Cameco Australia Pty Ltd

EL 5893

WELLINGTON RANGE PROJECT

NORTHERN TERRITORY

ANNUAL REPORT

CONFIDENTIAL

Date:	June 2009
Period:	4 May 2008 to 3 May 2009
Report No.:	WR09-02
Target commodity:	Uranium
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Datum/Zone:	GDA94 (Zone 53)
Map Sheets:	1:250K Cobourg Peninsula SC5313 1:100K Wellington Range 5574
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SUMMARY

This is the fifth year of tenure for EL5893 referred to as the Wellington Range project. The licence is located in Arnhem Land approximately 100 km north northeast of the Jabiru township. The tenement was granted for a period of six years on May 5 2004 and to the end of year four there has been one statutory reduction. A ‘Partial Waiver of Reduction’ application submitted in March 2008 involved the relinquishment of 68 blocks for 216.5 km^2, all within no-go zones. This partial relinquishment was actioned on the anniversary date of 3 May 2008 with 201 blocks for an area of 639.9 km^2 being retained.

Twelve diamond core holes were drilled, two of which were abandoned due to difficulties encountered in the Cretaceous. Total meterage drilled was 3719.6 m, which included 705.3 m of rotary mud pre-collaring. The program was designed to target two main areas namely structural environments with similarities to the Aurari Fault Zone located in the eastern part of the project, and interpreted basement highs with lithological changes located northeast of the 2006 drilling in the northern part of the project. Two holes intersected uranium mineralization within the basal part of the Kombolgie Subgroup (Mamadawerre Sandstone) up to 2346ppm U_3O_8. This is one of the most significant sandstone intercepts encountered by Cameco in Arnhem Land and the prospect is now referred to as Angularli.

In the southern and central parts of the tenement 120 air core holes were drilled for a total of 3099 m. The program is an extension of previous air core holes on the tenement designed to map the basement geology through the regolith, determine it’s prospectivity by observing any alteration features and obtain samples for geochemical analysis. No indications of uranium mineralization were found.

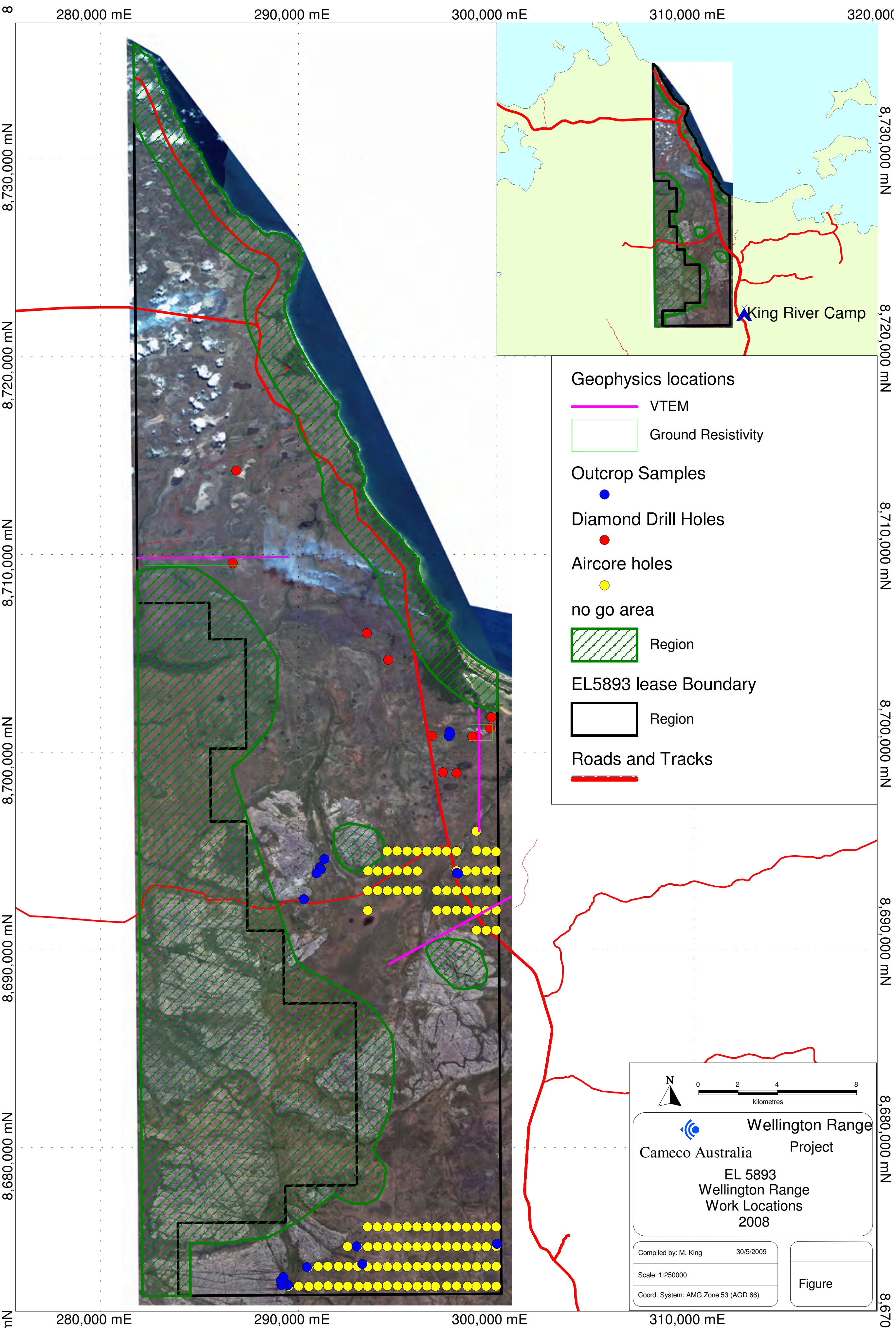
A total of 23 rock samples were collected from various outcrops/subcrops within the project. Of the samples collected, two returned elevated uranium assays as well as pathfinder trace geochemical elements.

Ground Time Domain Electromagnetic (TDEM) surveys were carried out along two lines in two separate locations within northern and eastern parts of the project totalling 8.2 km. Some subtle anomalies were identified along with a relatively strong conductor in an area to the north that has extensive cover and limited drilling.

Three orientation lines were flown with the GeoTech Airborne Limited helicopter-borne electromagnetic system called VTEM, totaling 24.9 km.

The exploration program for 2009 will likely consist of mapping and prospecting, diamond drilling, ground resistivity and detailed airborne magnetics and radiometrics. A minimum of 9 holes will be drilled focusing primarily on Angularli with additional drilling elsewhere targeting conductors from ground and airborne TDEM, where on of them will be heli-supported.

Eligible exploration expenditure for Cameco’s activities for the reporting period totalled $2,185,248.45.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King River Camp
Geophysics locations
VTEM
Ground Resistivity
Outcrop Samples
Diamond Drill Holes
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Wellington Range
Work Locations
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30/5/2009
Scale: 1:250000
Coord. System: AMG Zone 53 (AGD 66)
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INTRODUCTION

Exploration was carried out over EL5893 (Wellington Range) for the year ending 3rd May 2009.

Location and Access

Wellington Range (Figure 1) is located in western Arnhem Land, and centred 100 km north northeast of Jabiru.

Relevant map sheets are:

- 1:250K Cobourg Peninsula SC5313
- 1:100K Wellington Range 5574
- 1:50K Laterite Point

Figure 1 - Wellington Range Location Map

The unsealed road to Gurig National Park on the Cobourg Peninsula provides good vehicular access to the eastern margins of the tenement. Several east to west trending roads and tracks provide additional access. In general sandstone escarpment areas are only accessible by helicopter.

Tenure

EL5893 was granted on 5 May 2004 for an initial period of six years. On granting, the total area under licence was 269 blocks for 856.4 km^2 of which 378.8 km^2 (44%) was excluded from exploration by the Northern Land Council. The current area available for exploration is 477.6 km^2.

Cameco applied for a ‘Partial Waiver of Reduction’ in March 2008, involving the relinquishment of 68 blocks for 216.5 km^2, all within no-go zones in the project. This partial relinquishment was actioned on the anniversary date of 3 May 2008 with 201 blocks for an area of 639.9 km^2 being retained.

Physiography

The tenement contains some large remnant areas of dissected sandstone plateau, which form the western extension of the Wellington Range. The remainder consists predominantly of gently undulating country covered by savannah woodland. The principal drainage systems within the region are Angularli creek draining to the east and Murgenella Creek draining to the west.

Regional Geology

This section is largely based on the work by Needham et al. (1988), Needham (1998, 1990), and Needham and Stuart-Smith (1980). Information that is not based on these references have been indicated below.

The Wellington Range project area is located within the eastern margin of the Neoarchean and Paleoproterozoic Pine Creek Orogen, in a region that has been subdivided into the Nimbuwah Domain of the Alligator Rivers region.

The Bureau of Mineral Resources (now Geoscience Australia) completed 1:250 000-scale geological maps of the Pine Creek Orogen between the 1940s and 1960s following the discovery of uranium at Rum Jungle. The Alligator Rivers region was systematically mapped by the Bureau of Mineral Resources and the Northern Territory Geological Survey between 1972 and 1983. This later work produced 1:100 000-scale geological maps and reports for the region from Darwin to Katherine to the Alligator Rivers region.

Figure 2 - Regional Geology and Structures

The oldest exposed rocks in the Alligator Rivers region are included in the Neoarchean (ca. 2500 Ma) Nanambu Complex. The complex consists of paragneiss, orthogneiss, migmatite, and schist forming domical structures that are unconformably overlain by Paleoproterozoic metasedimentary and metavolcanic rocks, which were formerly included in the Pine Creek Geosyncline. Paleoproterozoic rocks in the Alligator Rivers region are amphibolite-facies psammites assigned in the Mount Howship Gneiss and the Kudjumarndi Quartzite. These formations are included in the Kakadu Group and are probably correlatives of the Mount Basedow Gneiss and Munmarlary Quartzite, respectively (Ferenczi et al., 2005). The group appears to on-lap Neoarchean basement highs, but gneissic variants are also thought pass transitional into paragneiss of the Nanambu Complex.

The Cahill Formation of the Namoona Group conformably overlies the Munmarlary Quartzite. The lower part of the Cahill Formation (informally referred to as the Lower Cahill Formation) hosts the Nabarlek, Ranger and Jabiluka uranium deposits. The Lower Cahill Formation consists of a structurally lower calcareous marble and calc-silicate gneiss, which is overlain by pyritic, garnetiferous and carbonaceous schist, quartz-feldspar-mica gneiss, and minor proportions of amphibolite.

The informally named Upper Cahill Formation is psammitic and consists of feldspar-quartz schist, quartzite, lesser proportions of mica-feldspar-quartz-magnetite schist, and minor proportions of metaconglomerate and amphibolite. The Cahill Formation is magnetic and significantly so at the base of psammitic unit in what is informally known as ‘hangingwall sequence’. The magnetic characteristic of this unit is due to the presence of mafic sills or magnetite and it is a useful characteristic used to distinguishing the Cahill Formation from surrounding less magnetic rocks (Kendall, 1990). Mafic sills and dykes assigned to the Goodparla and Zamu dolerites intrude the Upper Cahill Formation.

The Nourlangie Schist overlies the Cahill Formation and consists of argillaceous to quartzose phyllite and quartz-mica schist that locally contain garnet and staurolite.

The supercrustal rocks of the region are structurally complex, having been affected by at least three deformation event before deposition of the late Paleoproterozoic to Mesoproterozoic Kombolgie Subgroup (Thomas, 2002). The rocks have also been locally migmatization during the ca. 1847 +/-30 Ma Nimbuwah Event. In addition, there is a broad trend of increasing grade from southwest to northeast in the Nimbuwah Domain. This gradient is thought to reflect the synchronous emplacement of ca. 1865 Ma granites in the Nimbuwah Complex.

The Kombolgie Subgroup is the basal unit of the late Paleoproterozoic to Mesoproterozoic Katherine River Group of the McArthur Basin (Sweet et al., 1999a, b). The subgroup consists of sandstone units called the Mamadawerre Sandstone, Gumarrirnbang Sandstone, and Marlgowa Sandstone, which are divided by thin basaltic units called the Nungbalgarri Volcanics, and Gilruth Volcanics. The Mamadawerre Sandstone has a minimum age of ca. 1700 Ma, which is the minimum age of the intrusive Oenpelli Dolerite. Detrital zircon SHRIMP data from the GA OZCRON database constrain the maximum age of the sandstone at ca. 1810 Ma.

The Oenpelli Dolerite is the most pervasive mafic intrusive suite to affect the Alligator Rivers region and is the youngest Proterozoic rock unit exposed. It intrudes various units Neoarchean and Paleoproterozoic units, and the Kombolgie Subgroup, forming magnetic sills, dykes, lopoliths, and laccoliths. The Oenpelli Dolerite has a SHRIMP U-Pb baddeleyite date of 1723 ± 6 Ma (Ferenczi et al., 2005), however, geochemical and geophysical data suggest several phases of intrusion throughout the region. These intrusive events had a pronounced thermal effect within the Kombolgie Subgroup, with the promotion of fluid flow and aquifer or aquitard modification. Localized effects in the sandstone include silicification, desilicification, chloritization, sericitization, and pyrophyllite alteration. A characteristic mineral assemblage of prehnite-pumpellyite-epidote has formed in the quartzofeldspathic basement rocks adjacent to the intrusions.

Major regional faults, which affect the early Proterozoic, have north-west (Bulman), north-north-west (Aurari) and northerly (Anuru, Goomadeer) trends. Another significant set trends to the east and includes both the Ranger and Beatrice faults. The Bulman Fault Zone is the principle regional feature and is considered to represent a long-lived deep crustal structure, which has exerted a large lateral component in rocks of the Pine Creek Inlier.

A more intense concentration of structures traverse the mid-Proterozoic and younger rocks and include northwest, east, northeast and northerly trends. Faulting and jointing with displacements ranging from a few metres up to 100 meters dissect the Kombolgie.

Local Geology

The basement geology of the Wellington Range project has been clarified in the last two years from regional diamond core and air core drilling by Cameco. The diamond drilling programs have and will continue to be guided by mineralization as well as interpreted geophysics, specifically airborne magnetics and gravity and ground-based EM surveys.

Interpreted lower Proterozoic Cahill Formation rocks form an arcuate linear trend, which parallels the northwestern boundary of the project. Recent drilling has shown these rocks to consist of characteristic Cahill Formation ‘marker’ horizons such as the magnetic pelite and an underlying carbonate-calcsilicate unit. Graphitic structures and a semipelitic graphite bearing unit are also present at different stratigraphic levels. The bulk of the sequence however consists of pelitic and semipelitic rocks with minor psammite and interlayered amphibolite. Intrusive rocks include pegmatite and dolerite. The intersected stratigraphy suggests that both Upper and Lower Cahill Formation rocks are present.

A flaggy quartzite has been observed outcropping at or near the Kombolgie Subgroup sandstone unconformity on the western side of the tenement adjacent to the escarpment. These isolated outcrops have been mapped as Cahill Formation by the BMR in the 1970s, however it is uncertain where they fit into the stratigraphic succession. Quartzitic rocks have been cored in some of the Wellington Range drill holes and well scattered outcrops of flaggy quartzite were mapped by PNC geologists near the top of the Myra Falls Metamorphics succession on the King River licence (SEL 25064). Correlation of these "quartzites" in the region may provide an idea as to where the Wellington Range intercepts of Cahill Formation are in relation to the middle Proterozoic unconformity.

Granitoid and quartzofeldspathic gneisses and some migmatite of the early Proterozoic Nimbuwah Complex form the basement rocks in the southern part of the tenement. Large sill-like bodies of Oenpelli Dolerite intrude the basement.

The basal Mamadawerre Sandstone of the Kombolgie Subgroup forms the Wellington Range escarpment, which dominates the southwestern quarter of the project. Several smaller isolated outcrops of sandstone occur in the southeast. In places along the unconformity a prominent cobble conglomerate has been mapped.

Up to 300 m of Cretaceous sediments, equated with the Bathurst Island Formation, obscure the basement geology in the northern part of the Wellington Range tenement. The sequence consists principally of dark coloured micaceous mudstone with intercalated thin sandy beds. Other lithotypes include calcareous sandstone, siltstone and green glauconitic sandstone.

Recent cover materials include sands, clay, gravel and cemented ferruginous deposits.

Figure 3 - Wellington Range Local Geology Map

PREVIOUS EXPLORATION

Interpretation of government funded geophysical surveys was carried out by Mobil Energy Minerals Australia in the early 1980s. There is no known record of whether this work was followed up on the ground. McIntyre Mines was also active in the region investigating radiometric anomalies linked to conglomeratic beds in the Kombolgie Sub-group. Substantial exploration programmes were completed immediately east and south of the present tenement boundaries. For example, during 1970-1972, Union Carbide Exploration Corporation, explored for uranium in the King River area, now held by Cameco. This work included airborne magnetics and radiometrics with follow-up geochemical surveys, geological mapping, and drilling.

Exploration work conducted by Cameco in the first year of tenure (2004) included airborne radiometric, magnetic and hyperspectral surveys. Ground follow-up of radiometric anomalies and systematic rock sampling was also completed. A total of 89 outcrop samples, mostly sandstone, were collected for geochemical analysis. Nothing of significance was found.

Work for the second year of tenure (2005) included a TEMPEST airborne EM survey and detailed interpretation of the airborne magnetics, the latter activity providing a basis for year three (2006) planning.

Work for the third year of tenure (2006) encompassed three fences comprising 13 pre-collared diamond drill holes. The holes targeted a linear, approximately north-south trending magnetic feature, interpreted to correlate with a more regional trend representing the lower portion of the Upper Cahill Formation. The results of the drilling proved significant with the predicted Cahill Formation being intersected in the majority of holes confirming stratigraphy similar to that hosting several of the uranium deposits of the ARUF. Gneissic terranes were confirmed to enclose the trend both to the east and west. Airborne gravity was completed over the northern part of the project.

Work for the fourth year of tenure (2007) consisted of eight diamond core drill holes targeting the Cahill Formation magnetic trend, 71 air core holes to clarify geology and acquire geochemistry and rock outcrop sampling. A ground EM survey was conducted along one line targeting the graphitic unit. Table 1 gives a summary of all Exploration work completed by Cameco Australia.

Table 1 - EL5893 Summary of Exploration Work Conducted to Date

WORK CONDUCTED

Work conducted in 2008, shown in Figure 4, consists of twelve diamond core drill holes, 120 air core holes, rock outcrop sampling, a ground EM survey and some orientation airborne EM lines using VTEM.

Figure 4 - 2008 Work Locations

The collection of samples and subsequent analysis was performed using Cameco standard methodology. Drill codes used during the logging are detailed in Appendix 1. All samples were submitted to Northern Territory Environmental Laboratories (NTEL) in Darwin for geochemical analysis. The laboratory sample preparation, analytical methods and techniques and analysed elements are detailed in Appendix 2 through to 4. Details regarding the reflectance spectroscopy measurements and interpretation are shown in Appendix 5 and 6 respectively. Logging grain size and competency codes are outlined in Appendix 7. Selected samples were assessed by Pontifex and Associates Pty. Ltd. whose report is tabled as Appendix 8.

Appendix 1 - DH Logger Drill codes
Appendix 2 - NTEL Sample Preparation
Appendix 3 - NTEL Analytical Methods
Appendix 4 - NTEL Analytical Suite
Appendix 5 - Reflectance Spectroscopy Methodology
Appendix 6 - TSG Procedures and Definitions
Appendix 7 - Grainsize and Competency
Appendix 8 - Petrographic Report

All relevant digital data is included in the data directory of the CD containing this report.

Diamond Drilling

Drilling in 2008 was aimed testing various targets derived from mapping and geophysics including airborne magnetics, TEMPEST and gravity. To the east of the project a particular focus was placed on northwest inferred structures thought to be a similar orientation and possible extensions of the Aurari Fault Zone located in the adjacent King River project. To the north the target was an inferred basement high east of the existing drill holes. The drilling was also aimed at refining our knowledge of the basement geology since all the targets have thick cover and/or sandstone. Table 2 is a summary of drill hole collar details.

Table 2 - Diamond Drill Hole Collar Details

Drilling on the project commenced on June 30 and was completed on September 10 2008. The contractor was Titeline Drilling Pty. Ltd. of Ballarat Victoria who used a UDR650 for the program. Twelve holes were drilled, two of which were abandoned due to difficulties encountered in the Cretaceous sedimentary package. Total drilling consisted of 3719.6 m, which included 705.3 m of PCD pre-collaring through the Cretaceous cover and 3014.6 m of retrieved core. All holes were drilled towards the west (266-286 degrees), with the exceptions of WRD0025 which was drilled to the north (0 degrees) and WRD0033 which was drilled to the south east (135 degrees), with dips ranging between 70-80 degrees.

Figure 5 - Drill Hole Locations

The Cretaceous overburden, which averaged around 50 m in thickness, unconformably overlies the Proterozoic basement. A zone of paleoweathering was evident in some of the basement rocks and in some cases was estimated to extend at least 15 m beneath the unconformity. The rock type present determined the depth and degree of weathering, i.e. competent quartzites exhibited negligible weathering while pelitic or feldspathic rocks had more extensive weathering profiles. All holes were pre-collared through the Cretaceous sediments with a PCD bit utilising mud additives.

Down hole gamma logging was conducted within the rods for all diamond holes and the data is submitted with this report. Generally within the sandstone minor peaks relate to heavy mineral bands with increased thorium content.

A detailed description of the 2008 diamond drill holes is outlined below along with a summary of the results including the new prospect named Angularli.

WRD0022

The drill hole targeted an inferred fault from the airborne magnetics. Drilling intersected hematitic clays at 473.13 m causing the drill rods to become stuck. Due to further mechanical problems whilst attempting to retrieve the drill rods and bit, the drill hole was terminated at 473.13 m.

The hole was collared in 54.2 m of Cretaceous sands, saprolitic clays and black-dark grey shaley clays, overlying 404 m of variably haematitic and pebbly to clay-altered Kombolgie sandstone. Intervals of limonite alteration are also observed, associated with pyrite (therefore may likely be from weathering of pyrite). Conglomeratic beds appear from approximately 363 m and are hematite-altered, contain large pebbles (max. diameter 30 mm) and minor mafic clasts - these beds also give weakly elevated radiometric readings. Small detrital tourmalines are observed throughout the sandstone. From 248.6 to 250.1 m there is an interval of dolerite intruding the sandstone, which is sub-horizontal and brecciated.

The frequency of pebble beds increases towards 458.04 m, at which point there is an irregular boundary a haematitic conglomerate unit. The conglomerate is 14m thick (458.04 - 472.14 m), is micaceous in places, contains abundant sericitic clay, especially seen on broken surfaces but also within the matrix, and mafic clasts of various sizes (max. size is 5mm). Radiometric readings (using hand-held SPP2 scintillometer) were variable around the unconformity (472.14 m below surface).

Just above the unconformity there is a 3 mm-thick vein of an unknown black mineral that gives an elevated radiometric reading on the handheld SPP2 scintillometer. However, due to the early termination of drilling WRD0022, down hole probing could not be taken any lower than 464 m (furthest extent of the rods), therefore the gamma value of the unknown black mineral vein remains unknown.

Assay results from geochemical analysis have returned trace uranium (<10 ppm U) in two samples, accompanied by anomalous Pb isotope values. The predominant clay mineral assemblage as observed using short wave infrared spectrometry (SWIR) is dickite with minor amounts of illite and halloysite

Appendix 9 - WRD0022 Summary Log

Figure 6 - Traverse One Cross Section (WRD0022 and WRD0023)

Figure 7 - WRD0022 Strip Plot

WRD0023

The purpose of drilling this hole was to target an inferred fault identified from the airborne magnetics (Figure 6).

The hole penetrated over 60 m of cretaceous cover, followed by sandstone to the unconformity, which was intersected at approximately 445 m. The basement consisted of highly deformed (tightly folded to the point of being ‘squashed’ and quartz layer fold arms being re-incorporated into each other with evidence of shearing (plastic and brittle) Quartz Garnet Biotite Gneiss with more competent Amphibolite towards the base of the hole.

Whilst much of the sandstone has a pink hematitic colouration, significant alteration is restricted to the upper parts of the basement geology and immediately around the unconformity. Deep red penetrating hematite alteration extends from directly at the unconformity to well into the basement, preferentially altering the mafic layers. Relatively significant hematite alteration also extends from the unconformity into the sandstone for some 30 cm. Just below the unconformity, within the zone of hematization is a distinct layer of green chlorite alteration, relatively void of hematite. Textures in the basement at the unconformity are also suggestive of movement (possible shear texture).

The probe results had a best result of 0.0247% eU_3O_8 at 443.3 m within a 30 cm wide zone of hematization at the base of the Mamadawerre Sandstone (contact with the unconformity) corresponding to a composite sample from 442.2 to 447.3 m assaying 29.9 ppm U. Other portions of the sandstone are also moderately to weakly elevated in uranium, which requires further investigation.

SWIR values recorded throughout the drill hole have returned varying clay mineral assemblages. From 57.3 to 123.0 m, the dominant clay mineral measured is illite with minor paragonite. From 123.0 to 425.0 m, the main clay mineral is dickite with minor amounts of illite and halloysite. From 425.0 m to end of hole, the clay minerals vary from illite to chlorite with a large number of readings returning aspectral values.

Appendix 10 - WRD0023 Summary Log

Figure 8 - WRD0023 Strip Plot

<u>WRD0024</u>

The purpose of drilling this hole was to target a large north to northwesterly inferred fault derived from the magnetics. In addition, the TEMPEST conductive unconformity layer is unusual since locally there is an abrupt perturbation in the elevation and this particular sandstone block appears to have a broader and more diffuse conductive response than usual.

The hole collared in 43 m of Cretaceous sands, saprolitic clays and black-dark grey shaley clays and mudstones, overlying 245 m of variably hematitic and pebbly to clay-altered Mamadawerre Sandstone. From 125.68 to 191.1 m, intervals of interbedded quartz pebble conglomerate grading to fine grain sandstone occur throughout the stratigraphic column. These interbedded fining upward sequences are associated with thin beds of hematite +/- chlorite +/- sericite +/- limonite alteration of varying intensities.

From 191.1 to 288.88 m the depositional environment of the Mamadawerre Sandstone changes to fining upward sequences of cross bedded, moderate to poorly sorted, subangular to subrounded, coarse to fine grained sands. There are rare quartz pebble clasts found within the stratigraphic column that decrease in frequency with depth. Hematite +/- chlorite alteration is increasing in frequency and intensity with depth from 246.83 to 288.88 m. This interval is also associated with moderate to strong bleaching of the sandstone as well as moderate to strong clay alteration overprints on the sandstone. Overprinting some of this clay alteration are hematitic zones containing opaque, uranium bearing, blebs. From 257.7 to 288.88 m sooty pyrite (Marcasite) +/- chalcopyrite mineralization is found disseminated through the sandstone.

The basement was intersected at 288.88 m. From the Unconformity to 307.20 m the basement consists of a paleoweathered, highly altered pelitic rock. Alteration intensity and paleoweathering in this section has almost completely erased recognizable features of the original rock making identification difficult. From

307.20 to 339.70 m the basement consists of a garnetiferous semipelite, possibly lying within the Upper Cahill Formation. It consists of 50% quartz, 30% plagioclase, 10-15% micas (biotite, muscovite and sillimanite) and 5% garnet. It is strongly foliated with alternating mica rich and quartzo-feldspathic bands. Garnets form a porphyroblastic texture with pressure shadows which indicate a shear fabric. Between 317.00 and 339.70 m the rock is relatively fresh. Alteration consists of sericitization of feldspar and chloritization of garnets. Pyrite is found in the basement along fracture surfaces and in quartz veins. A single fracture surface was also coated in graphite at 321.10 m.

From 261.00 to 288.88 m there is a significant increase in the radioactivity from the probe data returning 8.5 m with and average assay of 585 ppm eU_3O_8 (maximum of 1981 ppm eU_3O_8). The geochemistry calculated from the 50 cm split samples compares very well with that derived from the probe data, although it should be recognised that the latter is more detailed (5cm) and one spike was up 6852 eU_3O_8ppm.

Clay mineral assemblages measured throughout the drill hole were of various compositions. This variability may equate to the changes in alteration observed throughout the drill core. From 43.0 to 105.0 m, the predominant clay minerals are illite, with minor amounts of dickite, halloysite, and paragonite. From 105.0 to 265.4 m, the dominant clay minerals are halloysite and paragonite with minor amounts of illite and dickite. From 265.4 to 288.8 m, the dominant clay mineral is illite with minor halloysite and paragonite. In the basement from 288.8 to 339.5 m, the dominant clay mineral is illite with minor chlorite.

Appendix 11 - WRD0024 Summary Log

Figure 9 - Traverse 2 Cross Section (WRD0024, WRD0026 and WRD0033)

Figure 10 - WRD0024 Strip Plot

WRD0025

The purpose of drilling this hole was to target an east to west trending inferred fault interpreted from the magnetics.

The hole was collared in 81.62 m of Cretaceous sands, saprolitic clays and black-dark grey shaley clays, overlying 226.78 m of variable stratigraphy including 80 m of dolerite followed by a thin layer of sandstone with the unconformity intersected at 168.94 m.

Oenpelli Dolerite was between 81.62 and161.90 m. The dolerite is fine-grained to 90.85 m. At 90.85 m the dolerite becomes coarser-grained and is characterized by an ophitic texture. The contact at 161.90 m with the sandstone is very fine-grained signifying a chilled margin. There is no alteration, structure or mineralization in this unit.

Mamadawerre Sandstone was intersected at 161.90 to168.94 m. It consists of coarse-grained pebbly sandstone that is almost conglomeratic. The unconformity appears to be intruded by a fine-grained dolerite between 168.94 to 171.75 m.

Basement rocks consist of intercalated quartz-feldspar-biotite gneisses, garnetiferous gneisses and amphibolites. Alteration consists of very minor chlorite alteration around sub-vertical quartz veins and minor sericite alteration.

The down hole gamma data and geochemistry has not identified any anomalous radioactivity or uranium. The analysis of clay minerals within the drill core by SWIR has predominantly returned aspectral readings. From 72.0 to 85.0 m, the majority of clay minerals observed is kaolinite with minor amounts of halloysite. From 160.3 to 272.0 m, the dominant clay mineral is illite with minor chlorite. From 290.0 to 307.75 m, the dominant clay mineral is illite.

Appendix 12 - WRD0025 Summary Log

Figure 11 - Traverse Three Cross Section (WRD0025)

Figure 12 - WRD0025 Strip Plot

WRD0026

The purpose of drilling this hole was to target a north to north northeast striking fault observed during surface mapping. It was the first drill hole to follow up mineralization intercepted in WRD0024. The drill collar lies approximately 800 m east northeast of the mineralized hole. The purpose of the hole was to intercept the controlling structure that may have caused the mineralization to the west (See Figure 9 for cross section).

The hole was collared in 11.00 m of Cretaceous sands and saprolitic clays overlying 283.70 m of variable stratigraphy.

Mamadawerre Sandstone was intersected at 11.00 to 79.25 m. It consisted of pebbly sandstone with alternating layers of heavy mineral bands with buff heterogeneous quartz-rich bands that have been bleached. Alteration is moderate to strong consisting of white clay, and weak hydrothermal hematite and limonite. Clay and hydrothermal hematite alteration is massive replacing the matrix whereas the limonite is mostly found along fractures but is also seen along bedding surfaces. The unit is strongly faulted, with near vertical fractures throughout and is characterized by a high friability. At the unconformity there is small scale folding in the sandstone indicating that possible movement along the unconformity.

Basement rocks consisted of meta-sedimentary rocks. After the unconformity pelite is present from 79.25 to 88.00 m. It is intruded by a fine-grained dolerite at 82.89 to 83.45 m. At 88.00 to 183.83 m quartz-rich semipelite is present and within this unit there are small minor units of amphibolite and garnet rich zones. After the quartz-rich semipelite a psamite is present between 183.83 to 193.09 m which grades into a pelite between 183.83 to 203.90 m. Quartz-feldspar-biotite gneiss is present between 203.90 to 239.90 m with intercalated minor amphibolite units. From 239.90 to 273.05 m there is garnet gneiss and the hole was ended in a calcareous semipelite between 273.05 and 294.70 m.

The hole is characterized by minor to moderate chlorite alteration throughout, found along fractures and replacing minerals such as plagioclase. There is a zone of deformation between 118.00 and 130.00 m comprised of a shear zone (118.00 to 127.27 m), a breccia (127.27 to 127.77 m) followed by a second shear zone (127.77 to 130.00 m).

Geochemical analysis has returned no assay results anomalous in uranium nor any samples anomalous in pathfinder minerals. Clay minerals measured using SWIR indicate the sandstone is mostly paragonite and halloysite with minor amounts of kaolinite, dickite and illite. From 81.0 to 294.5 m, the dominant clay mineral is illite with minor amounts of magnesium and iron chlorites.

Appendix 13 - WRD0026 Summary Log

Figure 13 - WRD0026 Strip Plot

WRD0027

The purpose of drilling this hole was to target a potential northwest striking structure identified from the magnetics.

The hole is collared in 13.70 m of Cretaceous sands, saprolitic clays and black-dark grey shaley clays, overlying 473.00 m of variable stratigraphy. Mamadawerre Sandstone is intersected between 13.70 to 416.27 m. It consisted of alternating layers of moderately sorted quartz and poorly sorted pebbly sandstone. The base of the sandstone is marked by a conglomerate characterized by quartz clasts from 1-8 cm in size. The sandstone is cut by several, small, minor, dolerite dykes that are very fined-grained. The sandstone is variably altered with some dark red diagenetic hematite and several places where the matrix is replaced by hydrothermal hematite. Other alteration types include chlorite, limonite, clay, silicification and bleaching. Chlorite is found along bedding planes or fracture surfaces. Limonite/goethite is found as massive replacement, along fractures and disseminated throughout the matrix.

The contact between the basement and the unconformity is structural. It is associated with brecciation and cataclastics. Basement rocks consist of strongly foliated semipelites, calcareous semipelites, amphibolites, quartzite and quartz-feldspar gneisses. Alteration in the basement is minor. Below the unconformity the rock is strongly hematized. Below the hematized zone is strongly altered to chlorite, which represents the typical “red” and “green” zone. The foliation is cross-cut by several high-angle quartz veins and pegmatite.

Geochemical analysis has returned trace uranium (<10 ppm U) in two samples. There are anomalous Pb isotope values within a number of samples. The presence of these geochemical anomalies may indicate part of a large hydrothermal alteration system with progressive increases in mineral concentrations to the east.

The analysis of clay minerals within the drill core has indicated that the clay mineral assemblages vary throughout the hole. This variability may be attributed with differences in Pb isotope values identified by geochemical analysis. From 13.7 to 208.6 m, the dominant clay minerals identified are illite and paragonite with minor kaolinite and tourmaline. From 208.6 to 282.0 m, the dominant clay mineral is diaspore. From 282.0 to 410.7 m, the dominant clay mineral is dickite with minor paragonite, halloysite and illite. From 410.7 to 484.8 m, the dominant clay mineral is illite with minor magnesium and iron chlorites. This type of clay mineral assemblage may be attributed to the composition of basement rocks within the area.

Appendix 14 - WRD0027 Summary Log

Figure 14 - Traverse 4 Cross Section (WRD0027)

Figure 15 - WRD0027 Strip Plot

WRD0028

The purpose of drilling this hole was to target an inferred fault identified from the airborne magnetics. The variability in the magnetic readings in this area may be an indication of variability in depth of Cretaceous cover as well as possibly intercepting favourable lithologies for uranium mineralization at shallower depth. This hole was terminated in Cretaceous sedimentary cover at 93.6 m due to drilling difficulties.

WRD0029

This hole was primarily aimed at testing the edge of an inferred basement high and potential significant change in lithology; derived from TEMPEST and airborne gravity. The hole intersected its target of Paleoproterozoic - Archean gneiss and granite as outlined below.

The hole was collared in 59.9 m of Cretaceous sands, saprolitic clays and black-dark grey shaley clays, overlying 147.7 m of variable paleoproterozoic stratigraphy below the unconformity intersected at 59.9 m.

From 59.9 to 93.35 m alternating layers of Leucocratic quartzofeldspathic gneiss are present along with metamorphosed arkose sandstone, intensely folded and metamorphosed banded/interlayered semipelite and psammite with minor intrusions of pegmatites, amphibolites and quartz veins.

Geochemical analysis has returned no samples anomalous in uranium nor any samples anomalous in pathfinder minerals associated with uranium mineralization. The clay minerals identified by SWIR are relatively common for this basement type consisting of: illite, muscovite, biotite, and chlorites.

Appendix 15 - WRD0029 Summary Log

Figure 16 - Traverse Five Cross Section

Figure 17 - WRD0029 Strip Plot

WRD0030

This hole was primarily aimed at testing the edge of an inferred basement high and potential significant change in lithology; derived from TEMPEST and airborne gravity. The hole intersected its target of Paleoproterozoic - Archean gneiss and granite as outlined below.

The hole was collared in 43.9 m of Cretaceous sands, saprolitic clays and black-dark grey shaley clays, overlying 131.0 m of variable paleoproterozoic stratigraphy below the unconformity intersected at 43.9 m.

From 43.9 to 108.98 m is predominantly quartz feldspar biotite gneiss with minor amphibolites, pegmatites and quartzo feldspathic granitoids throughout interval. Trace blue green tourmalines found within the pegmatites. This type of sequence stratigraphy is indicative of Lower Cahill Formation.

From 108.98 to 162.63 m is predominantly quartz feldspar biotite gneiss. Minor quartz hornblende gneiss, biotite schists, and pegmatites are interlayered throughout the stratigraphic column. Trace blue green tourmalines are found within the pegmatites.

From 162.63 to 174.9 m is predominantly quartzo feldspathic granite to granitoid. Weak fabric/foliation develops with depth and gradationally changes to quartz feldspar biotite gneiss with minor quartz feldspar biotite granites and pegmatite sweats and intrusions. Trace blue green tourmalines are found scattered throughout the pegmatites.

Down hole gamma logging was conducted with an NQ probe (NQ A837 Tool) from 0 to 163.3 m. Down hole gamma indicates no anomalous radiometrics.

Geochemical analysis has returned no samples anomalous in uranium nor any samples anomalous in pathfinder minerals associated with uranium mineralization. The clay minerals identified by SWIR are relatively uniform. The measurements are within basement lithologies found in drill core in the Wellington Range area. The dominant clay minerals identified within the rock are illite, muscovite, biotite, and chlorites. The clay mineral assemblage is very similar to the measurements taken in WRD0029. The basement rock in this area is very similar in composition

Appendix 16 - WRD0030 Summary Log

Figure 18 - Traverse Six Cross Section

Figure 19 - WRD0030 Strip Plot

WRD0031

The purpose of drilling this hole was to target an anomaly identified by aeromagnetic interpretation. The variability in the magnetic readings in this area may be an indication of variability in depth of Cretaceous cover as well as possibly intercepting favourable lithologies for uranium mineralization at shallower depth. It was the second attempt to target the anomaly as was the purpose of drill hole WRD0028.

The hole was collared in 139.30 m of Cretaceous sands, saprolitic clays and black-dark grey shaley clays, overlying 220.90 m of variable stratigraphy. WRD0031 collared into strongly foliated quartz-feldspar-biotite gneiss. The upper portion of this unit (139.3 to 160.9 m) is hematized and chloritized as a result of paleo-weathering. Alteration in this zone includes hemitization and chloritization. A dolerite dyke (160.9 to 162.9 m) has disrupted this unit and the foliation is also cut my several quartz/quartzofeldspathic veins and segregations. The dolerite dyke is very fine-grained, has chilled margins and sharp contacts to the surrounding gneiss. There is minor fracturing within the dolerite dyke, which is coated with pyrite along the fracture surface. Below the dolerite the rock is moderately fresh consisting of minor dark green chlorite alteration.

At 173.68 to 185.21 m is a moderately pure quartzite, with minor muscovite throughout. This unit has a small shear/crenulated zone at 178.2 m and a few fractures in filled by a dark green chlorite.

Below the quartzite unit is a metasedimentary package with alternating psammite, semipelite and pelite zones being disrupted by a few amphibolite (meta-dolerite) units. This package is strongly foliated consisting of alternating bands of quartz and feldspar and more biotite rich bands. The rock is fresh with little alteration.

Down hole gamma logging was conducted with an NQ probe (NQ A837 Tool) from 0 to 349.9 m. Down hole gamma indicates no anomalous radiometrics.

Geochemical analysis has returned no samples anomalous in uranium nor any samples anomalous in pathfinder minerals associated with uranium mineralization. The clay minerals identified by SWIR are relatively uniform. The measurements are within basement lithologies found in drill core in the Wellington Range area. The dominant clay minerals identified within the rock are illite, muscovite, biotite, and chlorites.

Appendix 17 - WRD0031 Summary Log

Figure 20 - Traverse Seven Cross Section

Figure 21 - WRD0031 Strip Plot

WRD0032

The purpose of drilling this hole was to target an anomaly identified by aeromagnetic interpretation. The variability in the magnetic readings in this area may be an indication of variability in depth of Cretaceous cover as well as possibly intercepting favourable lithologies for uranium mineralization at shallower depth. This hole was terminated in Cretaceous sedimentary cover at 113.0 m due to drilling difficulties.

WRD0033

This hole was drilled late in the season to follow up on the mineralization intersected in WRD0024 (See Figure 9 for cross section).

The hole was collared in Mamadawerre Sandstone at 4.40m and intersected the unconformity at 301.31 m. Before the unconformity two Oenpelli Dolerite dykes were intersected between 154.74 and 158.81 m, and 159.50 to 268.30 m; crosscutting the Mamadawerre Sandstone. Below the unconformity (301.31 m) a garnetiferous semipelite was intersected until the end of the hole at 357.60 m.

From 4.40 to 153.74 m quartz-rich, medium to coarse-grained and strongly cross-bedded, Mamadawerre Sandstone is the dominant lithology. The upper portion of the sandstone is relatively well-sorted, consisting of medium-grained sandstone. Closer to the unconformity it consists of several fining upward sequences, initially conglomeratic at the base, grading to medium grained sandstone with a fine-grained siltstone at the upper boundary. Sandstone exhibits diagenetic hematite throughout being maroon and purple in colour following bedding planes, but sometimes blotchy. Diagenetic hematite is over printed by bleaching which is over printed by, red, hematite replacement. Chlorite alteration is found along bedding planes where the sandstone is strongly hematized. Geothite and limonite alteration is found predominantly along fracture surfaces with minor disseminations within the matrix. Interstitial clay alteration is found in pore spaces and in large gouges in the sandstone.

A dolerite dyke is intersected, which cross-cuts the Mamadawerre Sandstone between 153.74 and 158.81 m. It is dark green in colour, has chilled margins, consists of 1% amphibole phenocrysts and is highly fractured. Fracture surfaces are infilled with quartz and coated with pyrite and chalcopyrite. Pyrite is also disseminated throughout.

The wedge of Mamadawerre Sandstone between the dolerite dykes (158.81 to 159.50 m) is characterized by moderate chloritization and is, most probably, hornfelsed from the two dolerite intrusions. This unit is moderately fractured with fracture infill of dolerite and lesser pyrite.

A second dolerite dyke is intersected at 159.50 to 268.30 m, intruding the Mamadawerre Sandstone. It is dark green in colour, is slightly coarser grained in the centre and has been brecciated and highly fractured. The breccia (261.52 to 262.40 m) is hydrothermal in origin. It consists of larger (4 cm) angular mafic fragments in a quartz matrix (healed breccia). Between 249.10 to 268.30 m the dolerite is bleached.

The basal Mamadawerre Sandstone between the lower dolerite dyke and the unconformity (268.30 to 301.31 m) is significantly altered. It is intensely bleached and overprinted by clay alteration. Between 268.30 to 274.10 m massive, light yellow, clay alteration has affected the sandstone increasing its friability. Between 274.10 and 301.31 m the clay alteration is still prominent, but not as strong as above it. Overprinting the clay alteration are hematitic zones associated with black, uranium bearing blebs (e.g. 276.10, 281.90 and 283.91 m). From the dolerite contact to 276.10 m there is a pistachio green clay mineral which overprints the bleaching. It seems to be associated with the hematite forming a halo above it (also seen in WRD0024) but has not been identified.

The basement was intersected at 301.31 m consisting of a garnetiferous semipelite. It consists of 55% quartz, 25-30% plagioclase, 10-15% micas (biotite, muscovite and sillimanite) and 5% garnet. It is strongly foliated with alternating mica rich bands with quartzo-feldspathic bands. Garnets form a porphyroblastic texture with pressure shadows which indicate a shear fabric. Between 301.31 to 317.00 m the basement is strongly hematized which has been overprinted by bleaching that has extended down from the sandstone. Between 317.00 to 357.60 m the rock is relatively unaltered. Alteration consists of sericitization of feldspar and chloritization of garnets. Pyrite is found in the basement along fracture surfaces and in quartz veins.

Down hole gamma logging shows that from 265.00 to 300.00 m there is a substantially elevated radioactivity associated with the highly altered Mamadawerre Sandstone (between the second mafic dyke and the unconformity) with strong hematite alteration and some black, uranium bearing, blebs. The assay results returned 8.5 m at 405.1ppm U_3O_8 with a maximum of 2346ppm U_3O_8.

Clay mineral assemblages measured throughout the drill hole were of various compositions. This variability may equate to the changes in alteration observed throughout the drill core. From 4.4 to 152.3 m, the predominant clay minerals are illite, with minor amounts of halloysite, and paragonite. From 152.3 to 267.9 m, the dominant clay minerals are magnesium and iron chlorite. From 267.9 to 357.3 m, the dominant clay mineral is illite with minor halloysite, paragonite and chlorite.

Late 2008, CSIRO Exploration and Mining were undertaking some work in the Northern Territory allowing Cameco to utilize the HyLogger system on WRD0033 core to collect reflectance spectroscopy measurements at a very high spatial resolution. The dominant clay minerals identified by SWIR (illite, paragonite, and halloysite) between 4.4 to 152.3 m are also the clay minerals defined using HyLogger analysis. This similarity in measurements recorded by both methods is evident throughout the entire core. Appendix 1 contains the details on the preliminary HyLogger report. A more detailed report is forthcoming.

Appendix 18 - WRD0033 Summary Log

Figure 22 - WRD0033 Strip Plot

Appendix 19 - HyLogger Report

Aircore Drilling

Within the south and central portion of Wellington Range, 119 shallow aircore drill holes were completed between 28 July and 22 August, for a total of 3099 m. Figure 6 shows the location of the drill holes superimposed on the interpreted geology. Drill holes intersected a range of rock types including sandstone, dolerite, granitoids and granodiorite overlain by up to 30 m of sands and clays with a common gravely layer at the base of the cover sequence. Some Cretaceous sandstone was also drilled. Average hole depths were 15 m with dolerite the most commonly intersected rock type.

The aircore drilling largely confirms previous geological interpretation of the area, which is dominantly Oenpelli Dolerite intruding Nimbuwah granitoid. There were several small outliers of Kombolgie Subgroup sandstone in the southern and western part of the area, which form topographic highs and lie unconformably on the Nimbuwah basement. The majority of sandstone intersected within the air core program occurred within planned holes adjacent to sandstone escarpments.

No anomalous uranium or Pb isotopes were identified by the air core program.

Figure 23 - Aircore Drillhole Locations

Outcrop Sampling

A total of 23 outcrop samples were collected, the majority of the samples taken are located around outcropping sandstone escarpment adjacent to the 2008 air core program. The object of the sampling was to increase sample density and geochemical knowledge of the surrounding area and improve drill hole targeting in areas of little to no prior work. Figure 8 shows the location of all outcrop samples and Table 3contains a summary of samples taken.

Out of the outcrop samples collected in 2008 only two, WR083002 and WR083003, are thought to be prospective. These are samples of Mamadawerre Sandstone collected towards the west of the project within 230 m of each other. They both have anomalous U (total rock), labile U (Weak Acid Leach [WAL]) and labile radiogenic Pb (expressed in anomalous Pb^{206}/Pb^{204} ratios – from WAL). While these samples seem relatively ferruginous in outcrop, both have less than 1% Fe_2O_3. Instead the samples are dominated by Al2O3, CaO, P_2O_5, with extremely high Sr (up to 5,270 ppm for WR083002) and extremely low Zr. These suggest a quartz poor, probably clay dominated and phosphate enriched sediment. The extremely high Sr and phosphates may even indicate an evaporitic pre-curser, however, more work would need to be achieved on these samples to correctly identify their geology.

Figure 24 - Outcrop Sample Location

Table 3 - Outcrop Sample Summary

Geophysics

<u>Ground Electromagnetic Surveys</u>

During the period August 6th to September 6th, 2008, Outer-Rim Exploration Services Pty Ltd. carried out ground Time Domain Electromagnetic (TDEM) surveys on two grid areas (Figure 25).

Appendix 20 - Geophysical Survey Logistics Report. Outer-Rim Exploration Services Pty. Ltd.

Figure 25 - 2008 Stepwise Moving Loop and Fixed Loop Survey Areas with Total Field Magnetic Intensity.

A Stepwise Moving Loop (Step Loop) profile was collected along a northing of 8709600mN, extending from 281550mE to 287250mE. It is located 2.3 km south of a line collected in 2007 in the northern part of the project. For clarity within this section of the report, this area will be referred to as the West Grid. The program at the second area, referred to as Angularli, consisted of one profile of Step Loop, and three lines of Fixed Loop survey. The Step Loop profile extended 2.5 km from 297750mE to 300250mE along a northing of 8700900mN. The Fixed Loop profiles, labelled 2990000E, 299100E and 299200E, were collected perpendicular to the Step Loop line, as indicated on Figure 25. The objective of the surveys was to locate graphitic conductors beneath a layer of highly conductive Cretaceous cover.

Survey Specifications

The Step Loop surveys were conducted by laying out a series of back-to-back 200 x 400 m loops. The vertical (z) component of the B field was recorded at 50 m intervals along the centre line over a maximum distance of +/-700 m from/through loop centres. The contractor utilized the CSIRO developed LANDTEM receiver, with a Crone 4.8 kW transmitter, and SQUID magnetic sensors. This was specifically chosen to allow high quality late time data that can be crucial for separating basement conductor from highly conductive overburden.

Interpretation consisted of conductor picking on pseudosection images of individual Step Loop data channels. The pseudosections were produced by plotting the vertical component data at the midpoint between transmitter and receiver at a plot depth equal to half the transmitter - receiver distance.

The Slingram profiles displayed on Figure 26 were extracted from the Step Loop data. Specifically, similar Tx-Rx separations from the 26 loops read along line 8709600N were grouped together. Presented on this figure is the sum of the 350 m Tx-Rx separations, which is the largest used in the Step Loop survey. This is believed to be the most useful separation, considering the depth to source (170 m, or greater), and the layered earth effects of the highly conductive Cretaceous cover. These data are presented in traditional "Slingram" fashion where the plot point is halfway between the centre of the transmit loop and the receiver coil. The data points are at 200 m intervals.

Figure 26 - West Grid, Line 8709600N, Stepwise Moving Loop Survey, Channel 35 Pseudosection, Extracted Slingram Profiles and Airborne Potential Field Profiles

One 400 x 400 m loop was used for the Fixed Loop survey. Both x and z-component data were collected at 50 m intervals. Only the centre line was read through, and to the south of, the transmitting loop. Interpretation consisted of establishing the peak of the in-line horizontal component anomaly and/or the inflection of the vertical component anomaly.

Additional details of both surveys' parameters, as well as equipment specifications, can be found in the contractor's logistics report, which is attached as Appendix 10.

Results

As mentioned, the location of a discrete conductor axis is generally determined from the peak of the in-line horizontal component anomaly and/or the inflection of the vertical component anomaly. The factors that can influence the interpretation are plate and host rock conductivity, depth to source, dip, channel delay time, multiple conductors, and as is known to be the situation at West Grid area, the presence of a highly conductive layer above the basement conductors of interest. The results of the 2007 orientation survey illustrated the difficulty encountered by a conventional Fixed Loop interpretation in such a situation (Ranford et al, 2008). There was little appreciable change in profile characteristics from loop to loop along the length of the survey line due to the significant layered earth response caused by the Cretaceous cover. Neither the x nor z-component profile data indicated an interpretable discrete bedrock conductor, as is commonly observed in the profiles from an area devoid of this horizontal conductivity effect. Therefore, in 2008, only the z-component data was collected, with the interpretation based on these pseudosections and the extracted Slingram profile.

Figure 27 - West Grid, Line 8709600N, Stepwise Moving Loop Pseudosections Z-Component Channels 5, 10, 15, 20, 25, 30, 35, 40, and 42.

Figure 27 displays nine z-component pseudosections for line 8709600N, ranging from early time (channel 5) to the latest time (channel 42). Apparent on all sections, except the latest time channels, which are essentially noise, is a strong layered earth effect interpreted from the upper layer of high conductivity (warm colours), as highlighted by the rectangle labelled A. This is attributed to the Cretaceous sediments, which range in thickness from 44 m at the east end of the profile, to greater than 150 m throughout the central and western portions, as shown on the geological cross section. Also of note is the region outlined by rectangle B. From channel 5 to channel 20 there appears to be weak conductivity associated with the predominantly quartz feldspar biotite gneiss and granitoid rocks intersected in drill hole WRD0030. This possibly just represents background conductivity of the basement rocks. Since the Cretaceous cover is relatively thin in this region, the masking effect is not as significant as along the rest of the profile.

The region of exploration interest is located within rectangle C. Prior to discussing this in detail, an example Step Loop profile from the Athabasca Basin of northern Saskatchewan, Canada, is presented. Figure 28 displays the early, mid, and late time responses from line 62+00W of Cameco's Hook Lake project, located in the western portion of the basin.

Figure 28 - Hook Lake Project, 2006, Line 62+00W, Step Loop Conductor

Interpretation, Un-normalized.

This line of data was chosen because it is typical of the Step Loop pseudosection responses observed over reasonably good graphitic lithologies, but also the drill hole that targeted this anomaly (HK-022), encountered 106 m of overburden, of which a large portion is believed to be conductive Cretaceous sediments. A subsequent pole-dipole resistivity survey indicated overburden resistivities of less than 1,000 Ohm-m. Although this is several orders of magnitude greater than the resistivities of the EMAX CDI produced for line 8711900N (Ranford et al, 2008), the intent of this example is to illustrate that the Step Loop configuration does have the ability to see through conductive cover. The warmer colours in the upper part of the pseudosection in Figure 28a, in the vicinity of drill hole HK-022, displays a significant layered earth effect, as do the x and z profiles.

Figure 29 - West Grid, Line 8709600N, Stepwise Moving Loop Survey, Channel 35 Pseudosection, In-loop Profiles and Airborne Potential Field Profiles

The Step Loop anomaly highlighted by box D in Figure 29 has a similar appearance to the late time pseudosections of Figure 28c, specifically the blue coloured core of the anomaly. However, the difference between the two is that the z-component values in the Hook Lake anomaly have turned negative, which is typical of good Athabasca graphitic conductors, whereas the anomaly on line 8709600N is still comprised of positive values ranging from 5 to 20 pT. The significance of this will not be completely understood until the feature is drill tested. It is noted that the two surveys employed different equipment, frequency of operation, and the Hook Lake measurements taken in northern Saskatchewan were dB/dt, whereas the current survey measured the B field.

Figure 26 displays the extracted Slingram profiles with a Tx-Rx separation of +350 m. The Step Loop data was collected from west to east; hence these profiles are from receiver locations leading the loops. The response appears as a typical Slingram anomaly, with a minimum at the conductor. The asymmetry of the profiles suggests a dip to the west. The interpretation of the pseudosections suggests two possible conductors, located at 285650E and 285850E (labelled C1 and C2 respectively), while these Slingram profiles indicate one conductor at 285750E. However, the profiles from the trailing receiver locations (-350 m) place the conductor axis at 285650E. It is noted again that the sample interval for the Slingram profiles is 200 m, which is considered coarse for good conductor resolution.

The remainder of the interpreted Step Loop conductors are quite subtle, and the characteristics of the pseudosections in general suggest flat lying sources. This is also evident in the in-loop profiles (Figure 29), where conductive bodies with some width appear as simple positive z-component anomalies, and of course confirmed by the shallow dips observed on the geological cross section.
Figure 30 shows the conductors in the context of the magnetic data of the region. The main conductors, C1 and C2, coincide with a structure interpreted at the contact between the magnetic Upper Cahill semipelites/pelites and the granitioids. There is no geological support from drilling at this time.

Figure 30 - West Grid (Line 8709600N), Total Field Magnetic Intensity with Conductor Locations and Drill Holes

Pseudosections of eight time channels along line 8700900N in the Angularli area are presented on Figure 31. The only feature of note is an early to mid time anomaly at the very eastern end of the profile, which is also the tenement boundary. This response may be due to the conductive Cretaceous sediments, but the appearance of the pseudosections is quite different from those in Figure 27.

Figure 31- Angularli Area, Line 8700900N, Stepwise Moving Loop Pseudosections

The x-component data for the three Fixed Loop profiles is shown on Figure 32. There is some stacking of mid time channels at 8699800N on line 299100E. Strong migration is evident, which is likely a consequence of the Cretaceous sediments. Unfortunately, the coverage did not extend far enough south to close off the anomaly, or allow a proper depth estimate. A second, weaker conductor is interpreted at 8700400N along this profile. There are no conductors defined on the other two lines, but there is a build up of the early to mid time channels on line 299200E, suggesting the presence of a conductor off the southern end of the survey profile.

Figure 32 - Angularli Area, Fixed Loop X-Component Profiles, Lines 299000E, 299100E and 299200E

Figure 32 displays the location of drill hole WRD0024 with respect to the survey profiles. Rare graphite coatings, as well as pyrite, were observed in the basement rocks intersected in this drill hole. Forty-three metres of Cretaceous sediments were encountered at the top of the hole. As the figure indicates, there is no TDEM anomaly directly associated with this drill hole. This suggests that the composition and/or the thickness of the Cretaceous vary south of drill hole WRD0024.

As with the West Grid area, the locations of the conductors are shown with the magnetic background for the Angularli region (Figure 33). Conductor C4 is associated with an intermediate intensity magnetic high, while C3 is on the edge of this magnetic feature, potentially Upper Cahill Formation lithologies. Also on the figure are the locations of two VTEM conductors interpreted from the profiles displayed on Figure 34. Conductor V2 correlates closely with C3, and suggests a possible northeast striking conductive trend along the magnetic high. Conductor V1 exhibits the classic “M” shaped response of a concentric loop system. Modelling of this data is required to determine whether the source is in the basement, or the response is due to changes in the conductive cover.

Figure 33 - Angularli Area, Total Field Magnetic Intensity with Conductor Locations and Drill Holes

Figure 34 - Angularli Area, VTEM Test Line 1000 with Interpreted Conductor Locations

Conclusions

The Step Loop survey combined with the LandTEM SQUID system appears to provide an effective method for delineation of basement conductors in an area of overlying, very conductive Cretaceous cover. The extracted Slingram profiles also supports the interpretation of the Step Loop pseudosections.

Drill testing is required prior to any further ground electromagnetic surveys to verify the validity of the primary anomalies, located at 285650E and 285850E on line 8709600N. A proposed drill hole is shown on Figure 26 and Figure 29, which would test the most prospective target.

The Fixed Loop survey has defined two conductors, however the source is uncertain. If the drill test on line 8709600N is successful, then a north to south orientated Step Loop profile should be considered for Angularli.

Another test of the Slingram configuration is recommended, but with a transmitter-receiver separation of at least 500 m, or perhaps larger. A larger transmitter loop should also be considered.

VTEM Orientation Survey

During 2008, GeoTech Airborne Limited flew three orientation lines, totaling 24.9 line kilometers, of a helicopter borne electromagnetic survey system known as VTEM. A description of the VTEM system, and the system parameters are described in Appendix 11.

Appendix 21 - VTEM System Specs

The data was collected during two separate surveys. Flight lines L30050 and L30120 were collected during survey A323 on June 28th, 2008. Flight line L10000 was collected later in 2008 during survey A372. Collected data and waveform files may be found in the geophysics data folder. The reported data includes the measured decay of induced currents within the earth, created by the VTEM transmitter after being shut off. This includes the magnitude of the induced field (Bfield) and the rate at which the field is decaying (dBdt). The locations of the VTEM flight lines, with respect to the Wellington range project area are displayed in Figure 35.

Figure 35 - Wellington Range 2008 VTEM flight lines

Figure 36 displays the data collected over line L30050, which investigates an area where a series of suspected conductors are located beneath conductive cover. No discrete conductors are apparent within this profile. A resistive body is evident between easting 286000E and 287000E (GDA94).

Figure 36 - Line 30050 VTEM Channels 8 through 35

Flight line L30120, displayed in Figure 37, was performed to confirm a conductor observed during a TEMPEST survey in 2006. This shallow conductor is centered close to 296000E (GDA94) along this line and possibly dips to the North East. Three additional, but less pronounced conductors are located at 294800E, 299900E and 300500E (GDA94).

Figure 37 - Line 30120 VTEM Channels 8 through 35

Figure 38 shows VTEM line L10000, performed over the Angulari prospect of Wellington Range. This data was reviewed in conjunction with the TDEM and discussed above.

Figure 38 - Line 10000 VTEM Channels 9 through 35

DISCUSSION

Angularli and Surrounds

Mineralization has been encountered in WRD0024 and WRD0033, which is now referred to as the Angularli prospect. It has become the most prospective mineralized zone found on the Wellington Range exploration license to date. The type of mineralization found within the prospect has characteristics similar to alteration assemblages proximal to unconformity uranium deposits found within the Athabasca Basin, Saskatchewan, Canada. The mineralization is open in each direction, thus there is excellent potential the prospect may contain a possible mineral deposit. The mineralization is hosted in the lower Mamadawerre Sandstone. The sandstone is primarily fine to medium grained, subangular to subrounded, moderately sorted quartz grains with minor chert grains and lithic fragments. A recently completed uranium anomaly identification study on all geochemistry from drilling currently held in the Cameco Australia database revealed that the Angularli mineralization includes the highest amount of U ever found in a drill sample of sandstone in Arnhem Land. In fact 21 of the 40 sandstone samples of highest uranium ever found in Arnhem Land are accounted for in the two Angularli mineralization holes, WRD0024 and WRD0033, further emphasizing the significance of the find.

Geochemistry suggests the black interstitial mineral pertaining to the mineralization in both WRD0024 and WRD0033 is pitchblende. However, Pontifex (Appendix 8) reports the black mineral to be Mn-oxides based on plain light microscopy. According to the geochemistry a number of Mn peaks corresponding to U in WRD0024 and some WRD0033, however, the concentrations of Mn are far too low to herald a Mn-oxide as a major mineral component. Therefore XRD analysis is planned to further investigate this aspect.

In the mineralized zone for both holes, there are a number of elements positively correlated to U although not always strongly and never throughout the entire zone. In other words, the mineralized zone seems to be compartmentalized, whereby some areas of mineralization can be characterized by one association and others with a different association. For instance Au shows almost linear positive correlation with U within the mineralized zone of WRD0024, but within 3 different trends governed by different concentrations of U, so that within the entire mineralized zone the concentration of U cannot be predicted from the Au value. Without a thorough investigation it is difficult to determine exactly why this may occur. It may signify vertical differentiation within the mineralizing fluid but it also may represent differences in the wall rock and hence differences in the bulk reaction with it. Other elements that show this 'patchy' positive association with U in the mineralized zone include Ni, Mn, Co, Cr, and Cu of the first transition series, and Au and Pd of the PGEs analysed. All of the rare earths are positively correlated to U in the mineralized zone where U concentrations are high, however in the lower, but still anomalous values, correlation dissipates. In rare cases the light rare earths behave in reverse to the heavy rare earths and actually decrease when U increases. Outside the mineralized zone, all the rare earths correlate with each other most of the time and also correlate well with U, a consequence of them substituting in minerals common also to U, such as zircon.

Pb and V behave differently to all other elements analysed, in that they both show a general correlation to U throughout the entire mineralized zone. This is not surprising for Pb since Pb isotope signatures show that it is mostly radiogenic (enriched in Pb^{206}). Importantly V seems to be enriched throughout the entire sandstone column in WRD0024 and although further work needs to be done, it therefore would seem that V has the potential to be used as a definitive pathfinder for U in the sandstone in the Angularli area. Although not as consistent as V, Au is also present in the entire sandstone column of WRD0024, and since it is also associated with U in the mineralized zone, it too has the potential to be used as a pathfinder for uranium mineralization at Angularli.

Apart from U itself, the only other definitive pathfinder so far recognized at Angularli is radiogenic Pb derived from the radio-active decay of U^{238}, expressed in the geochemistry by the ratio of Pb^{206} (derived from Pb^{238}) to Pb^{204} (which has no parent) or Pb^{206} to Pb^{207} (derived from U^{235}). Elevated ratios occur throughout the mineralized zones in WRD0024 and WRD0033, as well is in sandstone samples outside the mineralized zone. Importantly, this includes samples stratigraphically above the dolerite intrusion in WRD0033 that overhangs the mineralization.

WRD0022 and WRD0023 are located 2 km to the southwest of Angularli and can be elevated in their importance on the basis of the geochemistry. Both of these holes have definitive 'hits' of mineralization at the unconformity, just below the sandstone; with anomalous U compared to Th, 'spikes' of Pb^{206}/Pb^{204} and U extracted from the weak acid leach (WAL) analytical procedure. In fact WRD0022 is broadly anomalous in the sandstone well above the unconformity at approximately 245 m and 270 m depth (down hole). This mineralization surrounds a small interval of dolerite that is brecciated, potentially indicating its role as a reductant for fluids interacting with it. This provides evidence of U within fluid travelling through the sandstone and irrespective of the source, the broader area surrounding Angularli is deemed to be highly prospective.

Northern Portion of Wellington Range

The question of the presence of 'older' gneissic rocks was raised in 2006 with the identification in WRD006 of a massive monolithologic quartz-feldspar-biotite gneiss, which is present throughout the hole. WRD006 was collared in the northwest part of the project close to the western tenement boundary. Initially it was tentatively placed in the lower Proterozoic Kakadu Group i.e. Mount Howship Gneiss. Core samples were provided to the NTGS during 2008 for age dating as part of the ongoing geochronology project, who confirmed a NeoArchean age - assigning the rock to the Nanambu Complex (Worden et al, 2008).

The newly identified Nanambu Complex has implication for the prospectivity of the area. For instance the newly identified Nanambu Complex from WRD006 is within 500 m of Lower Cahill Formation located in several holes to the east. This would suggest a similar setting to the Ranger Mine environs, where Lower Cahill Formation onlaps the Nanambu Complex and is a site of significant structural complexity including thrusting and development of dilational zones. A few kilometres further to the east is WRD0030 (drilled in 2008), which intersected gneisses similar in character and geochemistry to those found in WRD006. This indicates that Lower Cahill Formation in this area may be flanked to the east by Nanambu Complex allowing still further opportunity for favourable settings to deposit uranium. Clearly there are a number of prospectivity implications to be considered in light of the recent NTGS age dating and 2008 drilling.

CONCLUSIONS

The area targeted as a structural environment similar to the Aurari Fault Zone (Angularli Prospect) has produced favourable intercepts of uranium mineralization within the basal layer of the Kombolgie Subgroup (Mamadawerre Sandstone). This new prospect has been named Angularli. Although there were little indications of structure in drill core that intercepted mineralization, the area remains prospective for large offsetting structures capable of producing a hydrothermal system necessary for uranium mineralization. Furthermore, samples from several kilometres away have also returned anomalous geochemistry possibly indicating a broad hydrothermal system.

As the mineralization found is hosted within the sandstone, the 2009 drilling campaign will focus on targeting basement mineralization related to structure. Deeper drilling up to 150 m below the unconformity may be required to identify prospective basement rock thought to be part of the Cahill Formation. Economic mineral deposits found within the Alligator River Uranium Fields are all associated with the rock types found within the lower portion of this formation.

Further detailed sampling and mapping is required at Angularli and also to follow up two anomalous surface samples collected in 2008 from the western portion of the project.

Nanambu Complex is now understood to exist in the northern portion of the project and may even flank Lower Cahill Formation to the west and east, as testified by NTGS dating of gneisses from WRD006 and the similarity of rocks from WRD0030. The full implications of this geological scenario are being assessed, which may provide further encouragement to explore in the area. An immediate target is a strong conductor identified by the TDEM survey in 2008, which is located 700 m to the west of WRD0030, possibly representing graphitic structures within the Lower Cahill abutting Nanambu Complex in a similar fashion to the Ranger Deposit.

VTEM orientation lines have shown that this system cannot penetrate the thick conductive cover to the north and has confirmed a number of TEMPEST features at Angularli and to the south, including a conductor to the south of the Telstra track. Using the LandTEM SQUID system, ground TDEM appears to work in areas of conductive cover in both step-wise and slingram configurations.

EXPENDITURE

Eligible exploration expenditure Cameco Australia for EL5893 for the reporting period totalled $2,185,248.45. Expenditure for 2009 is expected to be $1,500,000.

Table 4 - EL5893 Eligible Expenditure

RECOMMENDATIONS

Mapping and Prospecting

- Prospecting, sampling and mapping is intended for Angularli and also to followup to anomalous surface samples to the northwest of the Telstra track.

Heli-Diamond Core Drilling

- A single helicopter diamond hole is planned to test a TEMPEST conductor that was postponed from 2007 and 2008.

Truck Mounted Diamond Core Drilling

- As a first priority, up to eight diamond holes will follow up mineralization intersected at Angularli, stepping out 100 m and then up to 500 m from the existing holes.
- A second priority will be to drill a single hole testing a relatively strong TDEM conductor detected in the 2008 ground survey located in the northern part of the project.

Geophysics

- A detailed, 25 m line spaced airborne magnetic/radiometric survey is planned to be flown over the Angularli prospect. A further survey is also planned over the area where anomalous geochemistry has been identified by surface samples.
- Ground resistivity is planne**d** for the Angularli area to enhance delineation of conductive layers and more effectively target drilling.

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