Cameco Australia Pty Ltd

ARNHEM LAND WEST

GUNBATGARRI PROJECT
EL 2857 and EL 4012

ANNUAL REPORT

CONFIDENTIAL

Date: March 2004

Report No.: GG04-02

Period: 19 March 2003 to 18 March 2004

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SUMMARY

This report describes exploration work undertaken on the Gunbatgarri project for the second year of tenure. The tenements were formerly part of the Arnhem Land West Joint Venture, a joint venture between Cameco Australia Pty Ltd (Cameco), PNC Exploration Australia Pty Ltd (PNC) and the Ngalangak Aboriginal Corporation. Cameco, in 2002, attained management then ownership of the project when PNC withdrew from exploration activities in Australia.

Field activities during the report period consisted of eight days of helicopter assisted sampling, mapping and reconnaissance, and ground validation of airborne radiometric anomalies. A majority of the radiometric anomalies were found to be associated with the ferruginous and partially lateritised rubble and remnants of the Gilruth Volcanic Member. Other sampling did not identify any significant U mineralisation.

The hyperspectral clay interpretation correlates closely with the sampled PIMA results, and indicates that a basal illitic zone is present within the Gumarrirnbang Sandstone overlying the Nimbuwah Complex basement rocks within the basement inlier.

Further work is recommended in the area of the basement inlier and also at sampling areas of structural disruption as these may provide fluid conduits necessary for U mineralisation. The Tempest geophysical survey planned for 2004 may enhance the sub-surface dimensionality of the basement inlier area and provide drill targets.

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INTRODUCTION

This report describes exploration activities carried out from 19 March 2003 to the anniversary date. The work was initially performed on behalf of the Arnhem Land West Joint Venture, (AWJV) a joint venture between Cameco Australia Pty Ltd, PNC Exploration (Australia) Pty Ltd (PNC) and the Ngalangak Aboriginal Corporation. Cameco acquired full ownership of the project in early 2002 when PNC withdrew from uranium exploration in Australia. Since the Exploration Licence is located on Aboriginal Land the exploration program was carried out under the terms of consent documentation agreed with the NLC pursuant to the Aboriginal Land Rights (Northern Territory) Act 1976.

Airborne geophysical surveys were flown in the first year of grant of title. The field program for the second year consisted of ground based field activities, comprising airborne radiometric anomaly checking, regional grid based sampling, and preliminary mapping and geological reconnaissance.

Results from the field activities suggests that airborne radiometric anomalies are coincident in the main with ferruginised Gilruth Volcanic Member rubble and scree, with a minor number of anomalies associated with black soils within watercourses and floodplains. No areas of U enrichment were identified within the sandstone.

Location and Access

Exploration Licences 2857 and 4012 are located in central western Arnhem Land. The project area is centred about 40 km southwest of Maningrida and 140 km east of Jabiru.

The main Oenpelli to Maningrida Road traverses the area with secondary service tracks to various Outstations within and beyond the tenement.

Location Map

Tenure

ELs 2857 and 4012 were granted on the 19 March 2002 for an initial period of six years. On granting, the total area covered by the licences is 1253 km^2 (23.4 km^2 for 4012). Approximately two thirds EL 2857 is designated as 'no-go' and is therefore excluded from exploration. The main 'no-go' area is to be relinquished on the third year anniversary.

Physiography

The tenement consists of heavily incised sandstone plateau merging northwards into coastal plains interspersed with tidal river estuaries. Vegetation varies with geology and topography but generally consists of eucalyptus woodland and scrubland with remnants of monsoonal forest confined to deep gorges and mangroves along watercourses.

The plateau is dissected by numerous, mostly north flowing drainages including the Liverpool and Mann Rivers. Gorges and waterfalls have developed in places.

Tenement Geology

Based on the NTGS mapping of the Milingimbi 1:250000 geological series (Carson and others 1999), outcropping rocks within the tenement are dominated by the Kombolgie Subgroup of the Palaeoproterozoic Katherine River Group. These overlie basement rocks assigned to the Nimbuwah Complex. The latter is present as a small elongated 'window' and was once thought to be intrusive into the overlying sandstone ('Gunbatgarri Complex'). The Kombolgie Subgroup is represented by the fluviatile Gumarrirnbang and Marlgowa Sandstones.

Stratigraphically, these sandstone formations are located at the top of the Kombolgie Subgroup. Depth to the unconformity from the top of the Marlgowa Sandstone on the Milingimbi sheet area is estimated to be at least 700 metres as calculated from the measurement of sections through the various sandstone units by the NTGS.

Extrusive volcanic rocks of the Nungbalgarri Volcanics and the Gilruth Volcanic Member are present. The former conformably separates the Mamadawerre (basal member of the Kombolgie) from the Gumarrirnbang while the Gilruth forms a thin lateritised or saprolitic surface separating the latter from the overlying Marlgowa Sandstone.

Oenpelli dolerite intrudes both the Nimbuwah Complex and the Kombolgie. Exposures are restricted to linear incised fault traces within the sandstone.

The Cambrian Wessel Group, Buckingham Bay Sandstone, underlies the coastal plains to the north of the sandstone escarpment. Recent cover comprising sands and clay, gravel and cemented ferruginous deposits mostly obscure any outcrop.

Tenement Geology Map

Regional Structure and Geological History

The early Proterozoic rocks of the region have been affected by the Top End orogeny (1880 to 1780 Ma), which includes the initial Nimbuwah Event or Barramundi Orogeny at about 1870 Ma. This produced a prograde metamorphic effect with associated tight folding and faulting.

Major regional faults, which affect the early Proterozoic, have northwest (Bulman), north-north-west and northerly (Goomadeer) strikes. Another significant set trends to the east and includes both the Ranger and Beatrice faults.

Dating by AGSO (now Geoscience Australia) has constrained the time of deposition of the mid-Proterozoic Kombolgie Subgroup to between 1822 and 1730 Ma. A significant hiatus existed between the Nungbalgarri volcanic event and deposition of the Gumarrirnbang.

A more intense concentration of structures traverse the mid Proterozoic and younger rocks and include northwest, east, northeast and north trends. Both faulting and jointing with displacements ranging from a few metres up to 100 metres, locally heavily dissect the Kombolgie.

In a regional context, the Gunbatgarri project is located at the northern extent of the McArthur Basin. The tectonic environments that existed during deposition of the Katherine River Group varied, ranging from extension and local basin formation with probable fault-controlled sedimentation, to a basin-wide extensional setting. As noted above the exposed sandstone units illustrate spectacular eroded joint and fault patterns, however the near horizontal to shallow-dipping bedding would imply a tectonically inactive post depositional environment.

The widespread Oenpelli Dolerite intrusive event took place at about 1715 Ma.

Exploration Target

The focus of the exploration strategy is the discovery of unconformity-related uranium deposits. The nearby economic deposits at Ranger, Jabiluka, Koongarra and the now depleted Nabarlek Mine serve as models for this strategy. The presence of gold, palladium and platinum in these deposits plus the economic gold-platinum resource at Coronation Hill in the South Alligator Valley, indicates an additional potential for this deposit style.

Previous Exploration

Historically, McIntyre Mines explored the region for uranium during the late 1960s and early 1970s. Records are sketchy but it appears that airborne surveys with limited ground follow-up was carried out. There is no indication that any mineralisation was discovered within the tenement boundaries.

Cameco Australia conducted regional airborne geophysical surveys during the first year of tenure in 2002. Coverage consisted of an airborne magnetic and radiometric survey, and Hymap Mk1 hyperspectral survey. The processed results for the Hymap survey are included in this report, as these were unavailable at the time of the last report.

EXPLORATION PROGRAM

The 2003 exploration program consisted of regional grid based sampling across the project area, airborne radiometric anomaly checking, and basic geological mapping and reconnaissance. The program was conducted over eight days from 18 August to 25 August 2003. The Cameco King River Camp was utilised as the base for field operations during the work program. Two Traditional Owners, based in Oenpelli, were present and assisted in the field activities.

In total, 169 samples were collected from 180 stations; the outstanding stations being mapping locations. 33 airborne radiometric anomalies were ground checked; the samples are included in the afore-mentioned totals.

Work Summary

Outcrop Sampling

The outcrop sampling and processing were performed using Cameco standard methodology. This methodology is shown is the Cameco Outcrop Standard Procedures.

Cameco Standard Outcrop Sampling and Processing Procedures

The grid based outcrop sampling program was designed to provide a semi-regional lithogeochemical and clay mineralogy dataset of the outcropping sandstone units within the exploration area. These samples are defined as B type samples within the datasets. This dataset would be used as a basis for definition of alteration systems and anomalous areas that may be associated with unconformity-style U mineralisation.

33 airborne radiometric anomalies were ground investigated. Radiometric anomalies appear to have two main associations, as 'trails' of anomalous points coincident with mapped outcrops of Gilruth volcanics, and less commonly within the Kombolgie Subgroup (Marlgowa) corresponding to photo lineaments. A total of 48 samples were collected from 57 locations during the ground validation of the radiometric anomalies. These samples are designated as C type samples.

A limited number of sampling traverses were conducted within and proximal to identified lineaments from satellite, remote sensing imagery and magnetics, as these areas may be the surficial expression of structural elements, where alteration fluids may have interacted with the wall rocks. Mapping and sampling of the basement window in the southeast quadrant of EL2857 was also conducted. The samples collected during the traverses are also designated as C samples.

Of the total 169 outcrop samples collected from the Gunbatgarri tenements, 1 sample was collected from the Roper River Group (tallis deposit), 3 samples from Oenpelli Dolerite, 10 samples from Marlgowa Sandstone, 9 samples from Gilruth Volcanic Member, 142 samples from Gumarrirnbang Sandstone, 1 sample from Nungbalgarri Volcanics, and 3 samples from Nimbuwah Complex basement rocks.

The following figures detail the data and results from samples collected during the program.

Sample Locations

Sample Descriptions

Outcrop Lithology and Physical Properties

Outcrop Alteration and Structural Measurements

Sample Location Map

Outcrop G400 Geochemistry

Airborne Radiometric Anomaly Locations

Airborne Radiometric Anomaly Map

Airborne Radiometric Anomaly Sample Descriptions

All outcrop samples were processed using PIMA and TSG, with results in the following tables and figures.

Outcrop Samples TSA Analysis (Identified Mineral Species)

Outcrop PIMA TSA Clay Distribution Map

Outcrop Sampling Discussion

The airborne radiometric follow-up sampling on the Gunbatgarri project failed to identify any areas of U mineralisation. Ground investigations concluded that most of the anomalies were due to ferrigenous rubbly debris and lateritised material derived from the Gilruth Volcanic Member and ferrigenous sandstone, assigned to both the Gumarrirnbang and Marlgowa Sandstone formations proximal to the upper or lower contacts of this volcanic unit. A minor number of anomalies were associated with ferricrete, pisoliths and reworked laterite profile overlying sandy areas, with one anomaly associated with organic rich black soil within swamp at the bottom of a linear creek. The black soil anomaly recorded the highest total count gamma measurement with a recording of 1650cps from black soil.

The highest U value from all outcrop sampling is 133ppm from sample GG03C10201, and was collected during radiometric follow-up work (Arad GGR-32) in the southwestern portion of the project. The sample was collected from ferrigenous debris derived from the Gilruth Volcanic Member.

Gridded Uranium Map

As previously stated the majority of the arad anomalies were in close association with the volcanic member. The mafic volcanic influence on the geochemistry can be demonstrated by the association of other elevated elemental associations, eg Cu, Fe, Ni, Nb, Mo, Pb, V, Zn and Zr. A high correlation with Al, LOI and an inverse relationship to Si also exists in the geochemical data, and may be caused by the high degree of laterisation or weathering of the mafic volcanic unit. The elevation of these elements within the proximally sampled sandstone may be caused similarly during weathering and regolith development, where the high Fe and Mg content, from the original basaltic material, was released from the volcanic and infiltrated the sandstone, allowing scavenging of metals from the circulating groundwater within the regolith profile.

Sampling within areas of the basement window identified a sheared granitic rock (GG03C10379) assigned to the Nimbuwah Complex. The sheared granitic rock has a U content of 13.5ppm. This sample is elevated in U, as compared to the other samples from the Nimbuwah basement in the area that contain up to 4ppm U. The sheared granitic rock is in ?fault contact with Kombolgie conglomerate (GG03C20379) which was observed to have blue-green clay (dravite?) coating fractures and quartz pebble clasts. This sample contains the highest U content within the sandstone cover sequence, where the sandstone has not been subjected to weathering derived hematite overprinting. Further sampling is recommended for this area.

The metals (sum of As, Co, Cu, Mo, Ni, Pb, V, Ni and Zn) distribution map shows a similar pattern to the U distribution map. Elevated samples are generally associated with a degree of weathered hematite overprinting, as demonstrated by GG03B10247, a ferrigenous sandstone sample.

Gridded Metals Map

Major structural disruption is located within the Gumarrirnbang Sandstone in the northwestern portion of EL 2857. A northeast trending structure mapped by AGSO trends through the location and is easily observed in outcrop by the structural disruption evidenced by rotated and overturned sandstone bedding (up to 5 degrees past vertical). Structural bedding measurements taken at station GG030225 display a high degree of irregularity with bedding measurements of 70 to 160, 25 to 230 and 85 to 340 dip and dip direction. The structural disruption can be seen in the following digital photographs that highlight the degree of bedding rotation. Some associated silicified fracturing cross cuts the stratigraphy with measurements of 20 to 190 dip, dip direction.

Photograph GG03Z10225

Photograph GG03Z20225

Photograph GG03Z30225

On the northern edge of the Nimbuwah basement window, an amalgamation of large blocks of ?Kombolgie sandstone, conglomerate and quartz cobbles and pebbles are present in outcrop and represent what is interpreted as a tallis deposit, formed during the ?Cretaceous and tentatively assigned to the Roper Group (GG030380). Minor ferricrete development has occurred on some of the upper surface of the outcrop.

Photograph GG03Z30280

The PIMA clays show a general correlation with stratigraphy. Clay distribution mapping of the PIMA results shows a dominance of illite surrounding the sampled areas of the Gilruth Volcanic Member indicating that illite clays respectively dominate the upper and lower portions of the Gumarrirnbang and Marlgowa Sandstone formations. Higher within the Marlgowa Sandstone, dickite clays dominate the stratigraphy. It can be interpreted that the dickite is associated with the more silicified stratigraphic horizons in the Marlgowa Sandstone, and that this horizon is less prone to weathering indicated by the higher topographical relief. A strong muscovitic phase is displayed within the Nimbuwah basement rocks. Kaolinite and halloysite are more widely spread and are interpreted as weathering products, particularly in those areas that have structural disruption.

Outcrop PIMA TSA Clay Distribution Map

A similar, yet more comprehensive pattern can be determined from the Hymap interpretational image. Zaluski, 2003, identified a general clay distribution pattern consisting of alternating illitic and dickitic zones. The basal illitic zone, in this case within the Gumarrirnbang Sandstone appears the same as that observed in the basal Mamadawerre Sandstone of other project areas. This is interpreted as a regional diagenetic or diagenetic/hydrothermal effect. This illitic clay signature is most intense in the sandstone directly adjacent to the Nimbuwah basement inlier. A dominantly dickitic zone overlies this unit, extending to the Gilruth Volcanic Member. Around the Gilruth Volcanic Member the most noteworthy clay is a muscovitic phase, similar to that observed in other projects in a similar stratigraphic position. The lower part of the Marlgowa Sandstone is dominantly illitic, with an overlying dickite zone. Kaolinite and halloysite are distributed widely but in relatively low abundance. These are generally interpreted as weathering products,

with the exception of the locally more intense kaolinite signature with illite and pyrophyllite near the basement inlier.

Hymap Clay Interpretation with PIMA clays

As expected, from other project surveys, the correlation between the Hymap clay interpretation and the results derived from the surface sampling PIMA interpretation is quite strong. PIMA clays may be more biased to specific samples that cannot be resolved in the six metre pixel resolution of the Hymap, and the 10nm sampled wavelengths within the reflectance spectra.

The onlapping Gumarrirnbang Sandstone on Nimbuwah Complex basement rocks was observed in several localities; the best being example of this contact is located at GG030377, where a basal conglomerate directly overlies the weathered granitic rocks.

Photograph GG03Z10377

GEOPHYSICS

Hyperspectral – HyMap Mk1

On the 7 and 8 of August 2002, a hyperspectral survey was flown over the outcropping Kombolgie Sandstone within the tenement. The survey was conducted by De Beers 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.

The hyperspectral processing and reporting was completed prior to the 2003 report and is now included within this report.

Airborne Hyperspectral Interpretation Report - Zaluski 2003

CONCLUSIONS AND RECOMMENDATIONS

The basement inlier on the Gunbatgarri Project is somewhat unique in the Arnhem Land area. The exposure of Nimbuwah rocks with the unconformable onlapping contact of the Gumarrirnbang Sandstone suggests that the Nungbalgarri Volcanic Member thins rapidly and Carson *et al*. (1999) suggests that the volcanics do not exist to the east of basement inlier. With the absence of this large aquiclude and stratigraphic reductant, the regional fluid flow would be significantly altered in this area.

The more prospective areas as determined from the hyperspectral survey occur within the strong illitic zone adjacent to the basement inlier and the outcropping Oenpelli Dolerite. The absence of the Nungbalgarri Volcanics and the shallow depth to basement increases the prospectivity of this area. The anomalous U within the sheared granitic rock also occurs within this defined area.

The I-type granitic rocks of the Nimbuwah Complex basement rocks are unlikely to host unconformity style U mineralisation, however within areas of western Arnhem Land, inliers

of more favourable metasedimentary sequences are contained within the basement Complex. Studies in the area should be aimed at determining whether these more favourable lithologies are present, and are present within a structural context.

EXPENDITURE

A summary of the expenditure for the reporting period is given in the following table. A total reportable expenditure for EL's 2857 and 4012 is $83 238.19.

Summary of Expenditure EL2857 and EL4012

WORK PROGRAM

A summary of the proposed exploration activities, timing and contractors under consideration for Year 3 of the project is tabulated below.

- Airborne EM (Tempest) to cover southern portion of EL2857 where sandstone cover predominates.
- Follow up favourable results from 2003 sampling. Additional reconnaissance of areas of structural complexity and the basement window.
- Tempest interpretation and definition of possible drilling targets. Dependent upon timing, ground follow up of target areas

The budget to complete the program as planned is expected to be $150 000.

Location and Scheduling of Activities

Activity	Duration of Activity	Timing	Amount	Approximate Location
Reconnaissance and sampling	3-4 days	Late May – mid June	Maximum 30 samples	Regional coverage
Follow - up Investigations	2-3 days	Late May – mid June	Dependent upon result of investigation	Closer spaced sample collection.

Listing of On-Site Personnel Requirements

Activity	Equipment	Personnel	Potential Contractor
Sampling investigations		2 - 3	2 Cameco geologist and one Traditional Owner possible
Transportation to Project area	Bell Jetranger helicopter	1 pilot	Jayrow Darwin

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