



ALLIGATOR ENERGY LTD

ACN 140 575 604

EL25002

NORTHERN TERRITORY

ANNUAL REPORT

CONFIDENTIAL

Project Operator:	Alligator Energy Ltd
Tenement Holder:	TCC Project Pty Ltd
Date:	October 2011
Period:	2 September 2010 to 1 September 2011
Report No.:	AGE_TCC -2
Target commodity:	Uranium
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Datum/Zone:	GDA94 (Zone 53)
Map Sheets:	1: 250,000: Alligator River (SD-5301) 1:100,000: Howship (SD-5572)
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SUMMARY

Exploration Licence 25002 forms part of the the Tin Camp Creek project which comprises two Substitution Exploration Licences (SELS), SEL 24921 and SEL 24922 and EL 25002. These tenements were purchased by Alligator Energy's wholly owned subsidiary TCC Project Pty Ltd in November 2010.

This Annual Report is in respect of EL25002 which was granted on 2 September 2008. The tenement is located in western Arnhem Land approximately 250 km east of Darwin and 50 km northeast of Jabiru. The tenements are considered prospective for unconformity-style uranium deposits similar to Ranger, Jabiluka, Koongarra and Nabarlek.

Geology within the tenements is equivalent to that at the known deposits in the Alligator Rivers Uranium Field and consists in part of equivalents of Lower Cahill Formation of the Pine Creek Orogen (PCO) overlain in places by the lower Kombolgie Sub-group sandstone. The Tin Camp Creek Project area has been explored intermittently since 1970 resulting in the discovery of the Caramal deposit, South Horn prospect and the Two Rocks prospect on the adjacent Tin Camp Creek Project area.

Work undertaken during the reporting period included compilation of past exploration work, liaison with the NLC and traditional owners and completion of a stream sediment geochemistry survey and reconnaissance of the licence area. This work identified an area of gold anomalism for immediate follow up in the north-eastern part of the tenement.

Alligator Energy propose to undertake a high resolution magnetics and radiometric airborne geophysical survey in 2012 in addition to ground follow up of stream sediment geochemistry anomalism by mapping and soil and rock chip sampling.

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1. INTRODUCTION

The Tin Camp Creek Project is a uranium project that comprises Substitution Exploration Licences (SELS) 24921 and 24922 and Exploration Licence (EL) 25002.

EL 25002 located within the Arnhem Land Aboriginal Reserve and is subject to a Consent Deed with the Northern Land Council (NLC) and the Traditional Owners. Clearance for work was given by the NLC, on behalf of the Traditional Owners, following the Exploration and Liaison Committee Meeting held in May 2010 at Gunbalanya.

This report details exploration activities as conducted during 2010 - 2011 on EL25002 which has consisted of geological reconnaissance and a stream sediment geochemistry survey.

In addition to this field work there has also been substantial work in preparing various compliance documentation, conducting safety and environmental audits and assisting regional stakeholders with introduced weed management programs.

1.1 Location and Access

EL 25002 is located in western Arnhem Land approximately 250 km east of Darwin and approximately 50 km northeast of Jabiru in the Northern Territory, Australia (**Figure 1**).

Access is 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. Access into the northeastern part of EL 25002 is via tracks that were established by Cameco in 2008 for the aircore drilling program in Meikinj Valley. These tracks were rehabilitated at the end of the 2008 field season and have not been maintained since. The remainder of the tenement would only be accessible by helicopter and then by foot.

Access for 2011 exploration work has been by helicopter.

1.2 Tenure

Historically, EL 25002 was within the southern part of EL 2505 which was one of the seven tenements comprising the original Tin Camp Creek project (consisting of ELs 2505, 2506, 2507, 2516, 2517, 7029 and 9354). These tenements were granted on 12 September 1995 for six years and underwent two subsequent two-year extensions. Cameco Australia assumed full ownership of the Tin Camp Creek project after AFMEX withdrew from uranium exploration in the Northern Territory and the subsequent dissolution of the joint venture on 1 March 2003. All seven tenements expired on 11 September 2005.

Application for EL 25002, which covers an area of 10.83 km² (4 blocks), was lodged on 19 April 2006.

EL 25002 was granted to Cameco Australia Pty Ltd on 2 September 2008 for an initial period of six years. The tenement was purchased by Alligator Energy's wholly owned subsidiary TCC Project Pty Ltd in November 2010 as part of the Tin Camp Creek Project package (also includes SELs 24921 and 24922).

2. REGIONAL GEOLOGY

The Robbie's West project area 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; Needham 1988)).

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

The Robbie's West project area is located within the eastern margin of the Neoproterozoic and Palaeoproterozoic Pine Creek Orogen, and is in a region that has been subdivided into the Nimbuwah Domain of the Alligator Rivers region (Figure 2).

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 and the Alligator Rivers region.

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 et. al., 2008). 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 Neoproterozoic granitic gneisses from the northeastern Myra Falls Inlier (Hollis et. al., 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 et. al., 2009). 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 Neoproterozoic basement highs, but gneissic variants are also thought to be transitional into paragneiss of the Nanambu Complex.

The Cahill Formation of the Namoon 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 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 locally migmatized 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, Gumarrirrbang 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 Neoproterozoic 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 Pine Creek Geosyncline. 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.

2.1 Project Geology

The tenement is located to the south of Meikinj Valley and comprises escarpments of Kombolgie Sandstone, Early Proterozoic quartz-mica schists of the Cahill Formation (in the valleys) and ridges of Kudjumarndi Quartzite in the northern part of the licence area **(Refer Figure 2 - Tenement Geology Map for EL 25002)**

The Kudjumarndi Quartzite forms an expansive, moderately south-dipping dip slope throughout much of the northern part of the tenement. In the southeastern corner of the project area there is an irregular north-trending chlorite-haematite breccia zone in the basement immediately below the unconformity. Basement quartz-mica schists in this area have common micro folding (S2) and crenulation developed in the S0/S1 fabric. The elevation of the unconformity is locally variable along the escarpment and may reflect the palaeotopography although one variation may represent a possible growth fault.

The Kombolgie Sandstone dips gently south from the escarpment edge, which is typical of sandstone on the edge of escarpments in this part of Arnhem Land. The basal conglomerate of the sandstone in this area is dominantly a boulder conglomerate which is up to 5 m in thickness and typically recessive above the unconformity. The unconformable contact between basement and overlying sandstone is well-exposed through most of the area traversed.

Structures of interest in the project area include a major north-northwest – south-southeast trending fault and an interpreted intersecting east-west trending fault. The latter is present within the northeastern corner of the tenement and is thought to be an extension of the Caramal Fault which transects the Caramal uranium deposit approximately 17 km to the east.

One of the features that characterise the Robbie’s West project area is a set of multiple north-south trending quartz-breccia zones, observed in the basement but not in the sandstone. These breccias vary between 2 to 10 m in width and consist of massive quartz

matrix with host rock (quartzite) fragments. In places, the matrix is highly ferruginous and less commonly has a gossanous box-work appearance.

3. PREVIOUS WORK

3.1 Overview

Exploration Pre - 2003

Although both Queensland Mines Ltd and Uranerz Australia Pty Ltd conducted exploration over the area in the 1970s and late 1980s, documentation of the exploration activities is poor however it appears that no exploration was conducted over the blocks covered by EL 25002. In 1996, AFMEX conducted an airborne geophysical survey over all of the tenements in the former Tin Camp Creek project. The survey included Dighem (DIGital Helicopter ElectroMagnetics), radiometrics and magnetics. Various radiometric anomalies were identified project-wide, including a few anomalies at Robbie's West. These anomalies were subsequently followed up by various sampling programs in 1997 and 1998, from which the best assays returned were up to 129.7 ppm U_3O_8 and 240 ppm Cu in samples of haematitic quartzite. These samples were taken from the eastern edge of the EL 2505 sub-blocks outlier however the rock chip locations were not documented in the data.

Exploration 2003 - 2005

Cameco Australia assumed full ownership and management of the Tin Camp Creek project in 2003 and conducted exploration until the tenements expired in September 2005. Work comprised mainly helicopter-supported reconnaissance and rock chip sampling – 16 samples were collected in 2004 and 31 samples in 2005. Highest uranium values returned were 1214 ppm U_3O_8 from a north-south trending quartz breccia in 2004 and 61.6 ppm U_3O_8 from an interpreted weathered and altered amphibolite immediately below the sandstone-basement unconformity, in 2005.

The uraniferous sample collected in 2004 also contained 827 ppb Au, 10 ppb Pd, 12 ppb Pt, 154 ppm Zn, 511 ppm Pb, 28 ppm Se and 24.5 ppm Ag which was found to be the highest assay returned for Ag in all of the samples collected in 2004. Some of the breccia samples also contained anomalous amounts of phosphate (P_2O_5 , as high as 18,000 ppm) however there appeared to be no direct correlation with uranium.

Exploration 2008-2010

EL25002 was granged to Cameco Australia Pty Ltd in September 2008. No field exploration was undertaken by Cameco in the 2009 and 2010 field seasons as work was restricted to data compilation and re-interpretation of past results. The tenement was purchased by Alligator Energy's wholly owned subsidiary TCC Project Pty Ltd in November 2010.

3.2 Exploration Program 2010-2011

Exploration Work Undertaken

Exploration undertaken in 2010-2011 by Alligator Energy has consisted of a review of historical exploration data, re-processing of regional geophysical datasets, liaison with Traditional Owners and completion of a stream sediment geochemistry survey.

A review of past exploration data indicated a number of sporadic surface sampling programs. It was decided as an initial step to undertake a stream sediment geochemistry survey over the entire tenement to provide a consistent coverage of the area. As part of this survey, the location of previous anomalous rock chip geochemistry samples was followed up. This work was undertaken using helicopter support. A total of 33 stream sediment samples and 6 rock chip samples were collected.

Samples were submitted to AMDEL laboratories in Darwin for sample preparation before being analysed at their Adelaide facility using Fire Assay and ICPMS analytical techniques. Assay results are provided in Appendix 1 as a Mapinfo .TAB file and Laboratory assay certificates are provided in APPENDIX 2.

The location of samples is shown on **Figure 3 - Location of Stream Sediment and Rock Chip Sampling Sites for 2011.**

Results

Laboratory results returned from the stream sediment sampling program indicated generally low levels of indicator elements. One area of anomalous gold was identified in the northeast part of the tenement. A maximum value of 115ppmAu was returned. This result is considered of interest by Alligator Energy and will be followed up in 2012.

Low level gold anomalism was identified in 2 rock ship samples (81ppb and 31 Au). Both samples were located in the same area as anomalous stream sediment geochemistry.

Anomalous uranium rock chip geochemistry noted in historical exploration reports could not be replicated.

4. EXPENDITURE

Total eligible expenditure for the Tin Camp project during the reporting period was as per expenditure report.

5. CONCLUSIONS

Initial field work has identified anomalous gold in the northwestern part of the tenement. Uranium stream sediment geochemistry was low however U geochemistry is often suppressed in the oxidising conditions of stream sediment samples. There is also a significant input into the stream sediment load from the Kombolgie sandstone escarpment to the immediate south which is likely to partly screen basement geochemistry.

6. WORK PROGRAMME AND PROPOSED BUDGET

Exploration for the 2012 field season will be focused on a detailed airborne magnetics/radiometric survey to be flown over the entire tenement. Ground follow up of the stream sediment anomaly and reconnaissance mapping following the airborne survey will also be undertaken. Soil sampling will be undertaken in the area of the gold in stream sediment anomaly.

Proposed expenditure for the 2011-2012 reporting period exploration program is anticipated to total approximately \$75,000.

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Figures

Figure 1: Location Map for EL 25002

Figure 2: Tenement Geology Map for EL25002

Figure 3: Location of Stream Sediment and Rock Chip Sampling Sites for 2011

Appendices

Appendix 1- Laboratory Assay Results