Cameco Australia Pty Ltd

ARNHEM LAND WEST JOINT VENTURE
LIVERPOOL PROJECT
EL 2855
RELINQUISHMENT REPORT FOR PERIOD 25 JULY 2001 TO 24 JULY 2003

CONFIDENTIAL

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SUMMARY

This report is the final report for exploration work undertaken on relinquished blocks within the Liverpool Project during the field seasons over the period 25 July 2001 to 24 July 2003. The tenement is part of a joint venture between Cameco Australia Pty Ltd (Cameco) and the Ngalangak Aboriginal Corporation

Exploration activities included review of a report on a pilot ARGUS multispectral aerial survey, airborne magnetic and radiometric surveys, as well as processing, interpretation and analysis of hyperspectral survey data covering the exploration licence. Regional sandstone traverse sampling was conducted with samples being analysed for a suite of geochemical elements and PIMA clay determinations.

Radiometric anomaly ground truthing failed to locate any significant anomalies, with most being attributed to element scavenging by lateritisation of the ferruginous units. Dickite-Kaolinite was the dominant clay mineral assemblage noted and is consistent with regional clays in the Gumarrirnbang and Marlgowa Sandstone Members of the Kombolgie Subgroup.

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INTRODUCTION

This report describes program activities carried out during the 2001 and 2002 field seasons on behalf of a joint venture between Cameco Australia Pty Ltd (Cameco) and the Ngalangak Aboriginal Corporation. Since the Exploration Licence is located on Aboriginal Land the exploration program was carried out under the terms of consent documentation agreed with the Northern Land Council pursuant to the Aboriginal Land Rights (Northern Territory) Act 1976.

The program as described, represents the first two years of exploration within the blocks relinquished on tenement EL 2855 by the Joint Venture.

The only activity for the first year was the flying of a fixed wing airborne survey by UTS Geophysics of Perth. The survey, which was originally planned for October 2000, was postponed and eventually flown in June 2001.

A hyperspectral survey over the entire tenement was flown in October 2000.

During May – June 2002 a helicopter assisted sandstone sampling traverse program was conducted over EL 2855. This resulted in 6 outcrop samples being taken from the relinquished blocks, as well as one vein material sample from the same locality as one of the outcrop samples.

Location and Access

Exploration Licence 2855 is located in central western Arnhem Land. The tenement is centred about 70 km southeast of Nabarlek and 100 km east of Jabiru. It is situated approximately 120 km southeast of the King River project.

The project area has extremely limited vehicular access. A four-wheel drive track is indicated as traversing the extreme south east of the tenement and another accesses the Marlgowa Outstation on the Mann River.

Location Map

Tenure

EL 2855 was granted on the 25th July 2000 for an initial period of six years. On granting, the total area covered by the licence is 1255 km^2 with 213 km^2 being excluded from exploration.

A total of 149 blocks (498.7 km^2) have been relinquished from the original 375 blocks. The retained portion of EL 2855 totals 226 blocks (756.3 km^2). The partial surrender is depicted in the following Figure.

EL 2855 Relinquished Block Map

Physiography

The tenement consists predominantly of relatively flat-lying sandstone plateau covered by savannah woodland and scrubland. 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), the tenement is dominated by the Kombolgie Subgroup (formerly Kombolgie Formation) of the Paleoproterozoic Katherine River Group. The latter forms an extensive area of platform cover sediments in western Arnhem Land. The Marlgowa Sandstone, which is the stratigraphically highest unit of the Kombolgie, predominates with lesser exposures of the McKay Sandstone. The former consists of coarse to occasionally pebbly white-grey quartz arenite and was formed in a fluviatile depositional environment. The McKay, which lies conformably on the Marlgowa, consists of interbedded fine to medium grained white-grey quartz arenite and red-brown to purple ferruginous sandstone, occasionally pebbly. The depositional environment varied from fluviatile to shallow tidal marine.

The Gilruth Volcanic Member is present over a very limited area in the extreme south western corner of the tenement. This unit, represented by ferricrete and saprolite rubble, separates the Marlgowa from the underlying Gumarririnbang Sandstone. Isolated outcrops of Oenpelli dolerite have been mapped within the tenement. Stratigraphically, these sandstone formations are located at the top of the Kombolgie Subgroup. Depth to basement from the top of the Marlgowa Sandstone on the Milingimbi sheet area is estimated to be at least 700 metres, calculated from the measurement of sections through the various sandstone units by NTGS.

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. The various ‘domains’ exhibited a variability of deformation and metamorphic grade with the western and eastern margins of the Pine Creek Inlier (Litchfield Province and Nimbuwah domain respectively) exhibiting the most pronounced effects.

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. The Bulman Fault Zone is the principle regional feature and is considered to represent a long-lived deep crustal structure, which has exerted a large lateral component in rocks of the Pine Creek Inlier.

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 Liverpool project is located adjacent to the Arnhem Shelf 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 (Mamadawerre Sandstone), 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. Localised effects in the sandstone include silicification, the introduction of magnesium-rich to intermediate chlorite and the formation of muscovite-illite.

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

Previous field activity that took place during the 2000-2001 field season was flying a fixed-wing magnetic, radiometric and DTM (digital terrain model) survey over the extent of the exploration licence.

EXPLORATION PROGRAM

Data from the hyperspectral Hymap Mark I survey, flown in 2000, was processed and interpreted early in the current lease year. Analysis of the interpreted dated revealed several zones of high clay content.

The only field activity to take place in the 2001 field season was the flying of a fixed-wing magnetic, radiometric and DTM (digital terrain model) survey over the entire project area.

Digital data for the relinquished area of this survey has been submitted on CD with this report.

Later helicopter assisted regional sandstone sampling program was conducted over the area of the relinquished blocks. This resulted in the collection of 6 ‘brick’ sized samples for geochemical assay, clay estimation analysis (PIMA), and 1 vein material sample for geochemical assay.

Digital data for the surveys and that available for the sample analyses has been submitted on CDs with this report.

The Summary of Expenditures table is the expenditure statistics itemised by work and exploration license.

Summary of Exploration Work Completed During Reporting Period

Summary of Expenditures Cameco Australia Pty Ltd

Airborne Geophysics

During July 2001, Universal Tracking Systems Pty Ltd (UTS) conducted a single detailed airborne magnetic, radiometric and DTM survey totalling 6860 line km. Survey specifications employed for this survey were 60m flight height, 200m lines flown in a west east direction.

The primary aims of the survey were to locate any surface uranium enrichment and to acquire data useful for future geological mapping. No anomaly identification or geology interpretation has been undertaken within the current reporting period.

The gridded results of airborne geophysical surveys flown over relinquished areas are displayed in the following Figures. The areas excluded from exploration (no-go areas) have been greyed-out by request from Traditional Owners through the Northern Land Council.

Airborne Magnetics Map – TMI 1st Vertical Derivative

Airborne Radiometrics Map – Uranium Channel

Airborne Radiometrics Map – Thorium Channel

Airborne Radiometrics Map – Potassium Channel

Airborne Radiometrics Map – Total Counts

Airborne Radiometrics Map – U^2/Th

Airborne Radiometrics Map – U-Th-K as RGB

Airborne Surveys

In 2000 a 1255km^2 hyperspectral survey was flown over the Kombolgie Sandstone outcrops within EL2855. The survey was conducted by De Beers using their AMS (Airborne Multi-spectral Scanner) which has recently been renamed Hymap Mk1. The survey was designed to map minerals and identify alteration associated with unconformity uranium mineralisation. In particular, it was hoped that this system would identify and map variations in kaolinite, illite, dickite, halloysite, iron and magnesium chlorites and silicification, which could be attributed to the above alteration phenomena.

As described in the logistics report, the data has been submitted in ENVI BIL (Band Interleaved by Line) format because ENVI is the usual processing package for hyperspectral data and allows the survey parameters to be stored. This data can be imported into ERMapper if required.

Location of Hyperspectral Surveys

Hymap Mark I Survey Logistics Report

Hymap Mark I - AMS Clay Intensity Image

Cameco's Technical Services (G. Zaluski) completed the interpretation and processing of the AMS data. The interpretation is highly detailed with considerable effort made to describe the processing and processing products, which is important if Cameco is to embrace this relatively new technology.

The data indicate that the dominant clay layers within the Kombolgie are (in order from bottom to top) illite and kaolinite, dickite, and illite. Alteration is suggested by muscovite plus illite in zones along faults, particularly in the west, and at the edges of disturbed blocks. The processing has not identified chlorite alteration.

Cameco Australia's geophysical staff conducted a preliminary study of the radiometric, magnetic and DTM data in-house, resulting in no radiometric anomalies being defined within the relinquished area.

Sandstone Traverse Sampling

The 2001-2002 helicopter assisted regional sampling program was designed as follow-up ground truthing to the airborne surveys over the Kombolgie Subgroup outcrop. A total of 6 samples were collected in May 2002. The following figure shows the areas of coverage. These samples were carefully selected to represent anomaly and regional background signatures for lithological, spectral and geochemical parameters at each location. Geomorphological, geological and radiometric parameters were recorded and a digital photograph at each site was taken. The samples were systematically processed after return to Darwin. Lithological textures, alteration colours (Munsell), grain-size variations and petrophysical parameters (magnetic susceptibility) were routinely recorded.

Outcrop Sample Location Plan

Outcrop Sample Physical Properties

All samples were sent to NTEL in Darwin and Pine Creek for multi-element analysis. In total, four separate methods were being used to analyse for approximately 50 elements. All geochemical data including analytical procedures are included in the following appendix.

Outcrop Sample Geochemistry

Vein Material Sample Geochemistry

The sandstone within the relinquished area was notably flat lying and well bedded, consisting of multiple 10-20cm thick units with occasional interspersed more massive units. Well defined ripple marks and /or beds were noted throughout. Bedding dips rarely exceeded 5^{o}. Pebbles and pebble units are rare as are mud clasts though ripple marks are common. This sandstone has been assigned to the Marlgowa Sandstone Member of the Kombolgie Subgroup. An underlying more massive cross-bedded unit of distinct erosional character is proposed to belong to the Gumarrirnbang Sandstone Member.

Clay determination analysis of PIMA Infrared spectra indicate the background sandstone are dickite-kaolinite dominant.

Rare tight / closed 1-2mm thin quartz veins were noted throughout the area with no associated alteration, though ferruginous jointing was common. The average radiometric count for the relinquished area sandstone is ~50 – 80 cps.

Geochemical Assay Results

A preliminary review of the assay data received up until the end of the month indicate that sandstone in the east has elevated uranium in comparison to the sandstone outcrop in the western half of EL 2855. The mapped geology for the eastern half of EL 2855 consists of an upper ferruginous sandstone unit and a quartzose sandstone unit of the Marlgowa Sandstone Member overlain in the south eastern quadrant by McKay Sandstone. Both the Upper ferruginous Marlgowa Sandstone unit and the McKay Sandstone are known to have elevated uranium in comparison to the lower Kombolgie Sandstone Subgroup members.

One sample with U ~6.4 ppm is only marginally anomalous when considered within the context of the overall very low background values for the sandstone samples. Radiogenic lead assay ratios indicate that this sample has a greater contribution from U daughter lead than from Th daughter lead. Ferrous iron and Al2O3 are moderately elevated by comparison to other samples, however all other elements are within background ranges. Sample description indicates this lies within the ferruginous member of the Marlgowa Sandstone Member. Other sample properties such as hematite filled joints and weak distribution of metallic very fine grains in the matrix suggest heavy mineral related radionuclides.

The vein material sample, collected notably from the sandstone sample anomaly mentioned above, has high to very high U/Th ratio. Isotopic lead assay ratios indicate that the radiogenic lead is dominantly a thorium daughter element. The sample consisted of red-brown hematite vein infill. The elevated uranium is suggested to be due to surficial scavenging processes.

CONCLUSIONS/DISCUSSION

Radiometric surveying and sandstone sampling located no notable anomalies. Any elevated radiometric and assay values are attributed to element scavenging by lateritisation of the

ferruginous units and concentration along fractures and joint planes in the underlying Marlgowa Sandstone Member by groundwater flow.

Dickite-Kaolinite clay mineral assemblage is dominant in the samples analysed. This is consistent with regional clays in the Gumarrirnbang and Marlgowa Sandstone Members.

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