Cameco Australia Pty Ltd

GOOMADEER PROJECT

EL 2858 & EL 5892

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SUMMARY

This report describes exploration work undertaken for Year 4 on Exploration Licences 2858 and 5892 between 26th July 2003 and 25th July 2004. The tenements once formed part of the Arnhem Land West Joint Venture, a joint venture between Cameco Australia Pty Ltd, PNC Exploration Australia Pty Ltd and the Mangingburru Aboriginal Corporation. Cameco became manager of the project on granting of the tenements in 2000 and subsequently acquired ownership in 2002 after PNC ceased exploring for uranium in Australia.

The year's exploration activities included airborne geophysical surveys (TEMPEST and HOISTEM), RAB drilling, geological reconnaissance and an outcrop sampling program. Associated work completed included laboratory analysis of the RAB drilling and outcrop samples and PIMA.

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INTRODUCTION

This report describes program activities carried out on the Goomadeer project between 26th July 2003 and 25th July 2004. Cameco is involved in a joint venture arrangement with the Mangingburru Aboriginal Corporation. As the Exploration Licences are 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 activities completed in the above period included helicopter assisted geological reconnaissance and outcrop sampling, RAB drilling and two airborne electromagnetic surveys, HOISTEM (heli-borne) and fixed wing TEMPEST.

The 2002 RAB drilling program, which comprised a planned 31 holes, was abandoned due to mechanical failure of the drill rig. The program was continued without problem during the 2003 field season resulting in all remaining sites being drilled.

Location and Access

Exploration Licences 2858 and 5892, which comprise the Goomadeer project, are located in northwestern Arnhem Land. The tenements are centred approximately 50 km northeast of the rehabilitated Nabarlek mine site and 115 km northeast of Jabiru.

The principal access is via the Oenpelli – Maningrida road which traverses EL5892 from west to east. Several subsidiary tracks branch off the main road, some servicing outstations in the region. There is no known vehicular access into EL2858. Much of the country is flat lying and can most likely be accessed by four-wheel drive vehicle.

Location Map

Tenure

EL 2858 and EL 5892 were granted on the 25th July 2000 for an initial period of six years. On granting, the combined area covered by the licences was 1014.3 km2 or 306 blocks. Individually, EL2858 totalled 66 blocks or 208.3 km2 (with 79.1 km2 excluded from exploration) and EL5892 240 blocks or 806 km2 (with 109.5 km2 excluded from exploration).

Subsequent relinquishments have reduced the size of both licences. Going in to Year 4, EL2858 will be reduced to 6 blocks and EL5892 to 132 blocks.

Physiography

Much of the topography in both tenements is relatively flat lying and covered by savannah woodland. Numerous outliers of Kombolgie sandstone are present in the eastern half of EL5892. The larger heavily dissected one, which is located in the south eastern corner of the tenement marks the northern limit of the Arnhem Land plateau in the region.

The principal drainages in 5892 are the north flowing Jungle Creek and Goomadeer River. Several creeks traverse EL2858. All have swampy estuaries developed within the coastal tidal plains.

Tenement Geology

Based on the most recent NTGS mapping (Milingimbi 1:250000 geological series), the oldest rocks within the tenements comprise the Paleoproterozoic Nimbuwah Complex. These are overlain by remnants of the Kombolgie subgroup. Cambrian Buckingham Bay sandstone crops out as an elongate northwest trending ridge within EL2858. With the exception of the Kombolgie sandstone, only isolated scattered outcrop is present within the project area.

The Nimbuwah Complex consists of gneiss, migmatite and various granitic intrusives. The most recent age determinations place the Nimbuwah within 1870-1850 Ma. The 'complex' has an I-type granite origin and is considered to be, in part, intrusive into Paleoproterozoic metasediments, in this case the Myra Falls Metamorphics. (Carson et. al., 1999). Within EL5892, visible Nimbuwah is restricted to a series of northwest striking ridges (southeast corner), as outcroppings along the base of the main sandstone outlier and at widely scattered locations throughout the tenement.

The basement rocks are overlain by the Kombolgie Subgroup, which comprise the lower units of the early Proterozoic Katherine River Group, the oldest rocks of the McArthur Basin. The Mamadawerre Sandstone, the fluviatile basal unit of the Kombolgie, outcrops in EL5892 as several outliers, typically heavily dissected. The most south-easterly and largest block is almost square in outline, being controlled by a series of linear NNE and WNW structures. The age of the Mamadawerre has been constrained between 1822 and 1720 Ma and is probably closer to 1800 Ma (Sweet and others 1999).

The basal unit of the Cambrian Wessel Group, the Buckingham Bay Sandstone, crops out in EL2858 and trends south-eastwards into the adjoining Cameco tenements. These Cambrian sediments, which comprise the oldest rocks of the Arafura Basin, obscure any northern extensions of the Paleoproterozoic basement and sandstone.

Oenpelli dolerite has been observed at two locations in EL5892, both near the main sandstone outcrop. One locality was discovered during NTGS mapping where dolerite intrudes the Mamadawerre sandstone along an east-west linear. The other locality is several kilometres to the southwest in the vicinity of a basement-hosted airborne anomaly. During reconnaissance traversing, boulders of dolerite were observed in association with porphyritic granite and migmatitic gneiss.

Lateritised and sand covered Cretaceous tablelands cover the central western part of EL5892. Some outcrop is present along the erosional fringe of this tableland country. Large areas of Nimbuwah Complex rocks are exposed in places adjacent to the retreating edge of the Cretaceous. The Maningrida road traverses one such locality.

A variety of quaternary surficial materials cover much of the region, obscuring the Nimbuwah Complex.

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 event produced a prograde metamorphic effect with associated tight folding and faulting. The various 'domains' exhibit 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 northwest (Aurari) and northerly (Anuru, Goomadeer) strikes. Another significant set trends to the east and includes both the Ranger and Beatrice faults. The Bulman Fault Zone is the principal 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 north-west, east, north-east and north trends. Both faulting and jointing, with displacements ranging from a few metres up to 100 metres, locally heavily dissect the Kombolgie.

Deposition of the Mamadawerre Sandstone took place in an environment of extension and local basin formation with probable fault-controlled sedimentation. Rapid thickening and thinning of the sequence imply this.

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. A characteristic mineral assemblage of prehnite-pumpellyite-epidote has formed in the quartzofeldspathic basement rocks adjacent to the intrusions.

Exploration Target

The focus of the exploration strategy is the discovery of unconformity-related uranium deposits. The nearby deposits at Ranger, Jabiluka and 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

Part of the project area (EL5892) was initially explored for uranium by Union Carbide Exploration Corporation in 1971 and 1972 as part of A to P 2543. Exploration activities consisted of airborne magnetic and radiometric surveys with follow-up sampling and geological mapping.

Total Mining Australia Pty. Ltd. originally applied for EL 2858. Prior to that, a section of the tenement was included in EL144, which was explored for uranium in the early 1970s by the Ormac JV, a consortium consisting of Ocean Resources, McIntyre Mines of Canada and a corporation representing the local Traditional Owners.

Cameco Australia has now completed four years of exploration on the tenements. Activities have included a regional fixed-wing magnetic, radiometric and DTM (digital terrain model) survey covering both tenements (Year 1); ground follow-up consisting of airborne anomaly investigation and regional sandstone sampling (Year 2); an airborne Hyperspectral survey and RAB drilling (2002) and further rock sampling and reconnaissance (2003) for Year 3.

EXPLORATION PROGRAM

Field work for the 2003 field season included geological reconnaissance and rock sampling, RAB drilling and airborne electromagnetic surveys.

All digital data, which has been acquired by Cameco has been submitted on CD with this report. In some cases data over culturally sensitive "nogo" zones has been excised from figures and data in accordance with requests by Traditional Owners.

A summary of the expenditures for each tenement is given in the following tables. Expenditure totals $23,410.47 for EL 2858, and $152,473.36 for EL 5892.

EL 2585 Summary of Expenditure

EL 5892 Summary Of Expenditure

2003 Work Completed Map

2003 Work Summary Table

Geological Reconnaissance and Sampling

The helicopter assisted regional sampling and geological reconnaissance was completed over four days between the 24 and 28 May. The work was planned as a continuation of the 2002 program, which concentrated principally on the systematic sampling of the Kombolgie outliers. For the current year a total of 18 samples was collected: 15 from the Nimbuwah Complex and three from the Mamadawerre sandstone. The Nimbuwah samples were taken from sites representing airborne radiometric anomalies, along several linear structural zones and the widely scattered outcrop locations not previously covered. Systematic sampling of the basement rocks is impossible since much of the land surface is covered by regolith or thick Cretaceous as in EL 5892 and Cambrian sandstone or swampy river estuaries in EL 2858.

Reconnaissance activities included geological and ground radiometric traverses at selected locations within and along the contacts of the Mamadawerre sandstone in EL5892. Unconformable contacts between the sandstone and Nimbuwah Complex rocks were noted at three separate locations. Two of these occurrences have fresh granitic gneiss rapidly grading upwards towards the unconformity into a mauve-grey clay altered sericitic-hematitic gneiss. Adjacent to the contact these rocks exhibit a highly variable foliation and evidence of shearing. These unconformity-related alteration features have been observed regionally in both outcrop and drill core and are considered to represent a zone of paleoweathering.

The third location where the contact can be observed is situated on the northeast corner of the main sandstone block where two linear northwest striking ridges of strongly sheared mica-rich quartz feldspar gneiss pass beneath the sandstone. The gneiss exhibits the same characteristics as described above i.e. approaching the unconformity, there is a transition to the mauve-grey clay altered gneiss variant. These ridges can be easily traced on surface to their contact with the sandstone, which appears to be unconformable rather than faulted. The relationship is not clear on the ground, however there are regional structures apparent on Landsat imagery, which correlate with this trend, and are reflected in the sandstone.

Ground radiometrics failed to locate any anomalies. There was some variation in radiometrics within the various basement rocks, however, none could be described as anomalous. The two airborne anomalies checked consisted of several square metres of granitic gneiss outcropping in swampy or sand covered terrain. Both locations exhibited an obvious radiometric contrast between the outcrop and the surrounding country, which would account for the anomalous airborne response.

A further area of interest that was investigated is located along the northern edge and at the northwestern corner of the main fault-bounded Kombolgie block. At the latter location the bedding is steeply tilted and has associated quartz veining. The steeper bedding is present along much of the western face of the outlier and is directly related to the NNE striking Goomadeer fault. Three sandstone 'chip' and one WAL (Weak Acid Leach) samples were collected for analysis. The sampling was carried out in conjunction with scintillometer reconnaissance.

Outcrop Sample Location Map

Outcrop Station Locations

Outcrop Sample Locations

Outcrop Sample Descriptions and Physical Properties

Outcrop Sample Alteration and Structural Measurements

Outcrop Sample PIMA TSA Analysis

Outcrop Sample TSA Distribution Map

Outcrop Sample G400 Chemistry

Outcrop Sample G950 Chemistry (WAL)

Outcrop Sample G400 U Distribution Map

NTEL Analytical Methods

RAB Drilling

The remaining holes of the abandoned 2002 regional RAB drilling program were completed in one day. Eighteen holes were drilled for a total of 275 metres. Holes locations were spaced at approximately one kilometre intervals along Outstation access tracks and at several sites along the side of the Maningrida road.

The entire area is underlain by Nimbuwah Complex rocks consisting principally of a variety of pink and greenish altered, medium to coarse grained quartz-feldspar-muscovite +/- biotite gneisses, leucogneiss and granitoids. One hole produced a mafic dark green-grey coloured variant with abundant biotite and/or hornblende but this was the only variation to an otherwise fairly monotonous felsic terrane. No anomalous radiometrics were detected and all samples returned background geochemical values.

RAB Drilling Locations

RAB Drilling - Summary of Rock Types

RAB Drillinmg - Alteration

RAB Sample Geochemistry

Airborne Geophysical Surveys

During 2003, GPX Pty Ltd (GPX) were contracted to undertake a HOISTEM airborne electromagnetic survey over two portions of the project, designed to provide coverage of the Kombolgie Subgroup Sandstone. The survey was aborted shortly after it commenced since the system did not perform to specification with residual signal in the high altitude tests. No survey data was processed or received from GPX.

Fugro Airborne Surveys Pty Ltd (Fugro) were subsequently contracted to undertake a replacement survey, which was completed by a short time later utilising the TEMPEST system. The flight line spacing was 200 m and flying height was 120 m, totalling 942 line km. TEMPEST is a high-powered time-domain system with a broad bandwidth, which enables good resolution of variations in resistivity and penetration through relatively thick sandstone. In addition, the airborne platform allows electromagnetic data to be acquired over areas where ground geophysics is impractical due to rugged topography. The survey was flown with the aim of providing 3-D electromagnetic data to assist with the identification of structure/alteration and to infer the depth to the unconformity below sandstone.

Fugro has supplied grids of the time constant, time windows and flight line CDIs (Conductivity Depth Images).

TEMPEST Logistics Report by Fugro

TEMPEST RGB=Channels 1,4,7

TEMPEST Time Constant

Fugro's CDIs have been further processed using Profile Analyst software (Encom Pty Ltd) to calculate various 3D renditions including conductivity-elevation slices and also the depth to the first conductive layer. The primary aim of this processing is to interpret the geometry of the Kombolgie Subgroup sandstone and the depth of the unconformity, which is a weakly conductive semi-horizontal layer attributed to alteration at the sandstone-basement contact. The z-component data has been the primary component to be utilized since it is more sensitive to sub-horizontal features and generally less prone to noise.

TEMPEST Elevation of Conductive Unconformity

TEMPEST Depth Slices (RGB=20,100,200m)

Conductive Unconformity and Structure

As expected, outcropping sandstone relates spatially to strongly resistive surface features in the TEMPEST data. No additional resistive features have been identified

that might relate to previously unidentified sandstone outliers, although minor changes to the present outlines could be inferred to reflect sub-cropping sandstone. Away from the sandstone outliers, the land-surface has a relatively homogeneous elevation, which averages 100 m and is believed to be made up of sub-cropping to shallowly covered Nimbuwah Complex basement and Oenpelli Dolerite. Below the sandstone outliers the conductive unconformity elevation is slightly more variable between –70 and 150 m in elevation, indicating a combination of subtle basement highs and lows. The main sandstone block is located in the southeast and in this area the conductive unconformity may be synclinal in shape and orientated northwest.

Several areas have been identified as exhibiting possible structural disruption of the conductive unconformity. These areas should be considered for further field evaluation; however, in some cases surface samples already exist. The two highest priority areas are:

1. (Structure Id 7) Below the main southeast sandstone block the conductive unconformity elevation map reveals a west-east oriented ridge, which is approximately 100 m high and 500 m wide[1]. The ridge appears to correlate with Oenpelli Dolerite and Nimbuwah Complex basement (to the east). It is also correlates with a zone of increased illite that has been identified by Zaluski (2003). This area is recommended for further field assessment to ascertain whether a structural target is present and to determine what role the dolerite might play. There are no apparent airborne radiometric uranium anomalies along this interpreted basement ridge, which downgrades the prospectivity of the area. However, some subtle radiometric features could be identified for follow-up to assist with the field evaluation.

2. (Structure Id 4 and 5) In the southwest part of the survey area there is a sandstone outlier that extends off-property towards the south. Two separate parts of the outlier show relatively dramatic changes in the conductive unconformity elevation (up to 150 m over a distance of 200 m) and are located within 1 km of each other. The sandstone does not appear to be anomalous in the airborne radiometrics but has had only 1 outcrop sample taken. It is recommended that field investigations be undertaken to acquire further samples and investigate whether there is any kinematic indicators that can be identified.

TEMPEST Interpretation Map

Conductors

Airborne TEMPEST data can be utilised to identify areas of increased conductivity that may pertain to clay alteration, sulphides or graphite. At the Goomadeer project there are no conductivities that are in excess of 20 mS/m. In order to identify less conductive zones a map was produced, which shows the conductivity at several depth slices (well below the surface effects) and that are greater than 3 mS/m. This was augmented with the time constant map (using a threshold of .8 ms).

[1] The shape and interpretation of this feature is hampered by its orientation, which is parallel to the Tempest flight path.

Six weak conductors have been identified. None of these conductors are considered to constitute a diamond drill target in there own right. One conductor is located below sandstone and the remaining conductors are within areas mapped as cover. There is no sampling information to assess the prospectivity of these areas, therefore a minimal RAB/RC drilling program should be considered.

TEMPEST Interpretation Map

WORK PROGRAM 2004

The planned activities for 2004 is limited to one helicopter supported diamond drill hole on the fault bounded sandstone block.

Estimated expenditure to complete the above activities is $65,000 for EL5892. It is planned to surrender the remaining blocks for EL 2858 and reduce EL 5892.

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