ARGANARA PROJECT
EL24726 Arganara
PARTIAL RELINQUISHMENT REPORT FOR PERIOD ENDING 31ST MARCH 2010

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Map Sheets: Zone 53
1:250,000 Elkedra SF53-07
1:100,000 Elkedra 5955
1:100,000 George Creek 6055
1:100,000 Ammaroo 5954
1:100,000 Sandover 6054

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SUMMARY

The Arganara Project comprises two granted exploration licenses. Exploration license EL24726, Arganara, was applied for by Arafura Resources Limited on 12th May 2005 and granted on 1st April 2008. It was then transferred to NuPower Resources Limited on 3rd April 2008, as a result of the demerger of certain uranium assets from Arafura and the formation of the new company. Exploration license EL25664, Mt Alone, was applied for by Imperial Granite and Minerals Limited on the 19th October 2006. The title was granted on 23rd August 2007. The license was then purchased by NuPower Resources from Imperial Granite and Minerals and NuPower became the effective owner on 12th December 2007. Subsequently 96 blocks have been recommended for relinquishment from EL24726, and 60 blocks have been relinquished from EL25664. This report deals with the partial relinquishment of 96 blocks from EL24726.

The project area lies within the southeastern part of the North Australian Platform Cover successions of the highly folded Proterozoic Hatches Creek Group of the Davenport Province, unconformably overlain by flat lying Palaeozoic sediments of the Georgina Basin. The Hatches Creek Group, of limited extent on Arganara, consists of shallow marine-fluvial sediments with interlayered felsic and mafic volcanics, intruded by felsic and mafic sills and granite plutons, one of which, the Elkedra Granite outcrops in the southern part of Mt Alone and the centre of Arganara. The Hatches Creek Group and sills within it were initially folded about northwest trending axes into several major upright, open to tight synclines, anticlines and then subsequently refolded about northeast trending axes and faulted into a complex terrain of arcuate domes and basins during an orogeny dated between 1800-1650Ma. This deformation was accompanied by regional metamorphism to greenschist facies and occurred prior to emplacement of the Elkedra Granite. The sediments are represented by six formations of the Ooradidgee Subgroup, seven formations of the overlying Wauchope Subgroup and three formations of the succeeding Hanlon Subgroup with a total thickness of at least 10,000 metres. The group is typified by ridge-forming arenites separated by recessive sediments and volcanics. Widespread cross bedding, ripple marks, bedding planes with mudstone or siltstone pellets, rare stromatolites, and occasional pebbly-conglomeratic beds indicate that most sediments were deposited in shallow water. Units of the Wauchope and Hanlon Subgroup are present in the relinquished areas.

Cambrian-Ordovician sedimentary units of the Georgina Basin are extensive throughout Arganara. Two formations are present. The Early-Mid Cambrian Andagera Formation ranges from 5-40m thick, shows marked lateral variations in thickness and lithology and typically forms mesas and hills. The main lithology consists of thick bedded to massive, poorly sorted, oligomictic cobble conglomerate of subangular to well rounded clasts up to boulder size of mostly silicified arenites sourced from local Hatches Creek Group rocks, with a sparse friable matrix of sand and granules. Crude cross beds with high angle foresets up to 20 degrees are common. The formation represents fluvial and scree deposits that formed fans and terraces flanking Proterozoic ridges. Limited in extent it occurs in the north and southeast of the project, including the areas relinquished.

Mid Cambrian-Lower Ordovician rocks, formerly mapped as Sandover Beds, are confined to the flanks of the Whisky Camp and Rockhole Anticlines in the north where they form similar mesas and plateaux but are extensive throughout the south and beneath shallow alluvial and colluvial cover in the southeast. Subdivided into four main units the Sandover Beds now comprise the lowermost Arthur Creek Formation, overlain successively by Chabalowe, Arrinthrunga and Tomahawk Formations. Only the lowermost Arthur Creek Formation is present here, including the areas relinquished, disconformably overlying the Andagera Formation and consisting of fossiliferous organic-rich calcareous and dolomitic siltstone, silty limestone and silty dolostone. The formation interdigitates laterally with the Chabalowe Formation to the west beyond the tenement. Thicknesses vary from 68m to 181m as reported from drill holes. The formation is generally flat-lying or has dips of 2-5 degrees to the south and southeast. Weathering is deep, the calcareous matrix is mostly leached and pyrite and carbon are oxidized leaving a whitish to yellow-brown siltstone and claystone. Chert (silicification) is developed near surface and rarely at depth in the weathered zone. Outcrop is therefore poor comprising surface rubble of weathered or silicified
siltstone. Thin coquinites, usually solidified, are present in several areas and outcrops of thin biosparite and other limestones are present around Limestone Bore in the western part of Arganara. Two distinct facies have been identified; anaerobic and aerobic. The anaerobic facies from the deeper part of the basin consists of dark grey-black, finely pyritic, calcareous and dolomitic siltstone and calcareous mudstone with very fine millimeter-scale lamination. Carbonaceous content is very high and generally increases towards the base. The aerobic facies however is subtidal, highly fossiliferous, and bioturbated throughout with lower organic carbon content. Dark grey to black thinly laminated to wavy bedded calcilutite, dololutite, and fine grained calcarenite and dolarenite are interbedded with light grey boiclastic and peloidal medium grained calcarenite and dolarenite.

The Arthur Creek Formation is the target of phosphate mineralization in thin phosphorite horizons. Quaternary colluvial sand, soil and gravel form gently sloping fans alongside ridges and hills throughout the area and are weakly incised by watercourses. Red earth soils form a mantle up to 10m thick over the mature deeply weathered plain in the south in the headwaters of George Creek. The soils contain variable amounts of small ferricrete granules derived from lateritised sandstone and siltstone of the Arthur Creek Formation underlying the soil. Areas of calcareous soils overlie more calcareous and carbonate-rich Cambrian sediments. Alluvium and alluvial soils have accumulated along watercourses and spread out over floodplains throughout the area. These floodplains are dissected by wide meandering channels filled with sand and gravel and many palaeochannels are evident.

Mineralisation is limited to quartz-wolframite veins with minor tantalite in the Elkedra Granite at the abandoned Juggler Mine and a small copper prospect nearby in the Rooneys Formation of the Ooradidgee Group. Gem quality turquoise was mined from the Arthur Creek Formation at the Tosca Mine and high grade phosphorite was intersected in drill holes at the Ammaroo Prospect also from the Arthur Creek Formation. Rock chip sampling of the Cobalt Bloom Prospect northeast returned elevated values of Cu, Zn, Co and Ag as a result of surface enrichment in Supplejack Creek northwest of Supplejack Bore. There is no known mineralisation in the areas relinquished.

NuPower was initially interested in the uranium potential on the basis of widespread airborne uranium and thorium radiometric anomalies identified by NTGS surveys associated with the unconformity between the Newlands and Treasure Volcanics of the Hatches Creek Group and the overlying Andagera and Arthur Creek Formation of the Georgina Basin. Reconnaissance field work in Year 1 through both tenements has shown that the radiometric anomalies from these volcanic rocks are related only to variations in background radioelement content that are of no economic significance.

More significantly however are anomalies in the Cambrian sediments, although of similar origin, that are elevated locally in phosphatic units and the overlying Tertiary regolith derived from Cambrian phosphatic horizons where uranium and thorium have been further enriched in ferruginous zones. Further reconnaissance in Year 1 identified phosphatic sediments with encouraging low grade phosphate grades at several locations. This together with the results of previous explorers including drill intersections of significant phosphate grades at the Ammaroo Prospect raised the potential for significant deposits of phosphate.

Although the reconnaissance exploration is incomplete areas were selected for relinquishment at the end of Year 2 on the basis that these areas either lacked significant extents of prospective Cambrian sediments, or where the Cambrian is extensive that the areas lacked significant radiometric anomalies as indicators of the presence of phosphatic horizons. There has been no exploration work on these areas by NuPower.
INTRODUCTION

The NuPower Resources Ltd Arganara Project comprises two granted tenements;

EL 24726 Arganara (100% NuPower)
EL 25664 Mt Alone (100% NuPower)

This partial relinquishment report refers to EL24726, Arganara.

BACKGROUND

The Arganara tenement was originally applied for by Arafura Resources Ltd as part of its Ni-PGE-gold exploration program in the Kurinelli region focused on mineralisation in the Kurinelli Goldfield situated 140 kilometres SE of Tennant Creek. Gold was discovered at Kurinelli over 100 years ago but the region has been subjected to only limited, spasmodic attention since that time. Historical activity centred on gold mineralisation within quartz veins which characteristically occur within interlayered sandstone/siltstone (Rooneys Formation) and conformable gabbro/dolerite of the Hatches Creek Group. The two main mines were the Kurinelli Mine and the Dempsey’s Choice Mine the combined production from which totaled about 400 ounces of gold. Current activity by local prospectors in the area is directed towards recovery of gold nuggets from shallow alluvial and colluvial deposits using metal detectors.

Arafura also held EL9709, formerly located in the headwaters of George Creek 160km SW of Kurinelli over the southern part of the current Mt Alone area, for the same basement rocks as those at Kurinelli and considered this area prospective for the same Ni-PGE mineralisation as at Kurinelli and Ni-Cu mineralisation similar to that at Barrow Creek. This area was subsequently relinquished following an unsuccessful regional soil sampling program.

Similar units of the Hatches Creek Group which host these styles of mineralisation also surround the former area of EL9709 and were taken up by Arafura under the Arganara application.

NuPower then acquired the Arganara tenement application from Arafura Resources during the demerger process of its uranium properties. During its regional assessment of this area NuPower noticed that uranium and thorium radiometric anomalies from the NTGS airborne data associated with sedimentary units of the Cambrian Georgina Basin where they directly overlie Newlands Volcanics of the Hatches Creek Group, extended westwards into EL 25664. The license was offered for sale to NuPower by the title holder and NuPower acquired the area for its uranium potential to compliment its Arganara property.
LOCATION AND ACCESS

The Arganara Project is located approximately 300 kilometres northeast of Alice Springs (Figure 1). Access from the south is north via the Stuart Highway from Alice Springs for approximately 70km, then eastwards on the Plenty Highway for 30km of sealed road and then generally northeastwards on the unsealed Sandover Highway for approximately 220km to Ammaroo Station. Access to the centre of the area is then a further 60km via the unsealed George Creek road from Ammaroo to Elkedra Station that bisects the license area (Figure 2).

Access to the area is also via the unsealed road to Murray Downs station which leaves the Stuart Highway 150km south of Tennant Creek, via Ali Kurung for 55km and then the Davenport Loop Road that forks a short distance after Murray Downs Station.

Bush tracks, station bore roads and graded fence lines offer further limited access. 4WD access is also possible throughout most of the area although overall access is generally impossible through January to April as a result of scattered seasonal rainfall that disrupts passage on roads and tracks.

Airstrips for light planes are located at Elkedra, Ammaroo and Derry Downs Stations (now acquired by Ammaroo).
Figure 1 - Location of Arganara Project, NT
Figure 2 – Arganara Project, Location of EL25664, Mt Alone, EL24726, Arganara
TOPOGRAPHY AND DRAINAGE
The project area is situated at the southeast end of the Davenport Ranges. Topography throughout is characterized by low relief rising from around 400-450m ASL to a spot height of 499m ASL at Mt Alone. The southern part is flat at around 400m ASL. The northern and western parts are drained by George, Rockhole, Newlands Trew and Andagera Creeks and their tributaries. There George Creek assume a northeasterly direction in the northern part of the area controlled by low rolling strike ridges, similar to Rockhole Creek. These creeks flow for short periods during summer discharging into the Elkedra River. Permanent waterholes are present in the downstream part of George Creek in the northern part of the area. Topography in the south includes mesas formed by cappings of Cambrian sediments, especially conglomerate.

Station bores in the project area include Rockhole, Supplejack, Fitz and Whiskey Camp Bores in the north, and McRob, Limestone, and Discovery Bores in the south.

CLIMATE AND VEGETATION
The climate is mainly dry all year round with hot summers and cool to cold winters. Average annual rainfall for the Elkedra region, taken from the Ali Kurung and Barrow Creek Bureau of Meteorology weather stations ranges from 315-385mm most of which falls in the November to March period. Average minimum and maximum temperatures in summer are 24°C and 38°C degrees while corresponding winter average temperatures are 7°C and 24°C.

Vegetation comprises three main communities. The dominant type extending from the north to the southeast is a low open Eucalyptus woodland with sparse Acacia shrubland and spinifex (Trioda spicata and Trioda pungens) hummocky grassland understory. In the south west tall open Mulga shrubland with Woolybutt open grassland understory passes eastwards into soft spinifex and curly spinifex hummocky grassland with tall sparse Acacia shrubland overstory. Low open Coolibah woodland with open grassland understory is predominant around the lower parts of the George and Newlands Creeks in the northeast part of the area.
TENURE

EXPLORATION LICENSE
Exploration license (EL) 24726, Arganara, was applied for by Arafura Resources Limited on 12/05/05 and granted on 01/04/08 for a period of 6 years comprising 430 blocks covering an area of 1374 square kilometers. It was then transferred to NuPower Resources Limited on 03/04/08, (Figure 3).

An application for a partial reduction of 96 blocks at the end of Year 2, representing about 22% of the granted area was submitted on 26th February 2010. This was confirmed on 25th April 2010, (Figure 4).
Figure 3 - Arganara EL 24726 Application Area
Figure 4 - Arganara, EL24726, Partial Relinquishment and Areas Retained
Figure 5 - Arganara Project, Pastoral Stations
LAND TENURE
The exploration license covers parts of the following pastoral leases (Figure 5):

- Derry Downs Station, NT Portion 1289, PPL 1107. Owned by DA and CM Weir, Ammaroo PMB 154 Alice Springs NT.
- Elkedra Station, NT Portion 3431, PPL 1000, via Alice Springs, NT 0870. Owned by Roy Driver, via Tennant Creek 0861.
- Ammaroo Station NT Portions 749 & 1290, PPL 1105. Owned by DA and CM Weir, Ammaroo PMB 154 Alice Springs NT.

NATIVE TITLE
An Exploration Agreement between NuPower Resources Ltd and Central Land Council (representing the Native Title Holders of the land) was signed between both parties on 11th July 2008.

This agreement covers both Exploration licenses in NuPower’s Arganara Project area i.e. EL25664 and EL24726.

A Native Title Claim (NTD 6069/01), Tribunal No. DC01/69 was lodged that covers the entire project area on 19/12/2001.

An ILUA (EP127 and 128) by NT Oil Ltd that covers the southern part of the project area was lodged on 24/07/2007.

ABORIGINAL SACRED SITES
An inspection of the AAPA Register of Sacred Sites indicates that there are 10 registered sites, 31 recorded sites and two exclusion zones one of which covers an extensive area around the Tosca Mine. Some of the Sacred Sites in the southern part lie close to areas of interest to Nupower.

The Exploration Agreement with the CLC further requires NuPower to commission the CLC to undertake sacred site surveys on the license area prior to any drilling operations or detailed hard rock reconnaissance surveys.

GEOLOGICAL SETTING
REGIONAL GEOLOGY
The project area lies within the southeastern part of the North Australian Platform Cover successions (Figure 6) of the Davenport Province, a major Proterozoic tectonic unit with deposits of tungsten, gold and minor occurrences of copper, bismuth, silver-lead and molybdenum. This basement comprises mostly Hatches Creek Group consisting of shallow marine-fluvial sediments with interlayered felsic and mafic volcanics, intruded by felsic and mafic sills and granite plutons, one of which, the Elkedra Granite, is dated at 1640Ma.

The Hatches Creek Group outcropping in the central and northern part of EL24726 is represented by six formations of the Ooradidgee Subgroup, seven formations of the overlying Wauchope Subgroup and three formations of the succeeding Hanlon Subgroup with a total thickness of at least 10,000 metres. The group is typified by ridge-forming arenites separated by recessive sediments and volcanics. Widespread cross bedding, ripple marks, bedding planes with mudstone or siltstone pellets, rare stromatolites, and occasional pebbly-conglomeratic beds indicate that most sediments were deposited in shallow water. The Hatches Creek Group and sills within it were initially folded about northwest trending axes into several major upright, open to tight synclines, anticlines and then subsequently refolded about northeast trending axes and faulted into a complex terrain of arcuate domes and basins during an orogeny dated between 1800-1650Ma. This deformation was accompanied by regional metamorphism to greenschist facies and occurred prior to emplacement of the Elkedra Granite.
This is unconformably overlain extensively by flat lying Cambrian sedimentary successions of the Georgina Basin comprising conglomerate and sandstone of the Early-Mid Cambrian Andagera Formation and sandstone, chert and siltstone of the Mid Cambrian Mt Arthur Formation.

Plains and valley floors are covered by surficial Cainozoic-Quaternary sediments.
Figure 6 - Geological Regions of the Northern Territory (Ahmad and Scrimgeour, 2004), approximate location of the Arganara Project.
LOCAL GEOLOGY
(from Blake & Horsfall, 1987), (Figure 7).

PROTERozoIC

Ooradidgee SubGroup
The oldest rocks in the project area are represented by three formations of the Ooradidgee SubGroup exposed in the Tosca Anticline/Dome in the southern-central part of the area and intruded by the Elkedra Granite. This subgroup is represented by a partly interfingering sequence of mostly fluvial sedimentary and volcanic rocks probably exceeding 6000m thick. The lowermost Rooneys Formation forms a series of low strike ridges comprising thinly bedded micaceous arenite and siltstone of probable deltaic origin and felsic porphyry (possibly intrusive). Spotted mica schist and quartzitic hornfels are developed within 100m of the Elkedra Granite. Rooneys Formation is overlain by ridge-forming Kurinelli Sandstone consisting of well-bedded feldspathic arenite that includes minor siltstone and felsic volcanics. This is in turn overlain by the Treasure Volcanics comprising variably recessive, subaerial porphyritic flow banded rhyolite lava flows, tuffs and agglomerates and rhyolitic ignimbrites with interlayered quartzose-volcaniclastic arenites and pebbly to conglomeratic arenites. This subgroup is absent from the areas relinquished.

Wauchope Subgroup
Unimbra Sandstone, the lowermost formation of the overlying Wauchope Subgroup and up to 1500m thick, is also exposed in the Tosca Anticline where lies conformably and unconformably on the Treasure Volcanics or Kurinelli Sandstone where the volcanics are missing. The Unimbra Sandstone is the oldest of the three major sandstone ridge-forming units in the Hatches Creek Group represented by variably feldspathic/lithic medium-thinly bedded arenite and minor quartz arenite, arkose and quartz greywacke. It is intruded by rhyolitic granophyre. The Unimbra Sanstone is absent from the areas relinquished.

Newlands Volcanics, up to 2000m thick, overlie conformably the Unimbra Sandstone. They are exposed more extensively in the Tosca Anticline, the Rockhole Anticline in the central eastern part of the area and in the Whisky Camp Anticline to the north comprising generally recessive porphyritic dacitic-rhyolitic lavas and ignimbrite, bedded tuffs and minor feldspathic/volcaniclastic/tuffaceous arenite, siltstone, shale, mudstone and agglomerate. The volcanics are intruded by sili-like bodies of probably comagmatic dacitic granophyre. These volcanics underlie parts of the northern, central and southeastern relinquished areas.

Coulters Sandstone, 350-1000m thick, the second major sandstone ridge-forming units in the Hatches Creek Group, is extensive throughout the northern part of the area, conformably to disconformably overlying Newlands Volcanics. Thick-thinly bedded, well jointed, commonly cross-bedded quartz arenites predominate with subordinate recessive volcaniclastic feldspathic/lithic/kaolinitic arenite and rare pebbly arenite. Felsic volcanics appear in the upper part and a highly altered ?basaltic lava is present. The Coulters Sandstone overlies Newlands Volcanics in the northern, central and southeastern relinquished areas.

Frew River Formation, up to 600m thick, lies conformably over Coulters Sandstone but is limited to minor exposures against the Supplejack Fault in the Whisky Camp Anticline and in the nose of the Erlpunda Anticline in the western part of the area. It comprises recessive thinly bedded-laminated fine grained arenite and micaceous siltstone, cherty siltstone, mudstone, calcareous siltstone, calcarenite, limestone and dolomite. Stromatolites are present indicative of very shallow sedimentary conditions-possibly a coastal lagoonal environment. The carbonates weather to manganiferous and hematitic “gossans” as exposed at the Cobalt Bloom occurrence, northeast of Supplejack Bore in the adjacent Arganara block. This formation also includes an andesite flow or sill. This formation is confined to an isolated outcrop in the northern relinquished area.

Kudinga Basalt, the uppermost unit of the Wauchope Subgroup and 150-500m thick, lies conformably on the Frew River Formation. Generally recessive and poorly exposed on the northern limb of the Whisky Camp Anticline and in the nose of the Erlpunda Anticline it consists of
amygdaloidal basaltic lavas and minor volcanioclastic (basaltic) and micaceous arenites. The basalt is strongly lateritised and patches of calcrete are common. Fresh material is confined to corestones on low mounds. The basalt is confined to isolated areas in the northern relinquished area.

Hanlon Subgroup
Hanlon Subgroup conformably overlies the Wauchope Subgroup and appears to be entirely marine. Errolola Sandstone, 200-800m thick, forms the basal sequence and is the third major ridge forming unit although it is poorly exposed here in the Whisky Camp Anticline. It includes thin-medium and cross bedded feldspathic/lithic arenite, quartz arenite and minor recessive arenite that probably accumulated in an intertidal-subtidal environment. It is restricted to the northern relinquished area.

Alinjabon Sandstone, about 500m thick, conformably overlies Errolola Sandstone in the Erlpunda Anticline comprising interbanded, ridge-forming, quartzose to feldspathic arenite and recessive arenite, thinly bedded siltstone, mudstone, shale, altered basaltic lavas and possible calcareous beds, indicative of a shallow marine-deltaic environment. The uppermost unit of the Hanlon Subgroup and Hatches Creek Group, Lennee Creek Formation, is apparently not exposed. Recessive, it consists of deeper water, medium bedded to laminated, arenite, siltstone and shale conformably overlying Alinjabon Sandstone and may include some calcareous beds weathering to magnesite and calcrete concretions. This sandstone is absent form the relinquished areas.

Proterozoic Intrusions
High-level felsic and mafic sill-like bodies intrude the Ooradidgee and Wauchope Subgroups and the Rooneys Formation is intruded by the Elkedra Granite and an unnamed granite in the southern central part of the area. They are absent from the areas relinquished.

Of the felsic bodies, dacitic to rhyolitic granophyre and microgranite form sills and concordant bodies up to 8km along strike and 300m thick, predating the folding of the Hatches Creek Group. They are petrographically and chemically similar to the felsic volcanics of this group and are considered to be comagmatic equivalents of the extrusives with rhyolitic granophyre corresponding to the Treasure Volcanics and dacitic granophyre to the Newlands Volcanics. Such a body intrudes Newlands Volcanics exposed in the Tosca Anticline near Supplejack Bore and in the Rockhole Anticline to the east.

Mafic sills of medium-fine grained dolerite and quartz dolerite intrude Kurinelli Sandstone, Rooneys Formation and Unimbra Sandstone in the Tosca Anticline.

Elkedra Granite intrudes Rooneys Formation and dacite granophyre in the core of the Tosca Anticline, outcropping over an area of 12 square kilometres in the south of Mt Alone and extending into the Arganara tenement. It consists of an even-grained slightly megacrystic, medium-coarse grained monzogranite. It is cut by quartz-feldspar-tourmaline pegmatite and quartz-tourmaline-wolframite veins with greisen altered margins at the Juggler Mine. Contact metamorphism includes spotted schists and hornfels within 100m of the granite contact. The granite post dates folding of the Hatches Creek Group and has not been significantly deformed or metamorphosed.

Unnamed granodiorite intrudes Rooneys Formation at the Tosca Turquoise Mine on the southern border of Mt Alone and leucocratic microgranite is present 2km north of here.
Figure 7 - EL24726, Arganara, Geology, Relinquished Areas
CAMBRIAN

The Proterozoic Hatches Creek Group and intrusives are unconformably overlain by generally flat-lying Cambrian and possible Mesozoic sediments. Two Cambrian units are present.

The Early-Mid Cambrian Andagera Formation ranges from 5-40m thick, shows marked lateral variations in thickness and lithology and typically forms mesas and hills. The main lithology consists of thick bedded to massive, poorly sorted, oligomictic cobble conglomerate of subangular to well rounded clasts up to boulder size of mostly silicified arenites sourced from local Hatches Creek Group rocks, with a sparse friable matrix of sand and granules. Crude cross beds with high angle foresets up to 20 degrees are common. Minor beds and lenses of thin to very thick, immature to well sorted, friable/silicified sandstone with cross-bedding and ripple marks are also present and the formation represents fluvial and scree deposits that formed fans and terraces flanking Proterozoic ridges—the same ridges that are present today. Limited in extent it occurs in the northern, central and southeastern relinquished areas.

Mid Cambrian-Lower Ordovician rocks, formerly mapped as Sandover Beds, are confined to the flanks of the Whisky Camp and Rockhole Anticlines in the north where they form similar mesas and plateaux but are extensive throughout the south and beneath alluvial and colluvial cover in the southeast. Subdivided into four main units the Sandover Beds now comprise the lowermost Arthur Creek Formation, overlain successively by Chabalowe, Arrinthrunga and Tomahawk Formations.

Only the lowermost Arthur Creek Formation is present here, disconformably overlying the Andagera Formation and consisting of fossiliferous organic-rich calcareous and dolomitic siltstone, silty limestone and silty dolostone. The formation interdigitates laterally with the Chabalowe Formation to the west beyond the tenement. Reported thicknesses vary from 68m in drill hole ELK7 southwest of the area to 114-181m in drill holes Ammaroo 1 and 2 south of the area. The formation is generally flat-lying or has dips of 2-5 degrees to the south and southeast. Weathering is deep, the calcareous matrix is mostly leached and pyrite and carbon are oxidized leaving a whitish to yellow-brown siltstone and claystone. Chert (silicification) is developed near surface and rarely at depth in the weathered zone. Outcrop is therefore poor comprising surface rubble of weathered or silicified siltstone. Thin coquinites, usually silicified are present in several areas and outcrops of thin biosparite and other limestones are present around Limestone Bore in the western part of Arganara. Arthur Creek Formation is absent from the central relinquished area, is present in the northern area, but is extensive in the southwestern and southeastern relinquished areas.

Two distinct facies have been identified; anaerobic and aerobic. The anaerobic facies from the deeper part of the basin consists of dark grey-black, finely pyritic, calcareous and dolomitic siltstone and calcareous mudstone with very fine millimeter-scale lamination. Carbonaceous content is very high (total organic carbon up to 14%) and generally increases towards the base. Fossils are rare and this unit was deposited in a marine euxinic environment under anaerobic conditions. The aerobic facies however is subtidal, highly fossiliferous, and bioturbated throughout with lower organic carbon content. Dark grey to black thinly laminated to wavy bedded calcilutite, dololutite, and fine grained calcarenite and dolarenite are interbedded with light grey boiclastic and peloidal medium grained calcarenite and dolarenite. Nodular bedding or sedimentary boudinage is common. Quartz silt and sand content is variable and dolomite is detrital.

The abundant faunal content includes trilobites, brachiopods, hyoliths and sponge spicules. Shell material is concentrated along bedding planes, in lenticular coquina interbeds, in nodules formed by differential compaction and as fill in large burrows. Phosphatic brachiopod shells are common and non-phosphatic debris has been phosphatised locally.

The Arthur Creek Formation is the target of phosphate mineralization in thin phosphorite horizons.
Mesozoic
A unit of possible Mesozoic sediments is preserved as relicts on the outer flanks of the Whisky Creek Anticline and in the nose of the Erlpunda Anticline, comprising a 1-15m thick sequence of basal granule conglomerate overlain by fine grained and cross bedded sandstone and siltstone. The conglomerate is polymict containing rounded pebbles and cobbles of orthoquartzite, vein quartz, pegmatite and rare weathered granite. It is absent form the relinquished areas.

Cainozoic
Tertiary
Most pre-Cainozoic outcrops show evidence of ferruginisation or silicification. Ferruginisation has particularly affected the Cambrian arenaceous units and some of the recessive volcanic units of the Hatches Creek Group. Silicification is prevalent on the siltier and more carbonate-rich rocks of the Arthur Creek Formation and sandstone outcrops of the Hatches Creek Group have a silicified coating imparting a quartzitic appearance. Ferricretes forming low rises of duricrust or chert-ferricrete rubble and silcretes however are of very limited extent here.

Tertiary to Quaternary
A thin calcrete crust is common over limestones and dolostones and occurs near exposures of Kudinga Basalt. Fans of poorly consolidated alluvial and colluvial gravel, dissected by active watercourses, have accumulated on the flanks of prominent sandstone ridges and mesas and are common at Mt Alone.

Quaternary
Colluvial sand, soil and gravel form gently sloping fans alongside ridges and hills throughout the area and are weakly incised by watercourses. Red earth soils form a mantle up to 10m thick over the mature deeply weathered plain in the south in the headwaters of George Creek. The soils contain variable amounts of small ferricrete granules derived from lateritised sandstone and siltstone of the Arthur Creek Formation underlying the soil. Dense mulga covers most of these soils with a distinctive swaled growth habit. Areas of calcareous soils within the mulga plain are vegetated with gidyea that overlie more calcareous and carbonate-rich Cambrian sediments.
Alluvium and alluvial soils have accumulated along watercourses and spread out over floodplains throughout the area. These floodplains are dissected by wide meandering channels filled with sand and gravel and many palaeochannels are evident.

Mineralisation
Mineralisation is limited to quartz-wolframite veins with minor tantalite in the Elkedra Granite at the abandoned Juggler Mine and a small copper prospect nearby in the Rooneys Formation of the Ooradidgee Group. Gem quality turquoise was mined from the Arthur Creek Formation at the Tosca Mine, the only producing occurrence of turquoise in Australia, on the southern boundary of Mt Alone with Arganara and high grade phosphorite was intersected in drillholes at the Ammaroo Project also from the Arthur Creek Formation. Rock chip sampling of the Cobolt Bloom Prospect in Supplejack Creek northeast of Supplejack Bore returned elevated values of Cu, Zn, Co and Ag as a result of surface enrichment from manganiferous lateritic caps. There are no known mineral occurrences from the areas relinquished.
PREVIOUS EXPLORATION – ARGANARA PROJECT AREA
PART 1 (From Drummond 2001-03)

Prior to 1996

The application area has a poor mining history. According to the BMR (Blake & Horsfall 1987).

"A few small abandoned mines and prospects of unknown production are located in Elkedra region. At the Juggler tungsten mine in the south, wolframite occurs in a narrow quartz-tourmaline vein, bordered by greisen, within the Elkedra Granite. At a small prospect pit nearby, secondary Cu minerals impregnate sheared schistose sedimentary rocks of the Rooneys Formation. Detrital scheelite is present in stream sediments in the vicinity of the Elkedra Granite" ….and…."Turquoise has been mined at the Tosca mine. It occurs in weathered Cambrian sediments close to the unconformity with underlying Proterozoic rocks."

Possibly because of its lack of outcropping mineralisation, the area has received a comparatively low degree of exploration attention. Open File Records at the NTDME disclose the following information.


Initially, phosphate in the basal Georgina Basin was the target and although Vam discovered some, that commodity is understood not to be of interest to Arafura. During 1968 it also undertook a strong drilling and evaluation programme over the Tosca turquoise deposit, which is excluded from EL9709. It points out potential for further discoveries at the same stratigraphic level. In 1971 following air photo interpretation, IP surveys were carried out. Two areas south and east of the Tosca mine were recommended for further work in the Cambrian sandstones and ground reconnaissance was undertaken. No mineralisation of any significance was encountered. By 1971 an additional target was volcanogenic or sediment-hosted base metal deposits but it seems that no actual field exploration was actually carried out before the tenement was relinquished.

Metals Investment Holdings N L (1971) AP3228. CR71-083

The south-eastern corner of that tenement covered the north-west part of Arafura’s tenement. While it seems that the target was base metal mineralisation in, or proximal to, porphyry intrusives and/or volcanics, it seems that little field work was done.

Amoco Minerals Australia Co (1983-84) EL4043. CR84-095

Amoco considered that the Frew River Formation was a potential host for stratabound W and base metal mineralisation and its 1983 work was primarily designed to evaluate this formation, particularly its calcareous horizons. This is a generally recessive unit. Nonetheless, outcrops were located and a limited stream sediment and rock chip sampling programme found the “Cobalt Bloom” Prospect (Figure 11.1). Anomalous Cu, Zn, Co and Ba were found in a 250m wide zone. Manganiferous breccia zones returned values up to 9300 ppm Cu, 1250 ppm Zn, 4800 ppm Co and 2.55% Ba.

BHP also joint ventured into EL4043 so as to search for diamonds. It carried out a wide-spaced, helicopter-supported, heavy mineral and silt stream sediment sampling programme over the EL. A total of 32 samples in each category was collected. BHP found no indications of kimberlites and withdrew from the venture.

Shaft & Tunnel Pty Ltd (1994-95) EL8607. CR95-532

This tenement was centred around the Tosca turquoise deposit and was taken up for the purpose of exploring for additional turquoise deposits and of developing enhancement techniques for the Tosca gemstones. However the existence of an Aboriginal sacred site did not allow field assessment. Regional studies, including Cu assay of water bore drill hole cuttings, highlighted the potential for further turquoise discovery in the district.

Initial exploration concentrated on the Au potential in the Hatches Creek sequence. A Pine Creek Inlier metallogenic province model was proposed as the Davenports are early Proterozoic low grade metamorphics intruded by granites. An initial helicopter supported stream sediment sampling programme was carried out over the whole of the EL: 289 samples were collected at a sample density about three per square kilometre. Samples were assayed for BLEG Au, and a minus 80 mesh split was also assayed for a variety of other elements. No Au assay exceeded 0.6 ppb. Other elements assayed were uniformly low, even where collected close to known surface mineralisation. It considered that the base metal results may have been very subdued because of the sandy nature of the streams and Drummond considers this may also be the case for Au.

A 1992 lag sampling programme in an area close to the Elkedra Granite failed to source anomalous float rock chip samples collected in 1990. Rock chip sampling of manganiferous lateritic cappings at Amoco's Cobalt Bloom locality reported high surface enrichment of Cu, Zn, Co and Ag over one km of strike length. The Cobalt Bloom locality was selected for detailed exploration during 1992. The area was mapped at 1:2500 with rock chip sampling of manganiferous and ironstone outcrops. Ten soil lines and three lag sample lines were completed over a strike length of 2 km. Results from all surface sampling defined an anomalous Cu and Co zone which could be traced for nearly 1.5 km. A combined IP and SIROTEM survey was then completed and a number of shallow anomalies were defined.

Eleven percussion holes and one diamond hole tested both the surface and geophysical anomalies. All holes intersected an oxidised sequence of fine grained siltstones, dolarenites and arenites. Although moderately anomalous the values for Cu, Co and Zn were disappointing.

Best values were as follows:

<table>
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<th>Hole</th>
<th>From m</th>
<th>To m</th>
<th>Width m</th>
<th>Cu ppm</th>
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<td>828</td>
<td>234</td>
<td>465</td>
<td>38</td>
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As there was little correlation between drill results and the IP-SIROTEM survey, a more detailed IP survey was carried out in late 1993. It was then concluded that the chargeability sources were due to the surficial Mn in outcrop and the tenement was relinquished.


The area was selected by Luina following a review of the geology of the area in which it interpreted geological similarities between the felsic volcanics in the early Proterozoic Hatches Creek Group and similar rocks in the Drummond Basin in central Queensland. There, several significant epithermal-style Au deposits (Wirralie, Pajingo, Yandan, Twin Hills) were located using BLEG geochemical search techniques which are well suited to searching for fine Au in weakly metamorphosed areas. It established the Newlands and Arabulja Volcanics and interlayered sediments in the Wauchope Sub-group and, to a lesser extent, the Treasure and Edmirringe Volcanics in the Ooradidgee Sub-group as potential targets for epithermal systems and associated Au mineralisation.

Observations by the BMR (Blake 1988) reinforced Luina's model as the former considered it recognised hydrothermal alteration and silicified fumarolic deposits. The BMR also interpreted volcanic centre. Most of Luina's tenement lay north-west of EL9709. However BLEG sampling of the Newlands Volcanics in the Whisky Creek Anticline in EL9709 was carried out and returned anomalous Au values.

North targeted stratiform base metal deposits within sediments of the Hatches Creek Group, especially the recessive Frew River and Lennee Creek Formations. EL8146 was coincident with a wedge of sediments along the Erldunda Syncline on the northern edge of EL9709, and a few kilometres east of Luina’s tenement.

North’s sampling density was relatively low but it remarked that it found no evidence of significant base metal mineralisation. It also pointed out that extensive deposits of aeolian sand over the recessive units reduce the effectiveness of soil geochemistry. To conclusively test the recessive units, it concluded that a programme involving shallow RAB/aircore drilling accompanied by airborne EM may be required.

BHP Gold (1991)

BHP Gold’s major stream geochemical appraisal of the Davenport Province included coverage of Supplejack. The base metal anomaly associated with the Cobalt Bloom Prospect was found to be considerably more extensive than had been indicated by AMOCO. Its orientation does not necessarily coincide with the inferred disposition of only the Frew River Formation, and a structural input can be presumed.

A significant anomaly occupies the central north part of the tenement. No follow-up of the anomalies was undertaken by BHP Gold/Newcrest and, as results were not reported to NTDME, the subsequent explorers were not able to utilise the data.

PART 2 OTHER OPEN FILE REPORTS

CR196800051/52 AP2000 M E Morrison 1968 to 1971
This tenement overlapped most of Elkedra and extended to the north and west. Exploration was initially directed at extending the turquoise resource at the Tosca Mine but expanded to include 7 scout drill holes southwest of the mine in an area of weak turquoise development that intersected significant phosphate mineralisation. The report includes geologic cross sections and drill hole logs.

CR19890677 EL6258 Rosequartz Mining 1988 to 1989
EL 6258 straddled the boundary between Arganara and Mt Alone. Exploration was for gold, base metals and turquoise and consisted of reconnaissance mapping and several rock chip samples.

CR19770036 EL555, EL999, EL1000 International Turquoise Pty Ltd EL 555 from 1972 to 1977, EL999 from 1974 to 1976
These three ELs overlapped most of the south of Arganara and extend to the west and slightly to the east and south. Exploration was for turquoise and uranium and included rock chip sampling and bore water sampling from 8 water bores in the area.

CR19740122 EL555 International Turquoise Pty Ltd EL5551972 to 1977
EL555 overlaid the south of Mt Alone. Work was carried out to improve/extend reserves at the Tosca Mine.

CR19840260 ELs2682, 2683, 2684 and 2850 Stockdale Prospecting Ltd 1980 to 1984(?)
The title overlapped the southwest of Arganara and extended to the west and slightly south. Exploration was for diamonds and they carried out Landsat studies and stream sediment sampling.

CR20020159, CR20040612 EL22541 Elkedra Diamonds NL 2002 to 2004
EL 22541 overlapped the central south and extended south and southeast of Arganara. There were 26 tenements in this project, mostly in the south east of the NT. Their exploration program was for diamonds, manganese and base metals. There is no relevant data for Arganara. Little field work was done in this area and there is reference to only one rock chip sample.
CR20040348, CR20040622 EL 22505 De Beers Australia Exploration Limited 2003 to 2004
This tenement overlapped the southeast of Mt Alone and extended to the east and a little south. Exploration was for kimberlite (diamonds) and they infilled the NTGS Elkedra airborne magnetic survey from 400 to 200m line spaced data with an extra 3221 line km of data over EL22505.

CR19850272 EL4603 C.R.A Exploration Pty Limited 1984 to 1990
EL4603 overlapped the southeast of Arganara and extends to the east and slightly south. Exploration was for kimberlites (diamonds) and they completed airborne geophysics and aerial photography at 1:80,000. Phosphate rock and soil samples were taken but not shown in report.

CR19710070 EL2193 VAM Ltd 1969 to 1970
This tenement overlay Arganara in a central east section and again at the southwest corner and extended to the south and east. Literature search was completed and photogrammetry was carried out using government aerial photographs. Work on AP 2193 was in conjunction with APs 2000, 2018, 2190, 2192 and 2261. The target was base metal mineralisation and IP surveys were carried out. Two areas were recommended for further work and ground reconnaissance was undertaken. No mineralisation of any significance was encountered and the license was relinquished.

CR19920510, CR19930642 EL 7468 Harrow Holdings Pty Ltd 1991 to 1994
EL7468 contained within the upper middle quarter of Arganara. Their exploration was for gold and base metals and they carried out literature research, photogeological interpretation, geological reconnaissance, plus outcrop and drainage geochemical sampling that included the Cobalt Bloom Prospect. 1:100 000 geological maps are available but there were no encouraging results.

CR19940620 EL8146 North Mining Ltd 1993 to 1994
EL8146 overlapped slightly in the north and extended to the north. They were targeting stratiform base metals and completed stream sediment, soil sampling and geologic reconnaissance. There were no significant results.

PART 3 OTHER SAMPLES

RTZ Samples From Elkedra
Arafura Resources Limited provided a file of samples and assays supposedly taken by RTZ from the Elkedra region. They plot in the vicinity of a known turquoise occurrence in the northern part of Arganara.
EXPLORATION ACTIVITIES BY NUPOWER COMPLETED IN YEAR 1

NuPower compiled the results of previous exploration work from open file data available from DRDPIFR together with uranium and thorium radiometric images from the NTGS airborne surveys database and selected a series of radiometric anomalies for reconnaissance follow up. Results of that work were reported previously, (Rafferty, 2009), but this work did not include the areas relinquished.

Following recognition of the phosphate potential in the region some initial reconnaissance work was carried out and reported previously, (Rafferty, 2009), but again did not include the areas relinquished.

EXPLORATION ACTIVITIES BY NUPOWER COMPLETED IN YEAR 2

There was no on-ground exploration work on EL24726 during the reporting period, (Rafferty, 2010).

CONCLUSIONS AND RECOMMENDATIONS

Radiometric anomalies in the Proterozoic rocks of the Hatches Creek Group are of no economic significance and therefore of no further interest to NuPower.

The identification of significant intersections of phosphate mineralisation in drill holes by VAM Ltd on the Arganara tenement and the tenor of phosphate in rock chip samples taken by Nupower elsewhere on EL24726, have raised the potential for the discovery of further phosphate mineralisation at Arganara in the areas of Cambrian sediments preserved here, and is now the target of NuPower’s exploration.

It is now recognised that airborne radiometric anomalies from the Cambrian sediments and Tertiary ferricretes are associated with elevated levels of uranium and thorium in phosphatic units, and are therefore a useful guide to the presence of prospective phosphatic units.

Although reconnaissance work is incomplete, areas were nevertheless selected for relinquishment as follows;

a) The northern and central areas lack significant extent of Cambrian sediments and those sediments present lack radiometric anomalies.

b) The southwestern area is underlain by extensive Arthur Creek Formation but is devoid of radiometric anomalies.

c) The southeastern areas are underlain extensively by Cambrian Andagera Formation that is not prospective for phosphate. Minor areas of Arthur Creek Formation are present but lack any radiometric anomalies.

There has been no exploration by NuPower on these areas.
EXPENDITURE STATEMENT, YEAR 2, 2009
Expenditure details for EL24726 Year 2, 2009 and the covenant are given as an attachment in Appendix 1.

Expenditure for EL24726 for Year 2 was $16,336.15.

The covenant for EL24726 for Year 2 was $50,000.00 and therefore the covenant was not satisfied due to access issues and a letter requesting a variation of covenant was submitted along with this report.

GROUND RELINQUISHMENT
The granted area of EL24726 comprised 430 blocks. A request for partial reduction for EL24726 of 96 blocks was submitted on 26th February 2010 that was confirmed on 25th April 2010.

WARRICK RAFFERTY
MSc(Hons) AusIMM, SEG
24 June 2010
REFERENCES


## NORTHERN TERRITORY EXPLORATION EXPENDITURE
### FOR MINERAL TENEMENT

#### Section 1. Tenement type, number and operation name: (One licence only per form even if combined reporting has been approved)

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Covenant for the reporting period: **$50,000**

#### Section 3. Give title of accompanying technical report:

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<td>Author</td>
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#### Section 5. Work program for the next twelve months:

- **Activities proposed** (please mark with an "X"): x Drilling and/or costeasing
- [ ] Literature review
- [x] Geological mapping
- [x] Rock/soil/stream sediment sampling
- [ ] Airborne geophysics
- [ ] Ground geophysics
- [ ] Other:

Estimated Cost: **$50,000**

#### Section 6. Summary of operations and expenditure:

Please include salaries, wages, consultants fees, field expenses, fuel and transport, administration and overheads under the appropriate headings below. Mark the work done for the appropriate subsections with an "X" or similar, except where indicated. Complete the right-hand columns to indicate the data supplied with the Technical Report. Note overheads are not to exceed 15% of total.

Do not include the following as expenditure (if relevant, these may be discussed in Section 7):

- Insurance
- Company Prospectus
- Rent & Department Fees
- Bond
- Transfer costs
- Title Search
- Legal costs
- Advertising
- Land Access Compensation
- Meetings with Land Councils
- Payments to Traditional Owners
- Fines

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This form should accompany any Annual or Final Report

Email to: Geoscience.info@nt.gov.au

Last update: 29/04/10
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### Geochemical Surveying and Geochronology

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| Ground Exploration Subtotal        | $        |          |          |          |          |

### Drilling (state number of holes & metres)

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| Subtotal         | $        |          |          |          |          |

### Other Operations

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| Subtotal         | $        |          |          |          |          |

### Access and Rehabilitation

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| Subtotal         | $        |          |          |          |          |

### TOTAL EXPENDITURE

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Section 7. Comments on your exploration activities:

The Arganara Project was originally acquired to explore for uranium on the basis of airborne radiometric anomalies associated with the unconformity between the Hatches Creek group and the overlying Georgina Basin. Reconnaissance has proven these to be of no economic significance.

Previous exploration identified significant phosphate potential at Ammaroo in Arganara and reconnaissance by NuPower confirmed the presence of phosphate sediments of the Georgina Basin at two other locations in the project area.

The exploration focus is to now assess the potential for near surface deposits of high grade phosphate, capable of direct shipment.

A substantial program of mapping, sampling and drilling was planned for 2009 that was put off until 2010 due to the lack of a Sacred Sites Clearance Certificate from the CLC, the result of local Aboriginal issues.

I certify that the information contained herein, is a true statement of the operations carried out and the monies expended on the above mentioned tenement during the period specified as required under the Northern Territory Mining Act and the Regulations thereunder.

1. Name: Warrick Rafferty 2. Name: 

Position: Exploration Manager Position: 

Signature: 

Date: 29 April 2010 Date: 

This form should accompany any Annual or Final Report.