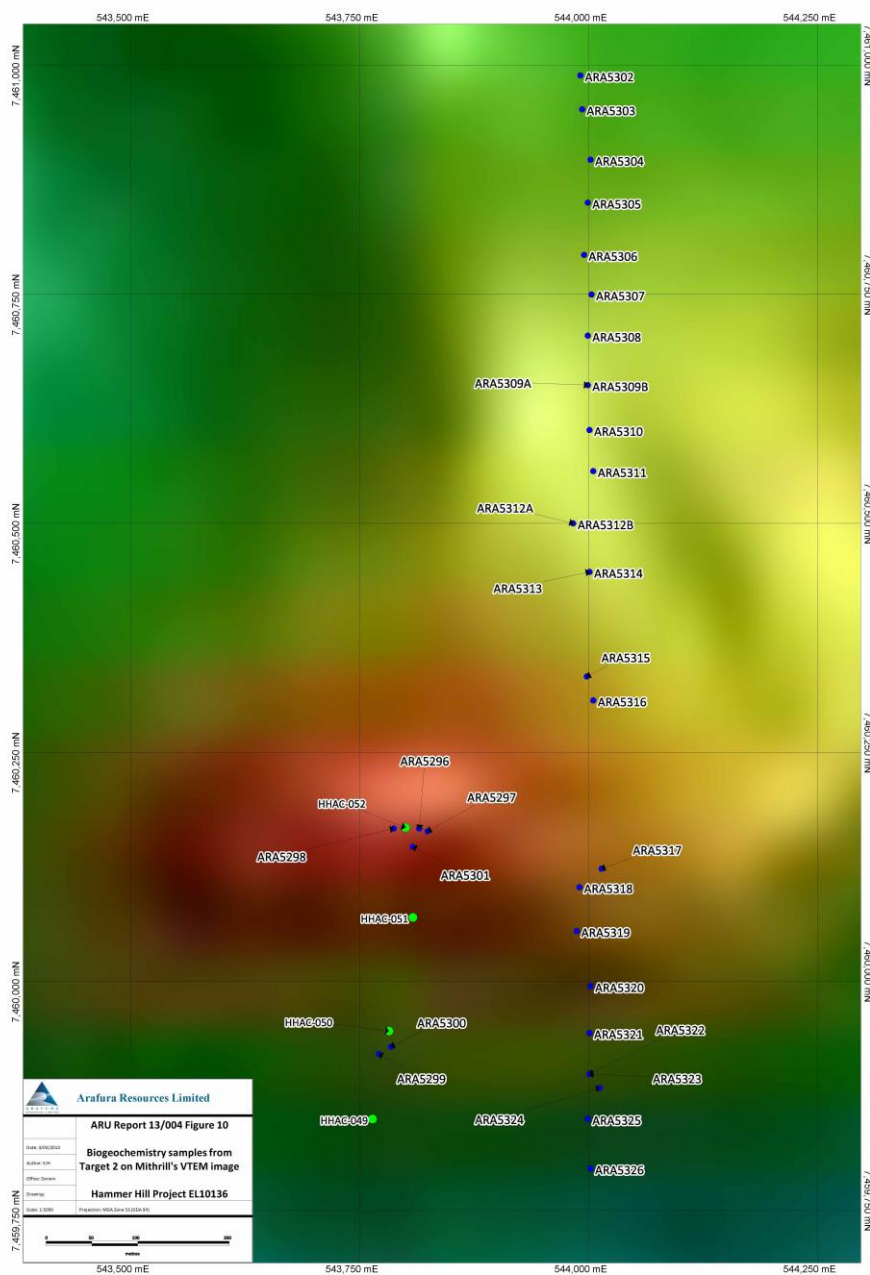


Figure 10: Biogeochemical sample locations on Mithrill's VTEM image highlighting Target 2 on EL 10136.

Target 3 (EL 10136)

Target 3 is a discrete magnetic high identified by Mithrill's VTEM survey and occurs adjacent to the main public access track from the Plenty Highway to Indianna through Huckitta. Biogeochemistry was chosen as the preferred reconnaissance sampling media because there is no outcrop in this area and the regolith is clearly transported colluvial sheetwash with an aeolian component. The depth of cover is not known in this location but it is expected to be around about 2-10 metres based on drilling at Target 2 about 4.5km to the southeast.

The target area is best described as an Acacia open-woodland with a grassy understory developed on a red sandy soil plain. Most of the area was in the process of recovering from a significant but patchy bushfire with relatively fresh new growth evident in the burnt out parts. *Acacia estrophiolata* (Ironwood) is a dominant species throughout the general area and was systematically sampled at each site. A total of 22 biogeochemical foliage samples were collected from 21 sites, including one field duplicate, every 50 metres along a north-south traverse across Target 3 (Figure 11). All assay results and sample descriptions are presented in Appendix 2.

The very low Zr and Al contents of the foliage samples indicate there is no significant dust contamination and that the metal uptake is therefore mostly biological. The assayed biogeochemical samples did not yield any significant REE values. Most assayed metals of economic interest are generally low or below their detection limit. However relative to all *Acacia estrophiolata* samples collected in the project area, anomalous Zn and Cu assays occur in ARA5276, with anomalous Cu also identified ARA5277 and ARA5291 and anomalous Mo in ARA5275, ARA5294 and ARA5295. Sample ARA5294 has 3.3 ppm Mo which is the highest Mo content found to date in the project region and is worthy of follow up exploration. The meaningfulness of these subtle but anomalous biogeochemical signatures is not understood and is yet to be fully evaluated.

It should be noted that Cu and Zn results from Mithrill's drill samples are above the average Cu and Zn values for the UCC and hence this apparently anomalous biogeochemical signature may be a reflection of slightly enriched bedrock sources rather than mineralisation. It should also be noted that much higher Cu and Zn values have been found in biogeochemical samples from EL 27337 (eg Hussey 2012b). Biogeochemical sampling over areas of known mineralisation is therefore essential to determine if these apparently elevated values are truly significant, particularly since plants are known to take up Cu and Zn as important trace metals. Drill testing may ultimately be warranted if these anomalous values are deemed significant.

The absence of anomalous REE at Target 3 downgrades its REE mineral potential and Arafura's interest in this target.



Figure 11: Biogeochemical sample locations on Mithrill's VTEM image highlighting Target 3 on EL 10136.

Mag low southeast of Holsteins (EL 9725)

A total of four biogeochemical samples were sampled from a discrete magnetic low about 6.5 kilometres southeast of Holsteins. This target was chosen because it was close to the main access track/fence line and was considered as a representative test of similar magnetic features in the Holsteins detailed airborne survey.

No outcropping basement rocks are evident in the general location and the buried target is dominated by colluvial sheetwash with a substantial aeolian component. The physical location is best described as sparsely vegetated open woodland with a grassy understorey. Depth of transported cover is unknown however outcropping basement is occasionally observed along the nearby fence line to the west suggesting the cover is likely to be thin. These four 50 metres spaced *Corymbia opaca* foliage samples were selected as representative of the vegetation in the general vicinity. The assayed samples did not yield any anomalous REE results. However, like elsewhere this species again shows elevated U which is attributed to the U-specific nature of this species and sample type (see Hussey 2012b).

The absence of anomalous REE downgrades its REE mineral potential and Arafura's interest in this target and similar features in the Holsteins airborne survey.

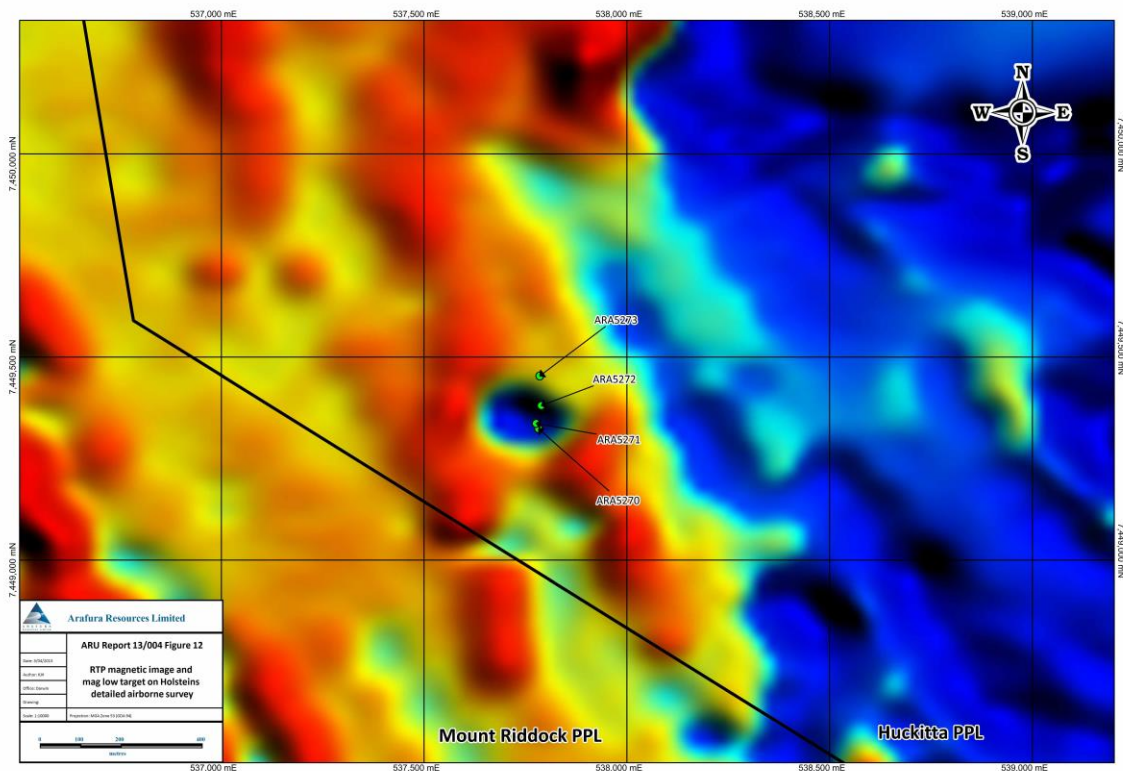


Figure 12: Location of biogeochemistry samples collected over a distinct magnetic low target in the Holsteins airborne survey on EL 9725.

REFERENCES/SOURCES OF INFORMATION

Ahmad M and Scrimgeour IR, 2004. Geological map of the Northern Territory, 1:2 500 000 geological map series. *Northern Territory Geological Survey*.

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

Buick IS, Miller JA, Williams IS and Cartwright I, 2001. Ordovician high-grade metamorphism of a newly recognised late Neoproterozoic terrane in the northern Harts Range, central Australia. *Journal of Metamorphic Geology* 19, 373-394.

Buick IS, Hand M, Williams IS, Mawby J, Miller JA and Nicoll RS, 2005. Detrital zircon provenance constraints on the evolution of the Harts Range Metamorphic Complex (central Australia): links to the Centralian Superbasin. *Journal of the Geological Society, London* 162, 777-787.

Claoué-Long J, 2003. Event chronology in the Arunta Region. In Munson TJ and Scrimgeour I (Editors), Annual Geoscience Exploration Seminar (AGES) 2003. Record of Abstracts. *Northern Territory Geological Survey, Record 2003-001*.

Claoué-Long J, Fraser G, Huston D, Neumann N and Worden K, 2005. Towards a correlation of the earliest Proterozoic evolution in central Australia. In Munson TJ (Editor), Annual Geoscience Exploration Seminar (AGES) 2003. Record of Abstracts. *Northern Territory Geological Survey, Record 2003-001*.

Claoué-Long JC and Hoatson DM, 2005. Proterozoic mafic-ultramafic intrusions in the Arunta Region, central Australia. Part 2: Event chronology and regional correlations. *Precambrian Research* 142, 134-158.

Close D, Scrimgeour I, Duffett M, Worden K and Goscombe B, 2005. East Arunta project – preliminary results and future directions. In Munson TJ (Editor), Annual Geological Exploration Seminar (AGES) 2005, Record of Abstracts. *Northern Territory Geological Survey Record 2005-001*.

Collins WJ and Shaw RD, 1995. Geochronological constraints on orogenic events in the Arunta Inlier: a review. *Precambrian Research* 71, 315-346.

Donnellan N and Johnstone A, 2003. Expanding the Tennant Region: mapped and interpreted geology of the Mount Peake and Lander River 1:250 000 sheets. In TJ Munson and I Scrimgeour (Editors), Annual Geological Exploration Seminar (AGES) 2003, Record of Abstracts. *Northern Territory Geological Survey Record 2003-0001*.

Dow R, 2010. Hammer Hill Project Review. *unpublished Arafura Report*.

Freeman, M. J., Shergold, J. H., Morris, D. G., and Walter, M. R., 1990. Late Proterozoic and Palaeozoic Basins of Central and Northern Australia. *Geology of the Mineral Deposits of Australia and Papua New Guinea (Ed. F.E. Hughes), AusIMM Monograph* 14, 1125-1134.

Green MG, 2012. Partial relinquishment report of EL9725 and 10136. *unpublished Arafura Report ARU2012/006*.

Hand M, Mawby J and Miller J, 1999a. U-Pb ages from the Harts Range, central Australia; evidence for early Ordovician extension and constraints on Carboniferous metamorphism. *Journal of the Geological Society, London* 156, 715-730.

Hand M, Mawby J, Miller JA, Ballèvre M, Hensen B, Möller A and Buick IS, 1999b. The tectonothermal evolution of the Harts and Strangways Range Region. Field Guide 4.

Geological Society of Australia, Specialist Group in Geochemistry, Mineralogy and Petrology.

Hoatson DM, Sun Shensu and Claoué-Long JC, 2005. Proterozoic mafic-ultramafic intrusions in the Arunta Region, central Australia. Part 1: Geological setting and mineral potential. *Precambrian Research* **142**, 93-133.

Hussey KJ, Huston DL and Frater M, 2004. Metallogeny in the eastern Arunta Region and the potential of its Palaeoproterozoic rocks. In TJ Munson and I Scrimgeour (Editors), Annual Geological Exploration Seminar (AGES) 2004, Record of Abstracts. *Northern Territory Geological Survey Record* 2004-001.

Hussey KJ, Huston DL and Claoué-Long JC, 2005. Geology and origin of some Cu-Pb-Zn (-Au-Ag) deposits in the Strangways Metamorphic Complex, Arunta Region, Northern Territory. *Northern Territory Geological Survey Report* 17.

Hussey KJ, 2012a. Combined annual report for period ending 12/02/2012; EL 9725 and EL 10136, Hammer Hill Project. *unpublished Arafura Resources Report* ARU 12/008.

Hussey KJ, 2012b. Results of a biogeochemical orientation study at Nolans Bore and the application of biogeochemistry to exploration for Nolans Bore-type REE-P-U mineralisation. *unpublished Arafura Resources Report* ARU 12/016.

Lindsay-Park K, 2005. Year 3 Annual Report for EL 9725 and EL 10136 Hammer Hill Project, Northern Territory. *Exploremin Pty Ltd Report* EPL-05/172.

Maidment DW, Williams IS and Hand M, 2004. The Harts Range Metamorphic Complex – a Neoproterozoic to Cambrian rift sequence in the eastern Arunta Region. In TJ Munson and I Scrimgeour (Editors), Annual Geoscience Exploration Seminar (AGES) 2004. Record of Abstracts. *Northern Territory Geological Survey Record* 2004-001.

Mawby J, Hand M, Foden J and Kinny P, 1998. Ordovician granulites in the eastern Arunta Inlier: a new twist in the Palaeozoic history of central Australia. *Geological Society of Australia, Abstracts* 49, 296.

Mawby J, Hand M and Foden J, 1999. Sm-Nd evidence for Ordovician granulite facies metamorphism in an intraplate setting in the Arunta Inlier, central Australia. *Journal of Metamorphic Geology* 17, 653-668.

Miller JA, Buick IS, Williams IS and Cartwright I, 1998. Re-evaluating the metamorphic and tectonic history of the eastern Arunta Block, central Australia. *Geological Society of Australia, Abstracts* 49, 316.

Rich B, 2010. Hammer Hill Project, EL 9725, EL 10136 and EL 26520, Year 8 Annual report for the period 13 February 2009 to 12 February 2010. *unpublished report, Mithril Resources Ltd.*

Scrimgeour I, 2003. Developing a revised framework for the Arunta Region. In TJ Munson and I Scrimgeour (Editors), Annual Geological Exploration Seminar (AGES) 2003, Record of Abstracts. *Northern Territory Geological Survey Record* 2003-001.

Scrimgeour I and Raith JG, 2001. High-grade reworking of Proterozoic granulites during Ordovician intraplate transpression, eastern Arunta Inlier, central Australia. In. JA Miller, RE Holdsworth IS Buick and M Hand (Editors). *Continental Reactivation and Reworking*. Geological Society, London, Special Publications 184, 261-287.

Shaw RD, Stewart AJ and Black LP, 1984. The Arunta Inlier: a complex ensailic mobile belt in central Australia. Part 2: tectonic history. *Australian Journal of Earth Sciences*, 31, 457-484.

Stewart AJ, Shaw RD and Black LP, 1984. The Arunta Inlier: a complex ensailic mobile belt in central Australia. Part 1: stratigraphy, correlations and origin. *Australian Journal of Earth Sciences*, 31, 445-455.