



**Cameco Australia Pty Ltd**

**KING RIVER PROJECT**  
**EL 5890**  
**NORTHERN TERRITORY**  
**RELINQUISHMENT REPORT 2004**  
**CONFIDENTIAL**

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## **SUMMARY**

This report describes exploration work undertaken within that portion of Exploration Licence 5890, which was relinquished on the 12 May 2004. Fifty eight blocks were surrendered. The licence area is located in northwestern Arnhem Land and was initially granted on the 13 May 1996 for a period of six years. A two year renewal was granted in March 2002 for the period ending on May 12 2004.

The exploration program was initially managed by PNC Exploration Australia Pty Ltd (1996 to 1999 inclusive) and then by Cameco Australia Pty Ltd on behalf of the Warrga Joint Venture partners, Cameco Australia Pty Ltd, PNC Exploration Australia Pty Ltd and the Nadjinem Aboriginal Corporation. PNC withdrew from the JV in 2001.

The primary exploration target is for unconformity related uranium deposits similar to the nearby Ranger, Jabiluka and Koongarra deposits and the now depleted Nabarlek mine.

Exploration activities over the eight year period comprised various airborne surveys, geological mapping, stream sediment and soil sampling and RAB drilling.

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## INTRODUCTION

This report describes exploration activities carried out over the relinquished portion of EL5890 between 1996 and 2004. The tenement is currently being explored on behalf of the Warrga Joint Venture, a joint venture between Cameco Australia Pty Ltd (Cameco) and the Warrga Aboriginal Corporation. Since the Exploration Licence is located on Aboriginal Land the exploration programmes have been carried out under the terms of consent documentation as agreed with the Northern Land Council pursuant to the Aboriginal Land Rights (Northern Territory) Act and dated 1 March 1996.

Contractors who were involved on the project are listed below:

- Aerial Photography by Airesearch P/L, Darwin
- Airborne Mag/Rad/VLF by Geoterrex, Sydney
- Diamond and BLEG stream sampling by consultant Ed Manning, Darwin
- Helicopter assistance by Rotor Services/Jayrow, Darwin
- Heliborne FHEM/magnetics by UTS, Perth
- RAB drilling by Gaden and Century Drilling of Batchelor NT and Johannsen Drilling, Port Lincoln, SA
- Chemical assaying by Chemnorth / NTEL, Darwin
- Petrographic work by Pontifex and Associates, Adelaide
- Earthworks by Wildman River Stock Contractors Pty Ltd Darwin and Gunbalanya Community Council.

[Location Map](#)

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### **Location and Access**

Exploration Licence 5890 is situated in western Arnhem Land and is centered approximately 40 kilometres northeast of Gunbalanya (Oenpelli). The subject areas border the southeastern and northeastern corners of the tenement. Four wheel drive vehicular access is relatively easy with much of the country consisting of flat lying to slightly undulating sand-covered plains. There are no established tracks, however parts of the area can be accessed via the Cobourg road.

### **Tenure**

EL5890 was granted on 13 May 1996 for an initial period of six years. The tenement was renewed for a further two years in February 2002 and again in February 2004. The latest renewal will take effect on 13 May 2004. On initial granting, the total area under

licence was 1188 square kilometres of which 160.3 square kilometers was designated as restricted zones following site surveys undertaken by the Northern Land Council.

The most recent reduction of 58 blocks, which is the subject of this report, coincided with the renewal for years nine and ten. An area of 453.5 square kilometres now constitutes the tenement after reduction to 135 blocks.

### **Physiography**

The relinquished area is comprised of gently undulating sandy plains. Thin remnants of lateritised Cretaceous sediments form localised tablelands and small mesas. The main drainage systems are Cooper Creek draining westwards and north-east flowing tributaries of the King River.

### **Tenement Geology**

Nimbuwah Complex rocks predominate and consist of quartzofeldspathic gneiss, migmatite and porphyroblastic granitoid. The portion of relinquished ground in the southeast corner is within the lower Myra Falls Metamorphic terrane. Regionally extensive, east-west trending dolerite dikes intrude the Nimbuwah. Remnants of younger Cretaceous cover rocks form scattered lateritised flat-topped hills.

### **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.

### **Exploration Programmes**

#### 1996

- Initial reconnaissance work including regional outcrop mapping, regional drainage BLEG and diamond indicator sampling.
- Regional fixed wing airborne magnetic-radiometric-VLF survey at 200-metre line spacing.

#### 1997

- Ground follow up of airborne radiometric anomalies, specifically BIR2, 3, 4 and 5 with sampling and scintillometer surveys. Further work was recommended.
- Regional scale stream sediment geochemistry (BLEG and -80 mesh).
- Geological mapping and outcrop recording.

#### 1998

- Ongoing regional geological mapping and interpretation.
- Regional stream sediment sampling (-80 mesh) concentrating on the Nimbuwah Complex. The survey was unsuccessful in locating any uranium anomalies although several streams had low order gold anomalies.

- Soil sampling over anomaly BIR4.

#### 1999

- Ground magnetic surveys were conducted across anomaly BIR 4.
- UTS Pty Ltd conducted a heli-borne EM-Magnetic survey over the southward extensions of the Aurari Fault zone, which is obscured by regolith.

#### 2000 - 2001

- No work was conducted within the relinquished area.

#### 2002

- Access track construction to BIR4. RAB drilling at prospects BIR4 (30 holes) and BIR2 (4 holes).

#### 2003

- No work conducted within the relinquished area.

## **DISCUSSION & CONCLUSIONS**

Outcrop mapping/recording identified Nimbuwah complex gneiss, migmatite and porphyritic granite. Red and green alteration observed in places in Nimbuwah outcrop indicates nearby Oenpelli dolerite intrusive activity. Airborne magnetics readily identifies and traces the regional distribution of the dolerite as well as contributing to the compilation of a regional geological map. The classification of mineral components, as determined from the bulk diamond indicator sampling, also contributed to the definition of the geology of the region.

First pass stream sediment sampling (BLEG and diamond indicator), which covered the entire licence, identified some low order gold anomalies adjacent to a major north-south set of linears (Anuru Fault zone). Further sampling, as part of a regional, more closer-spaced sediment survey and a ground mag survey significantly decreased the potential of the area. No uranium, other geochemical anomalies or indications of kimberlitic intrusives resulted from the surveys. There is no diamond potential in the region

Regional airborne surveys identified a number of radiometric anomalies, which were followed up with ground prospecting. Two of these, BIR2 and BIR4, were investigated further with mapping, sampling and RAB drilling and, in the case of BIR4, soil sampling and ground magnetics. Drilling at BIR4 intersected very minor alteration but no mineralisation. BIR2 was drilled more regionally with several holes falling in the relinquished area. No alteration or mineralisation was intersected.

The UTS helicopter survey was planned to determine the geological framework of an area where outcrop was almost totally obscured by regolith cover. The principal object of the survey was to locate the contact zone between the Myra Falls Metamorphics and the Nimbuwah complex by identifying the trace of the transitional magnetic unit termed the stromatic migmatite. The data supplied was extremely difficult to interpret and failed to distinguish any features, which would aid in the recognition of specific lithologies or contacts.

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