Cameco Australia Pty Ltd

Exploration Licence 23522
East Alligator – Northern Territory

Annual Report

CONFIDENTIAL

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SUMMARY

The East Alligator Exploration Licence (EL23522) is located in West Arnhem Land, approximately 280 km west of Darwin and has an area of 754 km^2. Cameco Australia Pty Ltd was granted the Licence on 26th February 2003 for a period of 6 years.

Cameco's exploration aim within the West Arnhem region is to discover a unconformity-style uranium deposit of economic proportions. This report outlines activity undertaken by Cameco for the year ending 25th February 2004, and represents the first exploration report for the East Alligator Exploration Licence.

Work completed during this initial year of exploration included reconnaissance outcrop sampling, processing and interpretation of HYMAP hyperspectral data, and airborne magnetic and radiometric surveys. A summary of the work undertaken is tabled below.

Activity	**Timing**	**Details**	**Location/ Coverage**
Outcrop Sampling	September 2003	n = 121, 2 x 2 km grid	Eastern part of licence.
Airborne Hyperspectral Survey	Data Collection: August 2002 Data Processing/Interpretation: March-May 2003	HYMAP Mk I, 11 x N-S flight lines, average pixel size = 6 m	Eastern part of licence
Airborne Magnetics/ Radiometrics/ Digital Terrain Model	Data Collection: July 2002	2417 line km, 200 m line spacing, 60 m flying height	Eastern part of licence

Better analytical results for the outcrop sampling include 110 ppm U, 75.5 ppm U, 34.3 ppm U and 27 ppm U. Several samples anomalous in U outline a northwest trend proximal to the Bulman Fault Zone. Further sampling and integration of geochemical data with PIMA and HYMAP datasets is planned for 2004.

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INTRODUCTION

This report summarizes exploration activity conducted by Cameco on the Alligator Licence (EL23522) for the year ending 25th February 2004.

All digital data that has been acquired to date by Cameco is submitted with this report, on CD or DVD. In some instances data from within culturally sensitive 'no-go' areas has been excised from the electronic dataset, and has not been displayed on figures. This is in accordance with requests by the Traditional Owners.

LOCATION AND ACCESS

Location Map

EL23522 is located 280 kilometres east southeast of Darwin. The relevant 1:100 000 topographic map sheets are Howship 5572 and Liverpool 5672. There is no vehicular access to or within the Licence. Exploration work is facilitated by charter helicopter based at the Myra exploration camp which is situated approximately 45 km north of the licence.

TENURE

Cameco Australia Pty Ltd was granted EL23522 on 26th February 2003 for a period of 6 years. Tenure expires on 25th February 2009.

REGIONAL GEOLOGY

Regional Geology

The following paragraphs describe the general geology, stratigraphy, and geochronology of the Alligator River Uranium Field, as written by previous workers.

The oldest rocks exposed in the area are gneisses belonging to the Mount Howship Gneiss of the Kakadu Group of lower Palaeoproterozoic age, which is interpreted to overlie the Archaean Nanambu Complex. The Mt Howship Gneiss is overlain by the Kudjumarndi Quartzite, which is one of the main marker horizons in the region.

The psammitic rocks of the Kakadu Group are overlain by the Cahill Formation also of lower Palaeoproterozoic age, which is the host of the uranium ore bodies in the area. The Lower Cahill Formation consists of a basal calcareous unit that is overlain by a sequence of pelitic schists, meta-psammite and amphibolite. A well-defined amphibolitic unit at the top of the Lower Cahill Formation hosts the Nabarlek uranium deposit. The Upper Cahill Formation and Nourlangie Schist consist of a monotonous sequence of meta-psammite, schist and amphibolite.

East and south of the area of the Palaeoproterozoic sediments lie the granitoid rocks of the Nimbuwah Complex. These granitoids were extensively migmatised during the Top End Orogeny, which is dated at about 1800 Ma. The relationship between the Cahill Formation

and the Nimbuwah Formation is little known. Limited field observations show the contact to be migmatitic and gradational.

Later post-orogenic Proterozoic granites (1780-1750 Ma) such as the Nabarlek and Tin Camp Creek Granites have intruded the met sediments in the east and south of the area.

The upper Palaeoproterozoic Kombolgie Formation overlies the older rocks unconformably. This formation consists of sandstones with a prominent basaltic horizon (Nungbalgarri Volcanic Member), which crops out in the northeast of the tenements. The flat-lying sandstones form the Arnhem Land escarpment.

The Oenpelli Dolerite (1710-1720 Ma) intrudes the early Palaeoproterozoic metasediments and the Kombolgie Formation, and forms large lopolithic bodies. It is the youngest Precambrian rock cropping out in the area.

LOCAL GEOLOGY

The following descriptions of the geology of the East Alligator project area are extracted from Zaluski (2003).

No basement rocks occur within the East Alligator project area. The nearest basement rocks are exposed in the northwest, at the southern end of the Beatrice Inlier. These rocks consist of Nimbuwah Complex orthogneiss. Farther to the west and north, off the Arnhem Land plateau are metasedimentary rocks of the Myra Falls Metamorphics, Cahill Formation, Kakadu Group, and equivalents in the South Alligator Valley.

Unconformably overlying the basement rocks is the Carpentarian platform represented by the Kombolgie Subgroup. The lowermost unit, the Mamadawerre Sandstone and the overlying Nungbalgarri Volcanics do not outcrop within the study area but are present immediately to the north and are presumably present in the subsurface. The lowermost unit exposed in the survey area is the Gumarrirnbang Sandstone, consisting of fine to very coarse grained, medium to thickly bedded quartz arenite (Carson *et al*., 1999). It was mainly deposited in a distal braided fluvial system although the upper portions are aeolian. This unit is conformably overlain by the thin Gilruth Volcanic Member, which is extensively lateritised. Conformably overlying is the Marlgowa Sandstone, a fine grained to granular, thickly bedded quartz arenite deposited in a braided fluvial to shallow marine, tidal environments. It contains ferruginous sandstone interbeds at several levels, with higher contents of biotite and other mafic minerals than are found in the non-ferruginous beds (Carson *et al*., 1999).

PREVIOUS WORK

No mineral exploration work has previously been undertaken on the East Alligator Licence.

WORK COMPLETED 2003

Airborne Hyperspectral

An airborne hyperspectral survey has been conducted over the East Alligator project. The survey was conducted by De Beers Pty Ltd utilising their HYMAP MkI system, an airborne multi-spectral scanning instrument designed to map minerals and identify alteration. Cameco is utilising the instrument as an aid in locating alteration patterns associated with unconformity-style uranium deposits. It is hoped that the system will identify and map variations in clay types in the sandstone such as kaolinite, illite, dickite, halloysite and iron and magnesium chlorites as well as silicification.

Reports detailing the survey logistics as well as the processing and interpretation of the results are contained within the documents listed below.

HYMAP Mk I Logistics Report by DeBeers
HYMAP Mk I Interpretation Report by Gerard Zaluski

Airborne Magnetics, Radiometrics and DTM

UTS Geophysics Pty Ltd has conducted 2,417 line kilometres of airborne geophysics over the East Alligator project, which consist jointly of magnetics, radiometrics and DTM (Digital Terrain Model). The survey was flown with a line spacing of 200 m and a flying height of 60 m.

Airborne Geophysics Logistics Report by UTS

Airborne Magnetics – Total Magnetic Intensity (TMI) with 1st Vertical Derivative (1VD)
Airborne Radiometrics – Total Counts (TC)
Airborne Radiometrics – Potassium (K)
Airborne Radiometrics – Uranium (U)
Airborne Radiometrics – Thorium (Th)
Airborne Radiometrics – RGB=U,Th,K
Airborne DTM – Height with NE Sun Angle

Airborne radiometric uranium anomalies have been identified within the East Alligator project and are primarily associated with mapped outcrops of Gilruth Volcanics. Weak anomalies are less common and are generally related to photo lineaments and dolerite dykes within the Kombolgie Subgroup sandstone (Gumarrirnbang and Marlgowa). Initial ground follow-up has been focused on anomalies that occur away from the Gilruth Volcanics using a variety of image processing techniques including RGB=U,TH,K; UxU/Th; U/Uaverage and K/Kaverage (where the average is calculated over a .2 km^2). None of these anomalies are considered to be highly prospective and have UxU/Th ratios below three.

The airborne magnetic intensity increases towards the south-east (75 nT), which is currently unexplained (as is the case elsewhere in Arnhem Land). The broad nature of this intensity change indicates a deep source greater than 5 km. Several northwest and northeast trending dykes are indicated by the magnetics, including a northwest dyke that is coincident with the

Bulman Fault Zone. The Sawcut Fault trends east northeast and is associated with a localized decrease in magnetization.

Outcrop Sampling

Methodology

A total of 121 sandstone outcrop samples were collected during September 2003. This included 104 larger 'brick' sized samples collected on a 2 x 2 km grid. These samples were designed to provide broad, first-pass geochemical coverage of the project area. An additional 17 'chip' samples were taken as follow-up of radiometric anomalies.

The location of samples and radiometric anomalies are shown on the following figure:

Sample Locations

Description of outcrop samples, including lithology, alteration, and structure are detailed in the following tables:

Stations: Descriptions of Outcrop and Geomorphology
Outcrop Samples: Alteration and Structure
Outcrop Samples: Lithology and Physical Properties

Cameco's standard outcrop sampling and sub-sampling practices are summarised in the following appendix:

Standard Procedures for Outcrop Sampling

Geochemical Analysis

All samples were analysed by Northern Territory Environmental Laboratories Pty Ltd (NTEL), a Darwin-based analytical facility. Descriptions of analytical procedures, as documented by NTEL, are contained in the following appendix:

NTEL Analytical Procedures

For samples collected at East Alligator during 2003 the relevant technique codes and analyses are summarised in the following table.

NTEL Code	Elements Analysed	Data Units
G400 Rolls Digest	47 Multi-element suite + 4 Pb isotopes	ppm
G950 M	4 Pb isotopes, U	ppb
FA	Au, Pt, Pd	ppb
G140	B	ppm
C110	LOI	%

A complete listing of elements analysed and their associated detection limits is contained in the following document:

G400 and G950 Analytical Details

Results of the analyses of the 2003 East Alligator samples are contained in:

Outcrop Samples: Analytical Geochemistry

PIMA

PIMA (Portable Infrared Mineral Analyser) analyses were undertaken for all outcrop samples collected. A PIMA II short-wave infrared spectrometer was used. This instrument measures the reflected energy from a sample in the short wave infrared (SWIR) region of the energy spectrum. The sampling area on the rock specimen that is measured is permanently marked. Multiple measurements are taken on occasions, particularly if variations in spectral features are noted.

The spectra are converted to ASCII format and processed using "The Spectral Geologist" (TSG) developed by AusSpec International, and a Cameco in-house software program called Minspec. TSG is routinely used to process all spectral data. The SWIR spectra, once processed, provide a mineral identification utilising internal software pattern matching algorithms called "The Spectral Assistant" (TSA).

Unprocessed spectra for all outcrop samples are included as .fos files in the Data Folder of this report.

RESULTS AND DISCUSSION - OUTCROP SAMPLING

The figure below displays the results of the 2003 outcrop sampling programme in relation to project-scale geology.

Results - Sample Outcrop Geochemistry

Better analytical results for the outcrop sampling include 110 ppm U, 75.5 ppm U, 34.3 ppm U and 27 ppm U. All of these are 'C'-type samples and substantiate previously identified airborne radiometric anomalies.

For the 4 samples containing > 27 ppm U, U/Th ratios are > 2, suggesting uranium is not associated with detrital silicate minerals. Elevated U values exhibit a strong Au-PGE association. Maxima of 476 ppb Au, 27 ppb Pd, and 4 ppb Pt were recorded.

Of some interest is the northwest trend outlined by a set of six samples containing > 2 ppm U (maximum 110 ppm U). This anomalous zone parallels the Bulman Fault Zone, a major post-Kombolgie structural feature. In addition, several of the better results appear to cluster near the intersection of the of the Bulman Fault Zone and the east-west-trending Sawcut Fault Zone.

Higher U values are restricted to the stratigraphically lower Gumarrirnbang Sandstone. Only one sample from the stratigraphically higher Marlgowa Sandstone returned a value of > 2 ppm U. This suggests future geochemical sampling in the East Alligator area should target the Gumarrirnbang Sandstone in preference to Marlgowa Sandstone.

EXPENDITURE

Eligible expenditure on the East Alligator project in 2003 was AUD$58,693.82.

Expenditure Statement

CONCLUSIONS AND RECOMMENDATIONS

First pass geochemical outcrop sampling at East Alligator during has outlined a 9 kilometre northwest-trending zone moderately anomalous in uranium. This zone appears similar in orientation to the northwest-trending Bulman Fault Zone. Follow up field reconnaissance and sampling are required in order to:

- increase sample density within and surrounding this anomalous zone - a nominal 1 km x 1 km grid is suggested
- further describe and document sample composition and alteration features (note: all of the higher U values are described as ferruginous or lateritic)
- obtain PIMA data for outcrop samples

The distribution of clay mineralogies within the sandstone may provide an indication of hydrothermal alteration. Illitic zones that are not controlled by stratigraphy may be of importance at East Alligator (Zaluski, 2003). Relationships between airborne hyperspectral data and available PIMA data require investigation. In turn, interpreted clay distributions need to be integrated with available geochemical data, including Pb isotopic ratios. The above strategies will facilitate an understanding of prospect-scale alteration and mineralisation, and their relationships with post-Kombolgie structure. This approach will potentially lead to the generation of sub-Kombolgie drilling targets.

PROPOSED WORK PROGRAMME AND BUDGET: 2004

A budget of AUD$50,000 has been allocated for East Alligator for 2004. This includes provision for the following proposed activities:

- heli-supported outcrop sampling; approximately 50 samples
- multi-element geochemical analyses of above samples
- geological mapping
- collection and interpretation of PIMA spectra

REFERENCES CITED

Carson, L.J., Haines, P.W., Brakel, A., Pietsch, B.A., and Ferenczi, P.A.. 1999. Milingimbi SD 53-2 1 : 250 000 geological map series Explanatory Notes. Northern Territory Geological Survey, Department of Mines and Energy and Australian Geological Survey Organization. 46p.

Zaluski, G. 2003. Processing and Interpretation of HYMAP Mk I Hyperspectral Scanner Data for the East Alligator Project (ELA 23522). Cameco Corporation, Unpublished Internal Report. 49p.