Cameco Australia Pty Ltd

EL 22826, EL 23370 & EL 23371

MEIKINJ VALLEY PROJECT

NORTHERN TERRITORY

FINAL REPORT

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Target commodity:	Uranium
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Tenement manager:	AMETS
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SUMMARY

Meikinj Valley is a uranium exploration project located in Western Arnhem Land, operated and managed by Cameco Australia Pty Ltd. Meikinj Valley Project consists of three Exploration Licences (ELs) 22826, 22370 and 22371 granted to Cameco Australia Pty Ltd on August 31 2005 for a period of six years, and covers an area of 134.67 km² (45 blocks). In August 2008, in accordance with regulations outlined in Sections 26 and 27 of the *Mining Act*, 7 blocks from EL 22371 were relinquished. This report documents all the work undertaken on the now surrendered Exploration Licences 22826, 22370 and 22371.

Exploration work conducted during the four years of tenure comprised regional outcrop sampling in all the three Meikinj Valley tenements and aircore drilling on EL 22371 and EL 22826. Thirty-eight outcrop samples were collected during 2006 field season and 569 aircore holes were drilled for 7,913 m over two years to determine alteration patterns, background geochemistry and to delineate uranium anomalies as indicators for potential mineralisation at depth. Aircore drilling indicated that the uranium mineralisation at historical prospects 'Anomaly 12' and 'Robbies' is restricted to the near surface zone, probably a result of scavenging of uranium from the low content uranium bearing basement rock units and local enrichment due to near surface weathering processes, thereby downgrading the prospectivity of the area.

There have been no encouraging results returned from the exploration work carried out to date; therefore Cameco Australia is surrendering Exploration Licences 22826, 22370 and 22371.

,000 mE | 295,000 mE | 300,000 mE | 305,000 mE | 310,000 mE | 315,000 mE | 320,000 mE | 325,000 mE

8,625,000 mN | 8,620,000 mN | 8,615,000 mN | 8,610,000 mN | 8,605,000 mN

EL22370

EL22371

EL22826

Jacob's anomaly

Caramal Fault

Caramal Fault

Caramal Fault

Robbies Anomaly

Anomaly 12

GEOLOGY LEGEND

- Cover
- Oenpelli Dolerite
- Malgowa Sandstone
- Gilruth Volcanics
- Gumarinbang sandstone
- Nungbalgarri Volcanics
- Mamadawerre Sandstone
- Unconformity
- Nabarlek Granite
- Tin Camp Granite
- Nimbuwah Complex
- Zamu Dolerite
- Nourlangie Schist
- Upper Cahill Formation
- Lower Cahill Formation
- Kadjurmarndi Quartzite
- Unconformity
- Nanambu Complex

LEGEND

- No Go Areas
- Tenement Boundary
- Faults

Legend

- Outcrop Samples
- Aircore holes

N

500 0 500 1000
metres

Cameco Australia

Meikinj Valley Project

EL 22826, EL22370 and EL22371
Meikinj Valley Drilling
Location Map
1:100K Cameco Base

Compiled by: EKM 27/11/2009

Scale: 1:70000

Coord. System: AMG Zone 53 (AGD 66)

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INTRODUCTION

Meikinj Valley is a uranium exploration project in Western Arnhem Land, Northern Territory consisting of Exploration Licences: 22826, 23370 and 23371. The project is managed and operated by Cameco Australia Pty Ltd (Cameco). No encouraging results have been obtained from exploration work conducted in the tenement; therefore Cameco is surrendering Exploration Licences 22826, 23370 and 23371.

The project area is underlain by a variety of granitic and metamorphic basement rock units of the Nimbuwah Complex and Myra Falls Metamorphics, which are unconformably overlain by Kombolgie Subgroup sandstone. The basement rocks and the Kombolgie Subgroup are intruded by sills and dykes of the Oenpelli Dolerite. Favourable structures and hydrothermal alteration occurs in the region with several uranium occurrences identified in the project area, indicating a favourable mineralising and alteration event.

The prime objective is to discover economic 'unconformity style' uranium mineralisation by targeting geological settings similar to the known deposits of the Alligator Rivers Region, Northern Territory, and the concealed high-grade deposits of the Athabasca Region, Saskatchewan, Canada. Existing deposits in the ARUF (Alligator Rivers Uranium Field) include Ranger, Jabiluka, Koongarra and Nabarlek. All four major deposits are hosted in metamorphic rocks of the Cahill Formation and its inferred high-grade metamorphic equivalents, the Myra Falls Metamorphics. Upper and Lower Cahill Formation rocks outcrop within the Meikinj Valley project area. The project area has a history of uranium exploration extending back to the early 1970s, coincident with the discovery of the Nabarlek deposit and the nearby Caramal deposit.

Work completed by Cameco Australia during the four years of tenure comprised the following:

- Outcrop sampling program in 2006 in which 38 samples were collected for geochemical analysis.
- Truck mounted aircore drilling program in 2007 in which 234 holes were drilled totalling 3,309 m.
- Truck mounted aircore drilling program in 2008 in which 335 holes were drilled totalling 4, 604 m.
- Further assessment of existing and newly acquired data sets (geochemistry and radiometrics) to determine the remaining uranium mineralisation potential of the tenements.

Location and Access

The Meikinj Valley tenements (EL 22826, EL 22370 and EL 22371) are located in western Arnhem Land, Northern Territory on the Alligator Rivers (SD-5301) 1:250 000 scale topographic map sheet, the 1:100 000 Oenpelli (5573) and Howship (5572) map sheets, and the Mount Howship (5572-4), Gagudju (5572-1) and Spencer Range (5573-2) 1:50 000 topographic map sheets (Figure 1). The Ranger uranium mine is situated approximately 50 km to the west and the rehabilitated Nabarlek mine site is 45 km to the northwest.

Access is either by air to the Nabarlek or by road via the Arnhem Highway to Jabiru and then via Cahill's Crossing and unsealed roads to the Myra Base Camp located on Tin Camp Creek. Several old tracks that traverse EL 22371 and EL 22826 have provided the basis for accessing all the aircore work areas. The remote and rugged nature of the sandstone covering most of EL 22370 resulted in exploration activities being helicopter supported.

Figure 1: Location of Meikinj Valley Tenements in Arnhem Land

Tenure

The Meikinj Valley Project tenements were granted to Cameco Australia Pty Ltd on August 31 2005 for a period of six years and cover an area of 45 blocks for 134.67 km².

The Meikinj Valley project is located within an Arnhem Land Aboriginal Reserve and is subject to Exploration Consent Deed with the Northern Land Council (NLC) on behalf of Traditional Owners. Meikinj Valley contains areas that are sensitive or have cultural and/or social significance to the Traditional Owners, 'No Go Areas', and are excluded from exploration (Figure 2).

Compulsory land reductions were waived by DRDPIFR at the end of the second year of tenure; Cameco citing various exploration impediments. In 2008 Cameco relinquished 7 of 20 blocks from EL 22371, less than the 50% stipulated by the statutory requirements of Sections 26 and 27 of the *Mining Act*. Cameco applied for and was granted a partial Waiver of Reduction (Figure 2). Cameco surrendered all three Meikinj Valley tenements on 31st August 2009.

Figure 2: 2008 Meikinj Valley Relinquished areas

Regional Geological Setting

The Meikinj Valley project area is located within the eastern margin of the Neoarchaean and Palaeoproterozoic Pine Creek Orogen, and is in a region that has been subdivided into the Nimbuwah Domain of the Alligator Rivers region (Figure 3).

Figure 3: Simplified geology of the Pine Creek Orogen showing the location of selected mineral deposits (after Pirajno and Bagas, 2008).

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

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 4: NTGS 1: 250, 000 Regional Geology

The oldest exposed rocks in the Alligator Rivers region are included in the Neoarchaean (ca. 2500 Ma) Nanambu Complex. The complex consists of paragneiss, orthogneiss, migmatite, and schist forming domical structures that are unconformably overlain by Palaeoproterozoic metasedimentary and metavolcanic rocks, which were formerly included in the Pine Creek Geosyncline. Palaeoproterozoic 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 Neoarchaean 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 Palaeo- to Mesoproterozoic Kombolgie Subgroup (Thomas, 2002). The rocks have also been locally migmatisation 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 Palaeo- 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 Neoarchaean and Palaeoproterozoic 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. Localised effects in the sandstone include silicification, desilicification, chloritisation, sericitisation, and pyrophyllite alteration. A characteristic mineral assemblage of prehnite-pumpellyite-epidote has formed in the quartzofeldspathic basement rocks adjacent to the intrusions.

Deformation since deposition of the Katherine River Group includes transpressional movement along steep regional-scale strike-slip faults and possibly some shallow thrusting. These regional faults follow a pattern of predominantly north, northwest, north – northwest and northeast strikes, giving rise to the characteristic linearly dissected landform pattern of the Kombolgie Plateau. Another significant set trends east-west and includes both the Ranger and Beatrice Faults.

The Bulman Fault Zone is a principal regional feature and is considered to represent a long-lived deep crustal structure, with a large lateral component in rocks of the PCS. However, it appears that post-Kombolgie displacements along this and other faults have not been great, because the Arnhem Land Plateau is essentially coherent and offsets along lineaments are generally minor. Field investigations of many interpreted ‘faults’, including those with a marked geomorphic expression, show no displacement, and are best described as joints or lineaments (Thomas 2002).

Erosional remnants of flat-lying Palaeozoic Arafura Basin and Cretaceous Carpentaria Basin are present as a veneer throughout the coastal zone of the Top End. Various regolith components are ubiquitous as cover throughout much of the region.

Local Geology

The Meikinj Valley project area is situated in the Myra Falls Inlier, an east-west basement window exposure of Kakadu Group and Cahill Formation/Myra Falls Metamorphics, bordered by Mamadawerre sandstone (lower Kombolgie Subgroup) to the north, south and east (Figure 5). The basement rocks of the Meikinj Valley project include Proterozoic Cahill-equivalents of the Myra Falls Metamorphics, Kudjumarndi Quartzite and Archaean Kukalak Gneiss (provisional name, defined during 2008 mapping by NTGS). Kudjumarndi Quartzite outcrops as prominent ridges that dominate the inlier. Based on the recent NTGS mapping and the stratigraphy intersected in drill holes at the Two Rocks prospect to the north of the project, there is a suggestion that rocks mapped as Kudjumarndi Quartzite may represent an equivalent of a quartz-rich siliciclastic unit within the Lower Cahill Formation. Units stratigraphically below the quartzite may include the prospective carbonaceous and calcareous units of the Lower Cahill Formation (Hollis et al., 2009; Thomas, 2003).

Figure 5: Local Geology of Meikinj Valley Project

The large-scale structural geometry of the project area is that of NE-SW trending antiforms and synforms with fold wavelengths varying between a metre to hundreds of metres in scale. The major structure present is informally named 'Caramal fault', and runs roughly east-west through the Caramal prospect to the east across EL 22826 and EL 23371(Figure 4). The presence of a small uranium resource at Caramal, adjacent to the fault, gives the structure some prospectivity, although any relationship between mineralization and this structure is purely speculative.

Prominent NNE to NNW striking quartz breccia ridges cross cut the basement rocks, which were interpreted to be pre-Kombolgie by Afmex. Johnston (1987) suggests that there are three orientations of post-Kombolgie structure, NNE, EW and NNW, from oldest to youngest respectively. The NNE trending quartz-breccia ridges may correlate with the post-Kombolgie NNE structures.

Exploration Target

The focus of exploration in the Meikinj Valley Project area is the discovery of unconformity-style uranium deposits. The prospective nature of the Alligator Rivers region is demonstrated by the presence of economic uranium occurrences at Ranger, Jabiluka, Koongarra and Nabarlek. In addition, significant gold, platinum and palladium resources are present at existing uranium occurrences in the Alligator Rivers Uranium Field (Ranger, Jabiluka, Koongarra and Coronation Hill/South Alligator Valley-style deposits) suggesting that economic Au and Platinum Group Element (PGE) mineralisation, associated with economic or sub-economic uranium may also be present in the project area.

Recent research into the Proterozoic Westmoreland District uranium deposits, from the Northern Territory – Queensland border suggests that the same broad physiochemical processes that govern unconformity-style uranium deposits also produce Westmoreland-style deposits, and indeed other basin/unconformity associated precious and base metal deposits (Wall 2006). 'Westmoreland-style' uranium mineralisation may pose an exploration target in the dolerite and volcanic units of the project area, although only sub-economic uranium occurrences have been discovered associated with these units in West Arnhem Land.

Despite local variations in structures, host rocks, and element associations, all uranium deposits in the Alligators River region are located close to the unconformity between basement rocks and the overlying Kombolgie Subgroup. In several examples, down-faulted blocks of the Kombolgie Subgroup, such as at the Ranger No 3 Orebody and the Hades Flat Prospect, are present adjacent to mineralisation. This common association of sandstone and uranium mineralisation is considered to be indicative of a favourable setting for the concentration of mineralising fluids, irrespective of the deposit-style model being invoked.

PREVIOUS EXPLORATION

Exploration in the Alligator Rivers region of the Northern Territory can be divided into two

phases. The first phase of exploration commenced in 1970 and continued until September 1973 when a Federal Government moratorium on mineral exploration on Aboriginal Land halted exploration activity. Exploration in West Arnhem Land eventually recommenced in 1986 and in the Meikinj Valley project area in September 1995.

Queensland Mines Pty Ltd (QML): 1970-1973

QML began systematic exploration over Application Permit (AP) 2046 in January 1970, beginning with photo-geologic mapping and geological reconnaissance. A fixed-wing airborne radiometric and magnetic survey was conducted between April and June 1970 by Hunting Geology and Geophysics Ltd, flying quarter-mile spaced, N-S lines at 400 feet elevation over APs 2046 and 2221. Ground follow-up of radiometric anomalies was conducted over the following two years.

In March 1971, QML conducted a helicopter-mounted radiometric survey that included systematic traverses over large basement exposures as well as rim- and canyon-flights along the basement-sandstone unconformity.

Detailed ground radiometric grids were established over significant radiometric anomalies, followed by costeaning/trenching and eventually diamond/percussion drilling of some prospects, though none of the early anomalies are located within the current Meikinj Valley project area.

Prior to 1972 no geochemical surveying had been conducted by QML. Orientation surveys were conducted over Nabarlek and Caramal in 1972, followed by regional stream sediment sampling (Swingler 1974a). Samples were only collected from streams in the basement inliers at 400m intervals.

G4 is the first high priority anomaly to be identified in the Meikinj Valley project area. Subsequent ground follow-up work by QML in late 1973 identified '…small exposures of secondary uranium mineralisation associated with fault zones containing quartz veins and visible secondary copper mineralization,' (Swingler 1974b). A rock sample from this anomaly is reported to have returned assays of 0.23% U_3O_8, 1400 ppm Pb and 650 ppm Cu (Thevissen 1997).

Exploration activities came to an abrupt halt in September 1973 when the Federal Government imposed moratorium on uranium exploration.

QML and Tin Camp Creek Joint Venture: 1995-2000

Exploration activity within the Meikinj Valley project area restarted in 1995 following the grant of Tin Camp Creek tenements (ELs 2505-2507, 2516, 2517, 7029 and 9534) to QML on September 12 1995.

1995 - 1996

With the agreement of the Northern Land Council and Traditional Owners, AFMEX conducted helicopter based radiometric-magnetic and electromagnetic (DIGHEM) surveys of the tenement in July 1996, in conjunction with surveys in adjacent projects. The survey located 93 radiometric anomalies, of which 6 are located within the Meikinj Valley project area.

In 1996, a regional stream sediment survey was conducted in areas accessible by 4WD vehicles, with reconnaissance in the Meikinj Valley tenements restricted to Anomaly 12 (G4 Anomaly), Robbies and Jacobs anomalies. One sample collected 4 km downstream of Caramal had 10 ppm U and 50 ppm Th.

Mapping was conducted over Anomaly 12 in 1996. Thevissen (1997) reports that the anomaly is associated with a hematite-quartz breccia ridge, with an exposed strike length of 1.2 km. Radiometric prospecting located several small areas of elevated radioactivity, some with secondary Cu mineralisation.

1997

Ground follow-up work was conducted on the West Gorrunghar radiometric anomaly in 1997 and failed to identify any anomaly. Alonso *et al.* 1998 concluded that West Gorrunghar was a false anomaly due to the contrast between the overlying sandstone (20-35 cps) and basement arkosic mica schists (80-120 cps) exposed at the unconformity.

A RAB drilling program was conducted on the flood plains at the western end of Meikinj Valley to test for Lower Cahill Formation beneath the sediments. A total of 68 holes were drilled for 2,087 meters at 50 metre intervals along 1 km spaced lines. No anomalous radioactivity was encountered in any of the drill holes. Rocks of Lower Cahill Formation and Kudjumarndi Quartzite were intersected. Narrow zones of banded sulfide-quartz veins cross cutting quartz-mica-chlorite schists were intersected in some holes. Subsequent assay for Au returned a single result above the detection limit of 35 ppb Au, which was not considered significant (Thevissen 1997).

1998

Exploration work in the Meikinj Valley area in 1998 consisted of follow-up sampling of the 1996-1997 stream sediment survey. A total of three samples (2 in EL 22370; 1 in EL 22826) were collected, sieved to –80#, and assayed for Au, Co, Cu, Ni, Pb, Th, U, V and Zn. All samples returned U below 2 ppm (Fabray, 1999).

1999 - 2000

A partial reduction of the Tin Camp Creek Project was conducted at the end of the third year of tenure in September 1999 (Fabray 1999). This land comprises EL 22370 and parts of EL 22371. No work was conducted over this area in 1999.

A further partial reduction was conducted in September 2000, resulting in the relinquishment of the land currently comprised by EL 22826 (Fabray 2000). No additional work was conducted on this land in 2000 (Ewington *et al.* 2000).

Cameco Exploration: 2005 - 2008

Cameco was granted the Meikinj Valley tenements on 31st August 2005, with the project covering 45 blocks for 134.67 km². No on-ground exploration activities were conducted during 2005-2006 field season due to delays in holding the Northern Land Council (NLC) work clearance meeting and damage to the Myra camp caused by Cyclone Monica (Wykes 2006). 38 outcrop samples were collected and submitted for

geochemical analysis in 2006. Sample MV060012 collected on the southern part of EL 22826 close to Anomaly 12 had the best result with 412.69 ppm U_3O_8 in clay-hematite altered medium grained granitoid. Samples surrounding MV060012 returned poor results which are considered to be within expected background value of the Tin Camp granite. Location, descriptions and geochemical data for the outcrop samples is presented within the DATA directory accompanying this report.

Aircore drilling was conducted in EL 22826 in 2007 to determine background geochemical signatures, investigate historical uranium anomalies and to prospect in greater detail the trace of the Caramal Fault. A total of 234 holes for 3,309 m were drilled at 200 - 400 m spacing. No radiometric anomalies were encountered during drilling. The program was not completed due to delays and timing of drilling.

All drill holes intersected basement lithologies (gneiss, schist, quartzite, amphibolite and arkose) belonging to the Tin Camp Granite, Myra Falls Metamorphics and Kudjumarndi Quartzite below a shallow transported surface cover and in-situ weathering profile. Hand held SPP2 scintillometer results of drill cuttings failed to indicate significant elevated radioactivity in any of the holes drilled (Figure 8).

Geochemical analysis on drill hole sample assay results did not produce any significant geochemical targets. The maximum radiometric responses were recorded in two samples of variably altered and weathered granitic material from the Tin Camp Granite. Sample D07MVA0016-003 from aircore hole MVA0016 returned a geochemistry result of 10.7 ppm U_3O_8 from 10 to 16 m and sample D07MVA0027-004 from aircore hole MVA0027 returned 7.5 ppm U_3O_8 from 12 to 13 m in granite. The uranium concentrations in aircore samples D07MVA0016-003 and D07MVA0027-004 were not considered significant as they are within the expected background value of the Tin Camp Granite. The 2007 aircore drilling programme did not generate any targets that required further investigation.

Table 1: Exploration summary for ELs 22826, 22370 and 22371 during 2005-2008

EXPLORATION PROGRAM: REPORTING PERIOD 2008 - 2009

Exploration in the Meikinj Valley tenements during the reporting period (2008-2009) consisted of 331 truck-mounted aircore holes totalling 4,610 m in EL 22371 and EL 22826. The aircore drilling was conducted by Bullion Drilling Pty Ltd of Kalgoorlie, using a truck mounted aircore drilling rig. Aircore drilling was conducted to determine bedrock geology, background geochemistry, identify blind anomalies and alteration systems, to prospect in detail the trace of the Caramal Fault and to determine the prospectivity of the area surrounding Anomaly 12. The locations of aircore holes are presented in Figure 6 and Figure 7 below.

Figure 6: Location of Aircore Holes (Western Meikinj Valley)

Figure 7: Location of Aircore Holes (Eastern Meikinj Valley)

Aircore drilling

Aircore holes completed during the reporting period were drilled to refusal or where drilling conditions (eg, ground water) inhibited penetration. Drill spoils from each metre were inspected using a handheld scintillometer (SPP2) for total gamma. Representative samples were collected from each metre of drilling, and placed in soil chip trays, which are stored by Cameco in Darwin. A short wave infrared (SWIR) reflectance spectrum is recorded from each sample represented in the soil chip trays using an Analytical Spectral Device (ASD).

Geochemical sampling was conducted as nominal five metre composite samples, with smaller sample intervals over zones with increased gamma or alteration. Samples were submitted for geochemical analysis to Northern Territory Environmental Laboratories (NTEL) of Darwin, Northern Territory, for a suite of 59 elements including 4 lead isotopes.

Sampling, geochemical analysis, and infra-red spectroscopy methodology is summarised in (Appendix 1).

Appendix 1: Cameco Australia Standard Sampling Methodology and Procedures

EXPLORATION RESULTS AND INTERPRETATION (2005-2009)

Aircore collars, down-hole lithologies and samples submitted for geochemistry analysis are presented in tables 5-7. Geochemistry, major and minor lithologies, alteration data and clay mineralogy as determined SWIR can be found in the DATA directory accompanying this report. Distribution maps of various elements and aircore bottom of hole lithologies are presented from Figure 8 to Figure 11.

Table 2: Collar details for aircore holes

Table 3: Lithological details for Aircore holes

Table 4: Samples collected from Aircore drilling

Figure 8: Map showing Aircore drilling end of hole lithologies

Figure 9: Map showing uranium geochemical results for aircore samples

Figure 10: Map showing U/Th distribution for air core samples

Figure 11: Map showing gold geochemical results for aircore samples

Identified ‘bottom of hole’ rock types have been plotted and overlaid on an outcrop geology map (Figure 8). There can be inherent difficulties in the accurate identification of rock types from the drill cuttings.

There were no radiometrically anomalous or significantly altered rocks encountered during drilling. The best result is 21.57 ppm U_3O_8 from MVA0439 from depth 0 to 2 m (EL 22826) in pisolitic cover. MVA0443 and MVA0444 which are 300 m apart, located to the north eastern part of EL 22826 recorded 18.74 ppm U_3O_8 in MVA0443 from 4 to 9 m in saprolite and 18.62 ppm U_3O_8 in MVA0444 from 4 to 9 m in granite. MVA0240 which is located 2.6 km to the south west of MVA0444 has 19.8 ppm U_3O_8 from 14 to 15 m in schist of Lower Cahill Formation.

The two historical anomalies, 'Anomaly 12' and 'Robbies' are located in EL 22826. Drilling of the historical anomalies failed to confirm the existence of the anomalies below surface. Aircore samples collected near 'Anomaly 12' and 'Robbies' anomaly returned uranium results below 5 ppm U_3O_8 which is not considered significant for the Tin Camp Granite, Cahill Formation or Kadjurmarndi Quartzite rock units (Figure 9). Anomaly 12' and 'Robbies' anomalies are confined to the near surface zone and may be due concentration of uranium in pisolitic cover from weathering of low level uranium bearing rocks like the Tin Camp Granite. Some samples from the Tin Camp Granite have uranium content as high as 18.62 ppm U_3O_8 indicating the Tin Camp Granite is a likely source of uranium. Uranium mobilization in the weathered rock units possibly occurred through meteoric waters moving through weathered basement rocks with low uranium content and interacting with Fe- rich pisolitic cover. No clear targets have been determined from the Anomaly 12' and 'Robbies' anomalies. Further work to ascertain the uranium prospectivity of these anomalies by drilling is not warranted due to the lack of supporting evidence from geochemistry analysis and geological mapping.

The projected position of the east-west Caramal fault has been adequately covered by a pattern of north-south lines extending for over 6 kilometers east-west. The inferred Caramal fault zone has been described as an area of subtle radiometric anomalism by previous workers. No sign of structure was observed in aircore on the inferred position of the Caramal fault. No uranium results above expected background values were returned from sampling of the Mamadawerre Sandstone, Cahill Formation, Tin Camp Granite and Kadjurmarndi Quartzite rock units intersected in the aircore drilling proximal to the projected position of the Caramal fault. The weak elevation noted in the airborne radiometrics may be associated with pisolitic soil cover in the near surface zone.

Two areas mapped as Myra Falls Metamorphics, were quite extensively covered by the drilling:

- The eastern boundary of EL 22826 consists of quartzite and gneiss with lesser arkose, schist and amphibolite and
- The central and north eastern parts of EL 22371 are predominantly gneiss and quartzite with much lesser and scattered occurrences of amphibolite and schist. All these units have been variably intruded by dolerite dykes and sills. Amphibolitic rocks are widespread and intermixed with all the major units (Figure 8).

According to the currently used geological map of the area, the north-eastern grids lay within Cainozoic cover and outcropping rocks of the Myra Falls metamorphics along drainage channels, as well as abutting a significant ridge forming outcrop of the Kadjumarndi quartzite in the NW. Geological descriptions from aircore drilling suggest most of the analysed samples to be highly weathered basement (predominantly quartzite and schist). The U/Th ratio of most of the samples from the Meikinj valley tenements discourages further exploration work (Figure 10).

CONCLUSIONS

Analysis of the assay results and geological logging of the drill chips reveal no anomalies warranting further work in the Meikinj Valley tenements. Exploration carried out by Cameco has not increased the potential of the known anomalies discovered by historical exploration, nor has exploration drilling defined any new targets or areas of interest.

Weakly anomalous uranium results from aircore drilling at ‘Anomaly 12’ and ‘Robbies’ prospects have only been identified in surficial units and are interpreted to have resulted from the scavenging of uranium from meteoric waters and precipitation within Fe-oxides in pisolitic cover. The disappointing results from the various geochemical surveys and subsequent follow-up sampling programs have revealed uranium mineralisation in Meikinj Valley to be restricted to surface anomalies with limited depth extent and therefore do not warrant further work.

Cameco Australia has surrendered the Meikinj Valley project which consists of Exploration Licences 22826, 22370 and 22371, due to the lack of encouraging results.

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