Cameco Australia Pty Ltd

EL 23462

KUKALAK PROJECT

NORTHERN TERRITORY

ANNUAL AND FINAL REPORT

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Authors:	Asha Rao, Geologist Gavin Otto, Senior Project Geologist
Contact Details:	PO Box 35921 Winnellie NT 0821 Ph. 08 8947 3477
Email for further technical details: **Email for expenditure:**	gavin_otto@cameco.com.au gavin_otto@cameco.com.au
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Tenement manager:	AMETS
Copies:	Cameco Australia Pty Ltd DRDPIFR - Minerals and Energy

SUMMARY

Kukalak is a uranium exploration project in northwest Arnhem Land covering Exploration Licence 23462 (EL 23462). The project was granted on 25 July 2002 for an initial period of 6 years and is managed and operated by Cameco Australia Pty Ltd (Cameco). In 2007, 13 sub-blocks of the original licence were relinquished in accordance with the statutory requirements of Sections 26 and 27 of the *Mining Act*. In 2008, an application for extension was granted and the licence was renewed for a further two years beyond the original six-year term.

Exploration conducted by Cameco during the seven years of tenure comprised various geophysical surveys; geological reconnaissance and ground-proofing of earlier mapping; data evaluations of the tenement in context with the regional geology; various programs of outcrop sampling based on anomalies identified by the geophysics; geochemical analyses of historical drillcore; and four programs of helicopter-assisted diamond drilling (2003, 2004, 2005 and 2007) with 12 holes for 3,973.1 m drilled.

Work conducted during the 2008-2009 reporting period consisted of a project-wide review of all available data and anomalies that had not yet been investigated, a helicopter-supported program of outcrop sampling was undertaken in conjunction with this review; a re-evaluation of the Devil's Elbow prospect that involved relogging of historical drill core; and a review of the Whaleback West Anomaly to investigate a uraniferous and ferruginised sandstone sample that had been collected in 2006.

Results from the 2008-2009 were generally disappointing. The highest uranium assay returned from the outcrop sampling was 27.7 ppm U_3O_8 recorded in a granitic sample from Tin Camp Creek Granite in the Caramal Re-Entrant. Relogging of historic drill core from the Devil's Elbow prospect failed to further improve the conceptual model for the area. The review of the Whaleback West Anomaly indicated that the uranium within the ferrous sandstone sample probably resulted from the scavenging of uranium from the overlying Nungbalgarri Volcanics, thereby downgrading the prospectivity of the area.

Work conducted during the final year of tenure did not produce any significant results to increase the prospectivity of various prospects, such as Devil's Elbow, or produce new targets for potentially economic uranium mineralisation. As a result, Cameco Australia has surrendered EL23462 comprising the Kukalak Project.

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INTRODUCTION

Kukalak is a uranium exploration project that covers Exploration Licence EL23462 that is managed and operated by Cameco Australia Pty Ltd (Cameco).

The prime objective has been to discover economic 'unconformity-style' uranium mineralisation within a geological environment similar to the known deposits of the Alligator Rivers Region, Northern Territory, and the concealed high-grade deposits of the Athabasca Region, Saskatchewan, Canada.

The project is underlain by a variety of basement units, including the favourable Lower Cahill Formation metasediments that host the uranium deposits of the Alligator Rivers Uranium Fields (ARUF). The Kombolgie Subgroup sandstone and volcanic units outcrop extensively throughout the area. Favourable structures and hydrothermal alteration occur in the region. Several uranium occurrences have been identified in the project area and indicate that favourable mineralising and alteration events have taken place in the region.

Exploration work conducted between 25 July 2002 and 24 July 2009 comprised geological reconnaissance; ground-proofing of earlier mapping; detailed airborne magnetic-radiometric-digital terrain, Hyperspectral and TEMPEST surveys over various parts of the tenement; data reviews and evaluations in context with the regional geology; various programs of helicopter-supported outcrop sampling and geophysical anomaly ground follow-up; geochemical analyses of historical drillcore and four programs of helicopter-assisted diamond drilling (1125 m in 2003, 354 m in 2004, 1299 m in 2005 and 1277 m in 2007).

The work conducted during the 7th year of tenure (2008-2009) comprised:

- a review of all anomalies - this included a program of helicopter-supported outcrop sampling at Quarry Hill North, Caramal Fault (covering the Caramal Re-Entrant and Nick's Anomaly) and also Devil's Elbow;
- a review of the Devil's Elbow prospect, conceptual target modelling, and relogging of historical drillholes KLD005 and KLD021 to determine an explanation for the existing uranium mineralisation at the prospect and what effect this model would have on the prospectivity of the area.
- a program of helicopter-assisted geological reconnaissance around the Whaleback West Anomaly in the central eastern portion of the tenement. This accompanied a desktop review of the anomaly based on rock chip sample and reconnaissance from an airborne radiometric anomaly in 2006.

Location and Access

EL 23462 is located in Western Arnhem Land, Northern Territory (Figure 1) on the Alligator River (SD-5301) and Millingimbi (SD-5302) 1:250,000 scale topographic map sheets, and the Oenpelli (5573), Goomadeer (5673), Howship (5572) and Liverpool (5672) 1:100,000 scale topographic map sheets. The area is also covered by 1:50,000 scale topographic map sheets – Dalabon, Gagudju and Spencer Range.

Figure 1: Location Map for the Kukalak Project (EL 23462)

EL 23462 is centred approximately 60 km east of Jabiru (Figure 1). Due to the sandstone escarpment prevalent throughout most of Arnhem Land, the terrain is often rugged and access is only possible via helicopter and then by foot. Previous exploration programs on the

Kukulak licence have utilised tracks to the Devil's Elbow and Dog Leg prospects however, these tracks have not been used or maintained since exploration ceased during the early 1990s. Since 2002, helicopter access has been based from a semi-permanent field camp located on Tin Camp Creek, named 'Myra Camp', which had originally been established by Uranerz in 1987. Road access to Myra Camp is via the Arnhem Highway to Jabiru and bitumen road to Cahill's Crossing, then by unsealed roads via Oenpelli and the old Nabarlek mine site.

Tenure

The Kukulak Exploration Licence (EL 23462) is located in Aboriginal Land (Arnhem Land) and covers an area of 375.5 km^2, which comprises 112 blocks. The exploration licence was granted on 25 July 2002 for a period of six years. The original area of the exploration licence was 419.12 km^2 (125 blocks). In accordance with the statutory requirements of Sections 26 and 27 of the Mining Act, 43.62 km2 (13 blocks) of the eastern-most part of the tenement were relinquished in 2007.

In April 2008, an Extension Application for EL 23462 was submitted and approved for renewal for another two years beyond the original six-year term.

Figure 2: Location Map for Areas Relinquished in 2007

Exploration Licence 24362 was surrendered on 27th July 2009.

The Kukulak licence contains two classes of area that are sensitive or have cultural and/or social significance to the Traditional Owners. The most important of these classes is the 'No Go' division of areas which are absolutely excluded from exploration activities of any kind. The other class is the 'Restricted Access Areas', where permission from the Traditional Owners must be sought before conducting exploration within the designated areas.

REGIONAL GEOLOGY

The Kukulak Project is located within the eastern margin of the Pine Creek Orogen (PCO) and lies on the eastern boundary of the Nimbuwah structural domain (Needham and Stuart-Smith 1980) Figure 3 illustrates the regional geological setting of the PCO with the project location highlighted in the northeastern corner.

Figure 3: Simplified Geology of the Pine Creek Orogen (PCO)

This section is based largely on work done by (Needham 1990, Needham et.al. 1980, Needham, et.al 1988). Information that is not based on these references is indicated below.

Kukulak is situated on the eastern margin of the Nimbuwah Domain, which lies in the eastern-most region of the Pine Creek Orogen. The Nimbuwah Domain comprises a granitic Neoarchaean basement overlain by Palaeoproterozoic metasediments (psammitic and pelitic schists, quartzofeldspathic gneisses, homogeneous and layered amphibolites, lesser calc-silicates and carbonaceous schists and ultramafic rocks. The succession is intruded by post-tectonic granites and dolerites.

The Bureau of Mineral Resources (now Geoscience Australia) completed a series of 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 from Darwin to Katherine to the Alligator Rivers region (refer Figure 4).

Figure 4: Northern Territory Geological Survey 1:250,000 Regional Geology

In 2008, the Northern Territory Geological Survey conducted extensive field mapping and age dating of samples collected from various outcrops and subcrops of granitic gneiss, using the Sensitive High-Resolution Ion Microprobe (SHRIMP) U-Pb geochronological dating technique (Hollis, Carson, and Glass 2009). This work was undertaken in order to better recognise and characterise the Archaean basement within the Pine Creek Orogen. It was concluded that the oldest exposed rocks in the Alligator Rivers region were Neoarchaean granitic gneisses from the northeastern Myra Falls Inlier (Hollis, Carson, and Glass 2009). Geochronological data yielded a magmatic crystallisation age of 2671 ± 3 Ma for these rocks, which were also found to be coeval with unexposed Woolner Granite (ca. 2675 Ma) approximately 200 km to the east.

The Nanambu Complex consists of paragneiss, orthogneiss, migmatites and schist that form domical structures 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 to the Mount Howship Gneiss and Kudjumarndi Quartzite. Geochronological data have constrained the age of the Nanambu to ca. 2530 – 2510 Ma and were found to be shallowly extensive beneath cover (Hollis, Carson, and Glass 2009). These formations are included in the Kakadu Group and are probably correlatives of the Mount Basedow Gneiss and Munmarlary Quartzite, respectively (Ferenczi, Sweet, and authors 2005). The group appears to onlap Neoarchaean basement highs, but gneissic variants are also thought to be 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’ consists of a structurally lower calcareous marble and calc-silicate gneiss 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 a psammitic unit in what is informally known as the ‘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 distinguish 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 events before the deposition of the late Palaeo- to Mesoproterozoic Kombolgie Subgroup (Thomas 2002). The rocks have also been migmatised 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, Brakel, and Carson 1999; Sweet et al. 1999). 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 Geoscience Australia 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 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, Sweet, and authors 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.

Project Geology

Kukulak is located on the eastern-most extremity of the Myra Falls Inlier and the northeastern extremity of the Caramal Inlier. The Myra Falls and Caramal Inliers

consist largely of the amphibolite-facies metamorphic components of the Kakadu Group and Cahill Formation (Hollis, Carson, and Glass 2009), which include quartz-mica gneisses, amphibolites, quartzites, quartz-mica schists and minor carbonates.

Palaeoproterozoic metasedimentary rocks overlie an older basement of biotite-rich, quartzofeldspathic gneisses. Due to poor exposure, lack of outcrop continuity, and the subsequent difficulty in distinguishing lithological boundaries, it was tentatively proposed that these rocks be classified on the basis of their respective age groupings and named accordingly (Hollis, Carson, and Glass 2009). Subsequently, the quartzofeldspathic gneisses that structurally underlie the Kakadu Group in Arnhem Land and that have crystallisation ages of ca. 2530 – 2510 Ma, have been named the 'Kukulak Gneiss' whereas gneissic rocks found to have a crystallisation age of ca. 2670 – 2640 Ma have been classified as the 'Arrarra Gneiss' (Hollis, Carson, and Glass 2009). The Kukalak Gneiss is spatially located within the Myra Inlier.

Unconformably overlying the Archaean basement and Palaeoproterozoic metasediments are the sandstones and conglomerates of the Kombolgie Subgroup. The majority of the tenement is covered by up to 250 m of Mamadawerre Sandstone, however the southern part of the tenement is covered by up to 130 m of Gumarrirnbang Sandstone. These sandstones are separated by thin intervals of the basaltic Nungbalgarri Volcanics.

Figure 5: Local Geology

The most visibly obvious structure in the tenement is a deeply incised curvilinear feature, herein informally termed the Kukalak Valley. This feature has previously been inferred to be a shallow southwest-dipping reverse fault, the 'Goomadeer Thrust' (Thomas 2002; Rippert 1992; Otto et al. 2003). It is overall northwest-southeast orientated and, in some places, is traced by the Goomadeer River. It is now thought to represent the margin of an uplifted block of sandstone above a dolerite sill or lacolith.

Undifferentiated Cretaceous rocks have been mapped in the south of the Kukalak tenement on the Milingimbi 1:250,000 map sheet (Carson, Brakel, and Haines 1999). The rocks are exposed as weathered outcrops of lateritised sandstone and siltstone that forms weather-resistant, mesa-like ridges.

EXPLORATION TARGET

The focus of the Cameco exploration strategy is the discovery of unconformity-style uranium deposits. There is also additional potential for gold, palladium and platinum Coronation Hill-style deposits of the South Alligator Valley (SAV) region.

The major deposits in the area (Ranger, Jabiluka, Koongarra and Nabarlek) appear to have a common position relative to the base of the Kombolgie Subgroup i.e. Palaeoproterozoic unconformity, or to its erosional margin, and serve here as exploration models. Features such as down-faulted blocks of Kombolgie Sandstone (i.e. footwall blocks of reverse faults) are juxtaposed adjacent to the mineralisation at Ranger No. 3 orebody, are considered to be indicative of a favourable setting for the concentration of mineralising fluids within structurally disrupted unconformity settings.

The SAV and Rum Jungle-Waterhouse deposits also exhibit spatial relationships to Palaeoproterozoic unconformities. The SAV deposits tend to be more gold-enriched and are characterised by the presence of palladium and platinum selenides. The Sargents and Kylie styles of mineralisation, located south of Rum Jungle on the fringe of the Archaean Waterhouse Complex, have some similarities to the SAV with Au-PGE enrichments in association with uranium. The Depot Creek Sandstone, the basal unit of the Tolmer Group, unconformably overlies these deposits, which are hosted in a carbonate-carbonaceous schist sequence.

PREVIOUS EXPLORATION

Early exploration – 1970s

Exploration began in Kukalak after the discovery of the Ranger and Nabarlek ore-bodies in the Alligator River region in 1969 and 1970, respectively. Esso Minerals (Esso) and Queensland Mines Pty Ltd (QMPL) carried out exploration work over the tenement in the early 1970s until exploration was banned in the Alligator Rivers area in early 1973 by a federal government imposed moratorium on exploration, pending a resolution on the issue of Aboriginal Land Rights. QMPL conducted an airborne radiometric and magnetic survey over the Kukalak area during 1972. No further early work is documented on the Kukalak tenement.

Exploration 1987 to 1993

No exploration work was conducted from 1973 until Uranerz Australia Pty Ltd (Uranerz) negotiated rights to explore the Kukalak tenement and undertook exploration between 1987 and 1994 (Barrett 1988, 1990; Bruneton 1993; Coles 1988; Paterson 1989; Rich and Easdown 1988; Rich and Bruneton 1992; Rippert 1992). A summary is provided in the 2003 Annual Report (Otto et al. 2003).

Uranerz conducted detailed exploration over the Kukalak area from 1986 until the company departed Australia in June 1991. Afmeco (part of the Cogema Group), in 1991, continued detailed exploration over the Kukalak area through a joint venture arrangement (Afmeco 50%, Uranerz 25%, Kumagai 25%). Afmeco subsequently quit the joint venture and relinquished EL 3421 (Kukalak) in September 1993.

Figure 6: Uranerz Drill Hole Location Map

A variety of exploration methods were utilised during the term of exploration by Uranerz; these methods include mapping, extensive sandstone geochemistry sampling, soil and water sampling, stream sediment sampling, radon gas surveys, ground prospecting in conjunction with airborne and ground geophysics, including airborne magnetic, radiometric, and electromagnetic input surveys; ground magnetic and electromagnetic surveys; helicopter supported and ground gravity surveys; heliborne radiometry; trenching and RAB, RC and diamond core drilling. In total 51 holes were drilled for 4,616 m of drilling.

Uranerz initially carried out follow up of radiometric anomalies identified from the airborne radiometric and magnetic survey. Some 54 anomalies were identified. After ground prospecting of these anomalies it was found that the fixed wing airborne

radiometric flight lines did not pick up some of the major prospects containing uranium secondaries eg Ferricrete Anomaly. A helicopter borne spectrometer was used to survey along geological contacts and sandstone escarpment edges.

The intensive exploration programs conducted during the first two years of tenure generated a number of possible targets in several areas. The best of these targets is the Devils Elbow and Ferricrete Anomaly where U secondary mineralisation has been discovered. Other targets, which could not be substantiated, were the Leichhardt Plateau, Whaleback Anticline, Nicks Anomaly, and Dog Leg.

Cameco Exploration

Cameco Australia – 2002 to 2003

Exploration on EL23462 by Cameco Australia during the 1st year of licence consisted of reconnaissance outcrop sampling; ground proofing of previous geological mapping and prospects, as well as evaluation of the tenement in context with the regional geology (Otto et al. 2003). Airborne TEMPEST (electromagnetics) and detailed magnetics-radiometrics surveys were flown in order to determine the unconformity profile, potential drill targets and information about the basement below the sandstone.

A total of 158 outcrop samples were collected from various prospects around the project area. The best uranium assays were from ferricrete/ironstone samples collected from Ferricrete Anomaly within a fault splay of the Ranger Fault, and returned U_3O_8 values of 0.898 %, 0.438 %, 0.429 % and 0.427 % with associated elevated gold, arsenic, cobalt, nickel, lead, vanadium and zinc.

The highest uranium values returned from the sandstone cover were 21.2 ppm U_3O_8 from the Gumarrirnbang Sandstone collected 100 m north of Ferricrete Anomaly, and 19.5 ppm U_3O_8 from the Mamadawerre Sandstone collected from the basal, unconformable, sandstone – Tin Camp Granite contact near Nick's Anomaly. Mapping indicated that the sandstone in this area was highly silicified with chalcedonic quartz-infilled vugs and open dissolution vugs coated with drusy quartz.

The TEMPEST survey was flown for a total of 193 line km, at 200 m line spacing. Data collected over areas of Gumarrirnbang Sandstone revealed a weak to moderately conductive layer (> 10 mS/m) at shallow depths, interpreted to be the Nungbalgarri Volcanics, but did not show the sandstone-basement unconformity. TEMPEST survey data over the Mamadawerre Sandstone showed a conductive unconformity that varied in depth from near surface up to 250 m. An offset of 150 m in the depth of the conductive unconformity indicated the offset of a north-trending major structure approximately 1.3 km east of the Dog Leg prospect, which is coincident with a strong magnetic response of Oenpelli Dolerite.

A detailed airborne magnetic and radiometric survey totalled 548 line kilometres, flown at 50 m line spacing and 30 m altitude, was conducted by UTS Geophysics Pty Ltd (UTS). The survey covered the Dog Leg, Devil's Elbow prospects and Ferricrete Anomaly. The detailed airborne magnetics allowed more accurate delineation of the Oenpelli Dolerite, Nungbalgarri Volcanics and some lineaments/structures. The detailed radiometrics successfully identified the previous radiometric anomalies

Ferricrete and Devil's Elbow. No new insights were gained that could impact on further targeting and prospect analysis.

Oenpelli Dolerite along the Kukalak Valley (possible fault) was downgraded as a target for uranium mineralisation. Localised, low-level, elevated radioactivity, uranium elevation was found to be associated with north orientated flexures along the thrust fault (e.g. Dog Leg and Devil's Elbow).

Cameco Australia – 2003 to 2004

Exploration on EL 23462 during the 2nd year of tenure consisted of a helicopter-assisted drilling program of three diamond drill core holes (KLD100, KLD101 and KLD103) totalling 1,125 m (refer to Figure 7). Drilling was conducted at the Ferricrete Anomaly and Dog Leg prospects with the objective of identifying mineralisation at the Mamadawerre Sandstone – basement unconformity, adjacent to the Ranger Fault. An additional objective of the drilling program was to assess the extent of the uranium anomalism at the lower and upper contacts of the Nungbalgarri Volcanics. The drilling conducted at Dog Leg was undertaken in order to test the contact between the Cahill Formation and the Tin Camp Granite.

Figure 7: Cameco Drill Hole Location Map

No significant mineralisation was intersected: the best uranium assay returned was 38.9 ppm U_3O_8 from the unconformity and volcanic contacts in KLD100. Chlorite alteration and silicification were observed within the Mamadawerre Sandstone. Lead isotope analysis from the sandstone at Devil's Elbow indicated a lead concentration from uranium parentage that was greater than that from thorium parentage. Increased concentrations of lead from uranium were found to vector westwards at the Ranger Fault. No Cahill Formation metasediments were intersected at the Dog Leg prospect, however the Tin Camp Granite was found to have high background radiation with U_3O_8 and Th values of 26 ppm and 69 ppm, respectively.

Cameco Australia – 2004 to 2005

Exploration carried out during the 2004 – 2005 reporting period comprised a program of helicopter-assisted diamond core drilling; the relogging and sampling of segments of historical drill core from the Devil's Elbow prospect; field mapping, sampling and prospecting at the China Block prospect; and an airborne electromagnetic TEMPEST survey.

Drilling comprised of one diamond cored hole (KLD104) totalling 354.1 m to the west of Devils Elbow (refer to Figure 7). The best composite geochemical analysis was 132 ppm U_3O_8 over 3 m, while the best spot geochemical analysis was 752 ppm U_3O_8 and 46 ppb Au. Although these results clearly suggest that uranium-bearing fluids were active in this area, it was concluded that there had been insufficient deformation and subsequent fluid-rock interaction to form economic grade intersections.

The relogging and sampling of historic drill core identified a number of potential targets for follow-up, particularly in the Devil's Elbow area. This included chlorite, sericite and haematite alteration near the unconformity in most drill holes investigated from Devil's Elbow, which also coincided with elevated radiometric readings.

Mapping and prospecting revealed targets at China Block, Quarry Hill North and along the northeast-trending China Fault. Outcrop sampling was conducted in conjunction with the mapping – best assays were returned from the China Block prospect where uranium was found to be up to 425.6 ppm U_3O_8 and gold was recorded up to 755 ppb.

An airborne TEMPEST survey totalling 1785 line km was flown at a line spacing of 200 m and at a flying height of 120 m. The survey identified the conductive unconformity and several faults (including the Ranger Fault) that appeared as conductive ridges.

Cameco Australia – 2005 to 2006

The fieldwork program for the 4th year of tenure comprised a program of helicopter-assisted diamond core drilling of 4 holes for 1,299 m (KLD0105, KLD0106, KLD0107 and KLD0108R), outcrop sampling and a small high-resolution airborne magnetics-radiometrics-DTM survey along major structural corridors (refer to Figure 7 for drilling locations).

Three diamond drill holes (KLD0105 to KLD0107) were collared at China Block to test the various structural positions within the intersection of the Quarry and China Faults. All holes demonstrated brittle movement along the Quarry Fault splays and the presence of a small transfer structure, which were targeted near the base of each hole. The sandstone demonstrated brittle deformation over intervals where faults had been predicted and coincided with numerous systematic offsets that were consistent with mapped surface geology. The only result of interest was a uranium anomaly of 212 ppm U_3O_8 within a 90 cm-thick interval corresponding to a narrow shear zone with haematite alteration. Also associated with this interval were 86 ppb Au and elevated concentrations of Fe, Al, B, Be, V, Sn, W and Bi.

The diamond core hole (KLD0108R) drilled at Rangamam intersected 127.6 m of Mamadawerre Sandstone and 122.4 m of Nimbuwah Complex granite, with a narrow interval of Oenpelli Dolerite intruding the granite, however no significant deformation, radioactivity or alteration facies were observed.

Outcrop samples were collected from various radioactive or anomalous localities throughout the tenement. One sample was taken from a large northeast-trending ravine in the southern part of the Kukulak Valley and comprised haematite-altered, desilicified sandstone that returned an assay of 69 ppm U, elevated U/Th, 37,000 ppb labile U, 0.48 ppm Bi, 0.2 ppm Ag, 2 ppm Se, elevated REE (total 79 ppm), an enriched MREE pattern and extremely low Pb isotopes (Pb 7/6 = 0.14 and Pb 8/6 = 0.02).

A detailed airborne magnetic-radiometric-DTM survey, totalling 1381 line km, was flown along the Kukulak Valley line spacing of 50 m and a flying height of 30 m. The objective of the airborne survey was enhancing the resolution of radiometrics and magnetics to allow the identification of new uranium anomalies and infer structures. The survey successfully enhanced the resolution of radiometric and magnetic features/structures and anomalies along the Kukalak Valley and in the China Block fault system, thereby providing targets for follow-up during the 2006 field season.

Cameco Australia – 2006 to 2007

The exploration program for EL23462 during 2006 – 2007 consisted of 224 collected outcrop samples to determine any true spatial variation that may exist between labile U and Pb isotopes and also to investigate any contamination that may have been present in the 2005 outcrop samples; follow-up sampling and mapping of anomalies identified by the detailed 50m-spaced magnetic-radiometric-DTM survey that was flown in 2005; and further assessment of both existing and newly acquired data sets (geochemistry, radiometrics, magnetics, Hyperspectral and TEMPEST) to define new anomalies and drill targets for 2007.

A review of all available data from past and recent TEMPEST, magnetic-radiometric-digital terrain, Hyperspectral and geochemistry surveys was also undertaken, in order to identify possible new anomalies and future drill targets. Three areas were highlighted for future drilling; the Caramal Fault Zone, Dog's Leg and China Block prospects. A number of geochemical anomalies were also identified throughout the tenement and were followed up during the 2007-2008 field season.

Cameco Australia – 2007 to 2008

Fieldwork conducted during the 2007 to 2008 reporting period comprised a tenement-wide, helicopter-supported outcrop sampling program, a four hole diamond drilling program (KLD0109, KLD0110, KLD0111 and KLD0112) totalling 1,277 m, in the central and northern parts of the project area and the continuation of an integrated assessment of existing and newly acquired data sets (geochemistry, radiometrics, magnetics, Hyperspectral, TEMPEST) to define new anomalies and further drill targets for future exploration programs (refer to Figure 7 for drill hole locations).

No uranium results above expected background values were returned from the suite of outcrop samples collected. The best result from the sampling program was 43 ppm U_3O_8 from a sample of ferruginised sandstone, containing drusy quartz veins and hard, hematitic bands.

No uranium results above expected background values were intersected in the drilling.

EXPLORATION PROGRAM 2008 – 2009

The work program for the 7th and final year of tenure consisted of helicopter-supported outcrop sampling, geological mapping and reconnaissance; relogging of historical drillcore from the Devil's Elbow prospect, and a desktop review and field reconnaissance of the Whaleback West anomaly.

Outcrop Sampling

A project-wide, desktop review of all available data was conducted from which several geochemical and structural anomalies were identified. This was followed up with a program of helicopter-supported outcrop sampling and geological reconnaissance over the northern and central parts of the project (mainly the Quarry Hill North and Caramal Re-Entrant) with a total of 77 rock chip samples collected (refer Figure 8 and Table 1 for locations and summary description).

Table 1: 2008 Outcrop Sample Locations
Figure 8: 2008 Outcrop Sample Locations

The outcrop sampling and processing was performed using Cameco standard methodology, as outlined in Appendix 1. This appendix details methodology used for reflectance spectroscopy, laboratory techniques and methods, and analysed elements. 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 can also be found within Appendix 1.

Appendix 1: Outcrop Sampling Procedures

A summary of the geochemical results, PIMA and sample descriptions is presented in the tables below. Distribution maps of uranium, and clay minerals as determined by The Spectral Geologist for outcrop samples is presented in the below figures.

All tabulated data is presented in the data folder of this report.

Table 2: Outcrop Sample Geochemistry Results
Table 3: Outcrop Sample TSA Clay Minerals

Figure 9: Outcrop Sample TSA Clay Mineral Distribution Map
Figure 10: Outcrop Sample Uranium Distribution Map

The maximum radiometric responses were recorded in four samples of variably altered and weathered granitic material from the Tin Camp Granite in the Caramal Re-Entrant area. Samples KL080114, KL080115 and KL080412 recorded high radiometric responses of 570, 120 and 600 cps, respectively. Geochemical analytical results of these samples returned KL080114 with 12.5 ppm U_3O_8 and 20.7 ppm Th, KL080115 with 27.7 ppm U_3O_8 and 31.8 ppm Th, and KL080412 with 1.27 ppm U_3O_8 and 16.8 ppm Th.

The highest geochemical analytical uranium results were from the Tin Camp Granite with these samples also having high Th values with up to 64.7 ppm Th in sample KL080517. It is clear that the high radiometric responses from these samples are due to combined uranium and thorium minerals. The results from these samples are not considered for further work.

Sample KL080405 was collected from deeply weathered and lateritised Nungbalgarri Volcanics and returned 22 ppb Au, which was the highest assay for gold returned from the 2008 outcrop sample program. The gold is most likely due to iron scavenging and local enrichment due to near surface weathering processes.

Short-Wave Infra-Red spectroscopic analysis was conducted using the Terrsapec Analytical Spectral Device instrument, with clay mineral matching using The Spectral Geologist library. Analysis of the samples identified illite, kaolinite, halloysite and muscovite as the dominant clay species. The results of the clay mineral determination correspond with results determined from the Airborne Multispectral Survey that was conducted in 2001.

Relogging of Historical Drill Core

A conceptual model (Taylor 1999) for the uranium mineralisation at Devils Elbow (refer Figure 11) was reviewed with the assessment of two holes, KLD005 and KLD021, which were drilled by Uranerz.

Figure 11: Conceptual Target Model for Devils Elbow

The model suggests that Oenpelli Dolerite has intruded along a pre-existing west over east thrust fault. Smaller subsidiary structures may also be present and uranium anomalies identified in the drilling of KLD007 and KLD006 may represent leakage of uranium along smaller secondary structures from a deep unconformity style uranium deposit associated with the main thrust fault to the west and at depth from Devils Elbow. To assess this model, drill core from KLD005 and KLD021 were reviewed with a focus on structure and alteration.

KLD005 was drilled to a depth of 286.4 m. The hole was reverse circulation (RC) precollared through Oenpelli Dolerite to 121.2 m, before commencement of diamond core drilling. Mamadawerre Sandstone was intersected to the unconformity at 251.5 m, and is generally represented as fine-gained, silicified sandstone. Zones of weak chlorite alteration are present below 200 m, and moderate hematite alteration is observed within the basal 20 m of the sandstone. The basement consists of coarse grained granodiorite of the Nimbuwah Complex. No zones of elevated radioactivity were noted in the drill core.

KLD021 was drilled to a depth of 384.0 m. The hole was RC precollared to 185 m through massive Oenpelli Dolerite before commencement of diamond core drilling. Mamadawerre Sandstone was intersected from 190.85 to 337.81 m. The lower contact of the intrusive dolerite with the sandstone displays a fine-grained chilled margin and the sandstone is strongly silicified with minor quartz-chlorite breccias and drusy quartz infilled cavities. The sandstone in this upper section is strongly bleached with abundant chlorite spots. A zone of strongly broken and fractured sandstone is observed from 276.5 m through to 312 m containing abundant silica precipitation, black hematite and chlorite alteration. Minor thin dolerite dykes intrude the sandstone from 322 to 327 m. From 337.81 m weakly altered granite of the Nimbuwah Complex was intersected to 384 m. No zones of elevated radioactivity were noted in the drill core.

The lack of significant structure, alteration and radiometric responses in the reviewed drill core suggests that the conceptual model targeting an unconformity style uranium deposit to the west of the Devils Elbow is not prospective. While structural disruption was observed in KLD021, only weak to moderate chlorite alteration is associated with the brittle structures and no elevated radiometric response was noted.

Whaleback West Anomaly

The Whaleback West Anomaly is located in the central part of EL 23462. In August 2005, a detailed magnetic-radiometric survey was flown to provide better resolution to allow the identification of new uranium anomalies and the inference of structures possibly associated with uranium mineralisation. The survey identified several anomalies including a large area of elevated U^2/Th in the Whaleback Anticline.

The anomaly was followed up in 2006 during a program of tenement-wide outcrop sampling. The area is mapped as Mamadawerre Sandstone, however loose cobbles and scree of Nungbalgarri Volcanics are present in the area, suggesting that the exposed sandstone pavement is proximal to the contact surface with the overlying Nungbalgarri Volcanics. The background gamma counts were recorded as 200 cps (Exploranium GR110 scintillometer) in the area with one localised reading up to 5500 cps, and several other occurrences of 500 to 700 cps. One sandstone sample (KL060082) was collected from the site of the localised high gamma reading, which returned a geochemical result of 393.8 ppm U_3O_8, and 17 ppb Au. The sample was taken from a low, flat-lying area of bare silicified, undulose, sandstone pavements and comprised fine-grained, ferruginised sandstone with disseminations of specular hematite throughout.

No obvious structure was observed at the site itself, although a minor surficial breakaway was noted in the sandstone pavement with a small change in relief with a trend towards 040 degrees. A moderate-scale, north-northwest trending fault was mapped along the western edge of the anomaly that is interpreted to have had some control on the distribution of the Nungbalgarri Volcanics and possibly the anomaly.

The most feasible explanation for the localised uranium mineralisation at Whaleback West anomaly is that of precipitation of uranium minerals enriched by scavenging of U by Fe-oxides from remobilised U in meteoric waters moving through the sandstone and interacting with the mafic volcanics near the ground surface. The uranium has been localised near the upper contact of the Mamadawerre Sandstone with the overlying Nungbalgarri volcanics or just below in the sandstone and enriched by ferruginisation due to weathering.

Approximately 3.7 km to the east-southeast of the Whaleback West Anomaly, Uranerz drilled a single diamond drill core hole (KLD018) in the late 1980s. The sample suite taken from this drill hole contained a single anomalous, yellow-coloured sample near a structurally disturbed interval within the basement (logged as Nimbuwah Complex granodiorite). The sample returned an assay of 179 ppm U_3O_8 and high Au of 40 ppb. However, the lack of structure both at surface and from geophysical data of the area makes it difficult to relate this anomalous downhole sample to the uraniferous sandstone collected from drilling 3.7 km to the west.

CONCLUSIONS

Results from exploration during the 7-year tenure of the project have been largely disappointing and have not increased the prospectivity of the project area. Indications of potential uranium mineralisation at Whaleback West, for example, have only been surficial and are interpreted to have resulted from the scavenging of uranium from meteoric waters and precipitation within Fe-oxides derived from weathering of the overlying Nungbalgarri Volcanics into the Mamadawerre Sandstone. The 2008 targets sampled in the northern portion of the tenement have returned little of interest that requires further work.

Exploration carried out by Cameco has not increased the exploration potential of the known prospects discovered by historical exploration. Apart from some low level uranium

anomalies identified within basement rocks from drilling, most mineralisation is related to the Oenpelli Dolerite or the Nungbalgarri volcanics. Some of this mineralisation has been enriched by ferruginisation during weathering, and is probably the explanation for the relatively high grades at Devils Elbow and Ferricrete anomaly. Uranerz reported grades up to 5.8 % U_3O_8 within trenches at Devil's Elbow, but this has not been able to be repeated and historical drilling did not upgrade the prospect. Extensive surface sampling along the Kukalak Valley and extending from the valley on the plateau to the west have not resulted in any substantial uranium anomalies that require further follow-up.

No clear targets have been determined from the remaining low level geochemical anomalies. Further work to ascertain the uranium prospectivity of these remaining anomalies by drilling is not considered warranted due to the lack of supporting evidence from geophysics and geological mapping.

Results from the exploration work have failed to increase the prospectivity of the project leading to the surrender of EL 23462 at the end of it's seventh year of tenure.

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