



Cameco Australia Pty Ltd

KING RIVER PROJECT

NORTHERN TERRITORY

Exploration Licence 5891

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SUMMARY

This report describes exploration work undertaken within EL5891 during the tenth and final year of tenure ending 12 May 2006. The licence area is located in northwestern Arnhem Land and was initially granted on the 13 May 1996.

The exploration program was managed by Cameco Australia Pty Ltd on behalf of the Warrga Joint Venture partners, Cameco Australia Pty Ltd and the Warrga Aboriginal Corporation. 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.

The principal exploration activities involved diamond core and RAB drilling. Diamond drilling was conducted at the Aurari North and Kuroikin Prospects. Three holes were drilled in each area. Further RAB work was conducted at Sandy Point and environs with 49 holes being drilled.

An orientation SAM (Sub Audio Magnetics) survey was carried out over a selected area at Kuroikin. The aim of the survey was to test the method's suitability in this environment in acquiring high-resolution resistivity data and to a lesser extent magnetics to assist with the identification of shears and faults..

The aims of the diamond drilling program was to further define / constrain the mineralised zones at both Aurari North and Kuroikin. At the former, holes were sited within the mineralised 'envelope' and at some distance along strike to establish or otherwise, continuity of the host sequence and its prospectivity. At Kuroikin, the Aurari Fault zone was targeted in two holes to test the proposition that mineralisation intensity would increase within or immediately adjacent to this zone of structural disruption.

The main results achieved from both drilling programs include:

- Diamond drilling at Aurari North confirmed a barren gap between the two major mineralised intersections. An additional hole indicated continuation of host rocks up to one kilometre north of the prospect.
- Diamond drilling at Kuroikin established the eastward limits to the host rocks on two fences and confirmed an eastward extension to the mineralised zone on another.
- RAB drilling at Sandy Point established an eastward limit to the unconformity-related mineralisation at the prospect. Sub-surface radiometric anomalies were discovered at the Sandy Point East (Bald Rock) airborne anomaly. A similar setting to the Sandy Point prospect seems likely.

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INTRODUCTION

This report describes program activities carried out on EL5891 during the 2005 field season by Cameco Australia Pty Ltd (Cameco). EL 5891 forms part of the King River Project and exploration has been conducted simultaneously with the adjoining King River tenements, EL 734 and EL 5890. As the exploration licence is located on Aboriginal land the work 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 and dated 1 March 1996.

Clearance was given by the Northern Land Council on behalf of the Traditional Owners (Warrga Aboriginal Corporation) following the Exploration and Liaison Committee meeting on April 7 at Jabiru. Fieldwork on the tenement commenced in early June and was completed by mid September. Activities for the project were conducted from the King River camp located on EL5890.

Diamond core and RAB drilling constituted the work program for the current year.

Contractors who were involved on the project are listed below:

- Diamond drilling by Titeline Drilling Pty Ltd, Ballarat, Victoria.
- RAB drilling by Titeline Drilling Pty Ltd, Ballarat, Victoria.
- Chemical assaying by NTEL, Darwin.
- Petrographic work by Pontifex and Associates, Adelaide.
- Gtek Geophysics.
- Diamond drill site, RAB track preparation and general rehabilitation work by Wildman River Stock Contractors Pty Ltd, Darwin.

Location and Access

The tenement is located in western Arnhem Land to the northeast of the Aboriginal settlement of Gunbalanya and is wholly within Aboriginal Land. The Ranger uranium mine is situated approximately 100 km to the southwest and the rehabilitated Nabarlek site is within tenements immediately south of the project area. Access from Darwin is via the Arnhem Highway to Jabiru then north to Gunbalanya. The main road accessing the Gurig (Cobourg) National Park traverses the southwestern corner of the tenement.

Access within the tenement is variable and dependent upon topography. The country is a mixture of flat lying to slightly undulating woodland and heavily dissected sandstone plateau, the latter being remnants of the Wellington Range. For the most part the country can be traversed relatively easily by four wheel drive vehicle during the dry season. The only exceptions to this are several deeply incised and/or swampy creeks, which can be a barrier to cross-country travel. The sandstone remnants of the Wellington Range are best accessed by helicopter. Two pre-existing tracks, the Waminari Bay and King River roads provide access to the main drilling areas.

Figure 1. [EL5891 Location Map](#)

Tenure

EL5891 was granted on 13 May 1996 for an initial period of six years. On granting, the total area under licence was 957.5 square kilometres of which 234 square kilometres (15%) was excluded from exploration by the Northern Land Council. Two 2 year renewals took place, one in February 2002 and the other in 2004. Granting was made in March 2002 and 2004 and the renewals took effect on 13 May. A total of 238.7 square kilometres was available for exploration into Years Nine and Ten.

In November 2005, the existing area of EL5891 was applied for by Cameco to be incorporated into an SEL (Substitute Exploration Licence), which would combine a small portion of the adjoining EL5890. The application has been designated SELA25064. EL5891 expired on March 3 2006, the date on which notification of 'Consent to Negotiate' for the SELA was received from DPIFM.

Physiography

The tenement contains some remnant areas of dissected sandstone plateau, which comprise the eastern extension of the Wellington Range. The remainder consists predominantly of gently undulating plains covered by savannah woodland. The main drainage systems are the King River and Marligur and Angarlban creeks.

Regional and Tenement Geology

Please refer to the 2002 Annual Report for details.

Regional Structure and Geological History

Please refer to 2002 Annual Report for details.

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. . The King River-style of mineralisation has geochemical similarities with these deposits.

Exploration History

Please refer to the 2002 Annual Report for a detailed summary of the historical activities. For a tabulated summary of work to date on all King River tenements go to following link below.

Table 1. [King River - Exploration Summary](#)

PROGRAM ACTIVITIES

Diamond Drilling

Core drilling was undertaken during the period 20 June to 4 August with the completion of six holes totalling 1945.1m. This figure includes 137.4m of PCD bit (mud) precollaring.

Drilling was carried out by Titeline Drilling of Ballarat, Victoria using a truck mounted UDR 650 rig and support vehicles. The program was conducted on a double shift basis with an average rate of 22.5m per shift and an averaged all-up cost of \$181 per metre (includes mob/demob, consumables, etc).

All holes were angled at 75 degrees. Drill core orientations were run utilising the ACE tool. There were the usual problems with either the equipment or operator, where competent intervals of core would not 'line up'. Generally though much orientation data was acquired. Hole locations were originally positioned using a Garmin GPS. At the completion of the program, drill hole collar positions were re-established with a Trimble DGPS. All hole collars were capped and drill sites rehabilitated.

Figure 2. [EL5891 Drill Hole Location Plan/ Work Completed 2005](#)

Table of holes drilled 2005

Hole Number	AMG E	AMG N	Elev m	Bearing	Declination	Precollar m	Coring m	Total m
KRD1153	304289.5	8693433.1	30.6	251	75	60.8	261.2	322
KRD1154	304002.4	8694031.8	31.4	253	75	60	289	349
KRD1155	303749.1	8694515.6	20.5	250	76.5	141	214	355
KRD1156	305578.8	8688338.7	38.1	259	75	96	380.8	476.8
KRD1157	306082	8687762.4	39.7	253	75	54	382	436
KRD1158	306014.6	8687458.7	45.7	255	75	83.4	280.7	364.1
Totals						137.4	1807.7	1945.1

Natural radiation was logged down-hole by Cameco personnel using an Auslog digital down-hole logging unit. All holes were logged inside the rods due to unstable ground conditions in the Cretaceous cover sequence.

The drill core was geologically logged using the database system DH Logger. This logging software systematically records lithological, structural and alteration features in the drill core. Results are displayed in summary report form and graphically as a series of strip plots generated from either the DH Explore program or from Discover software to display all features logged and measured. Go to links below for DH Logger Codes and all drill hole data.

Routine sampling from every row of core is represented by a 5 cm sample that is collected and halved using a core saw. One half of the sample is retained and transported to be housed within the Cameco storage facility at the Darwin warehouse. This process provides a 'Skeleton Log' of the hole, which is easily accessed. All samples are measured for magnetic susceptibility and spectral parameters using the PIMA II infrared spectrometer. Interpretation of the spectra is achieved utilising The Spectral Geologist software. The other half of the core sample is used for

lithogeochemical analysis. The samples are combined to form nominal 5 metre 'composites' for sandstone and basement, and 15 metres for dolerite. Composite sampling in areas of mineralisation and obvious intense alteration is avoided.

Mineralised and alteration intercepts are sampled separately and designated as 'splits'. These are collected over nominal half metre intervals, with the sampling limits or grade cut-offs being determined principally from the down-hole radiometric logs. The initial and final sample for each interval is taken marginally beyond the 'edge' of the radiometric peak to ensure the entire intercept and adjacent alteration halo is captured. The analysed elemental suite is identical to that analysed for in the composite samples.

Northern Territory Environmental Laboratories of Darwin (NTEL) carried out the chemical analyses. The principal analytical procedures include G400 (ppm), G950 'WAL' or Weak Acid Leach (ppb), G140I for B (ppm) and Fire Assay (ppb). Go to link 'Analytical Methods'.

Samples are also collected for petrographic description and forwarded to Pontifex and Associates in Adelaide.

Appendix 1. [NTEL Analytical Suite](#)

Appendix 2. [NTEL Analytical Methods](#)

Appendix 3. [PIMA Methodology](#)

Appendix 4. [DHLogger Codes](#)

Appendix 5. [Pontifex Petrographic Report No. 8746](#)

Targets and Planning

Aurari North – three holes were planned, two to further determine the limits of the mineralisation and one to explore at distance along the strike of the fault zone. The first hole, KRD1153 was sited on a previously drilled fence (KRD772) located approximately half way between KRD664 and KRD666, both of which intersected the greatest widths of mineralisation at Aurari North. The aim of the current hole was to confirm the result from KRD772, which gave the first indications that a 'barren gap' could exist along the mineralised trend. This information was critical in determining whether or not a continuous 300 plus metre mineralised selvedge was present between 664 and 666 or that these holes intersected discrete mineralised 'blocks' implying an important structural control.

The second hole was placed on the northernmost drill fence at the prospect, approximately 600 metres NNW of 1153 and along the trace of the fault and the projection of the mineralisation. Previous holes in the vicinity either failed to intersect basement or were collared west of the fault zone.

The third hole was located a further 500m along the projected strike of the Aurari Fault. This is the most northerly hole drilled at Aurari North, it's position being within 100m of the boundary of the No-Go which coincides with Marligur (Wunbun) Creek.

Kuroikin – of the several planning options that have been considered over the last few years, which were aimed at better defining and potentially upgrading the Kuroikin mineralised system, the 2005 plan would involve placement of three holes coincident with the Aurari Fault. Some thoughts on the role of the Aurari Fault in controlling the distribution of mineralised structures had been put forward over several years of exploration at Kuroikin. A scenario was that the vein-style mineralisation intersected in the majority of holes may be a distal representation of a more concentrated, higher grade ‘disseminated’ system immediately adjacent to the fault.

As there is no defined surficial trace of the fault zone, siting the holes would rely on the limited amount of drilling and geophysical data that has been accumulated. Positioning would be critical, as drilling too far east i.e. on the hanging wall side, would involve the intersection of significant thicknesses of sandstone and/or dolerite, as in holes KRD400 and KRD409 (drilled 1998-1999). The three sites chosen were all on existing fences and corresponded to positions approximately 500m east of more recently drilled holes KRD778, 779 and 780 respectively. With the exception of 778, extensive vein systems associated with some reasonable grades were intersected in these holes giving some encouragement to the postulated model. Due to surficial ground conditions there had to be some modification to the position of the centre hole.

Drill Hole Descriptions and Results

Aurari North – drilling in 2005 has confirmed that a barren gap exists within the mineralised trend. Both the previously drilled KRD772 and KRD1153 exhibit almost identical features, the most obvious being the amount of silicification in the form of siliceous veining and replacement brecciation. Near identical alteration features in KRD664 and KRD666 (150m to the north and south respectively) are associated with extensive intervals of mostly low grade (locally high) mineralisation. Host rock lithologies and ground preparation features are also identical so there is the question as to why there are localised zones along the Aurari trend being preferentially mineralised. Adjacent mineralised holes, such as KRD665 and 669 (same fence as 666) exhibit some variations in the mode of occurrence of the mineralisation, which might be related to factors that control the variabilities within the mineralised system. For example, in KRD665 the mineralisation is vein style whereas in 669 it is associated with sheared intervals consisting of intense bleaching and brownish hematization. These are vastly different styles, which are not overprinted with the silica flooding evident in other nearby holes. The negative results from KRD1153 limit the scope for continuous mineralisation parallel to the trend of the Aurari Fault, and hence downgrade the prospectivity of Aurari North. East-west trending structures, at a high angle to the Aurari Fault Zone, remain as possible localising controls on mineralisation.

Two other sites were drilled, KRD1154 and KRD1155. The former was sited on the northern boundary of the ‘interpreted’ mineralised envelope, however the basement lithologies gave no indication of mineralising processes having taken place i.e. lack of alteration and structural preparation. The latter hole has intersected a mainly undisturbed basement package, which is interpreted to be representative of the Aurari ‘footwall sequence’ i.e. garnet-rich gneiss with associated mafic gneiss +/-

amphibolite. There was however some weakly anomalous quartz veining and alteration, which will be discussed below.

KRD1153.

The precollar passed through Cretaceous and Kombolgie sandstone. Coring commenced in competent and unaltered dolerite from 70 to 139 m. The dolerite has intruded basement, which consists of intensely fractured and brecciated quartz-feldspar-biotite gneiss and microgneiss to a depth of 264 m. Broad zones of this interval display pervasive alteration, including strong sericitisation and lesser chloritisation, however no mineralisation was intersected. A second strongly foliated and altered dolerite was then intersected to a depth of 277 m. Competent microgneiss followed by a distinctive foliated mafic unit was then intersected to EOH at 322m.

Down hole radiometrics recorded an interval of 1.8m at 0.04 % eU₃O₈ from 277.4 m (maximum value of 423 eppm U₃O₈). Elsewhere the probe recorded only two narrow spikes in the 100-150 eppm U₃O₈ range. The 'spikey' radiometrics within the basement interval (141 to 263m) reflect slight increases in uranium with anomalous values ranging between 10 to 30ppm.

Composite sampling produced geochemical results reflecting lithological variation within the hole. The interval in which the maximum radiometric peak is located produced 91.4ppm U (1.54ppm Th) over a 3m interval in altered and sheared dolerite. Grade sampling values within the same interval range from 101 to 265ppm between 277.5 and 279.5m. This interval consists of a 'melange' of dolerite and gneiss in a complex fault zone. The faulted contact is considered to have provided a channel for fluid flow. Low but detectable Au is present.

KRD1154

The hole intersected the basal conglomerate unit of the Kombolgie sandstone from 60 to 96m, Oenpelli dolerite to 252m and basement gneiss to 349m. The precollared section traversed the Cretaceous and possibly some Kombolgie. The cored sandstone interval is comprised almost entirely of intensely clay altered pebbly sandstone and conglomerate. Only the last few metres exhibited some degree of competency, being strongly silicified in places. The basement intersection consisted mainly of fine to coarse grained psammo-pelitic lithotypes with pelitic bands. Variations include microgneiss, coarse grained pegmatoidal swaths and some granitoid. The sequence is weakly altered in places. Rare poikiloblasts, consisting of chlorite-sericite-quartz-feldspar after garnet occur within the pelitic intervals. Towards the end of the hole, unaltered coarse garnets increase in frequency, occurring within coarse leucocratic swaths and micaceous pelitic rocks.

Down hole logging detected elevated radioactivity from 82.0 to 85.6 m (up to 80 cps SPP2) within an altered Kombolgie sandstone interval. Three low order radiometric peaks were recorded in the basement; one adjacent to the dolerite contact, the other two between 320 and 340m.

Composite geochemical sampling indicates that the semi-pelitic garnetiferous basement rocks are essentially devoid of anomalous uranium, averaging around 1 to 1.5ppm. The Kombolgie intersection however contains a 3.6m anomalous interval

averaging 70.3ppm U (total) associated with intense white clay alteration, hematite and 'white mica'. This is in a pebbly sandstone bed approximately 10m above the Oenpelli dolerite contact. Adjacent samples within the sandstone range from 8 to 17ppm U. Th averages around 12ppm.

Half metre grade sample intervals gave the following:

- 83 to 84m 125ppm U (147.38ppm U₃O₈) with trace but detectable Au and Pd
- 84 to 84.66m 90ppm U (106.1 U₃O₈)

The geochemical signature of this interval suggests alteration typical of a uranium mineralising event with elevations in light rare earths plus Co, Cr, Cu, Li, Ni, S, Ti and V. Kombolgie background levels for most of these elements is generally insignificant. This broad elemental association is a 'universal' indicator of alteration in the King River region. The hole is located approximately 500m northwest of KRD404 (PNC 1999), which contained anomalous U (1450ppm) plus Au and Pd in a strongly altered sandstone interval.

KRD1155

The hole was precollared to 141 metres, the deepest yet drilled at King River. The precollar consisted of coarse grained pale coloured sands and clayey sands. An obvious visual change in colour and composition of the sands noted from 102m correlates closely with an abrupt increase in the radiometric background. This most likely reflects a major lithological contact i.e. Cretaceous to Kombolgie.

Basement comprises garnet-rich (30-40% modal garnet) biotitic pelites and psammo-pelitic quartz-feldspar-biotite gneisses and coarse leucogneiss. Minor intersections of non-foliated mafic rocks are present between 251-252m and 314-327m. These intervals, which are markedly magnetic, are considered to be post tectonic. There is little indication of deformation and disruption and the rocks appear to be representative of the 'footwall sequence' intersected elsewhere at Aurari North. Older quartz veins and quartzofeldspathic vein-type segregations exhibit ptygmatic folding.

There appears to be a preferential though not exclusive association of the veins with the coarser grained feldspar-quartz rocks. Based on limited orientation data, the veins appear to have shallow to moderate variable dips (<45 degrees). There are similarities in the structures and associated alteration with other occurrences of vein-style mineralisation in the region, at Laterite and Kuroikin North (pelitic and psammo-pelitic hosts) and Kuroikin (possible intrusive body of granodioritic to tonalitic composition). In this case the host assemblage is similar to Kuroikin North although garnet-rich lithotypes are more dominant in this hole.

Down-hole radiometric peaks reflect the presence of anomalous quartz +/- carbonate veinlets carrying minor amounts of uranium. Best intersections from down hole probing include:

- 0.60 m @ 132 ppm eU₃O₈ from 195.8 m
- 1.02 m @ 120 ppm eU₃O₈ from 212.4 m

The anomalous intervals are quartz veins mostly within quartzo-feldspathic lenses, that are in turn within a biotite-rich mafic gneiss unit (193-214m). This suggests the lithological boundary served to channelise fluids, or the Fe-rich material acted as a reductant for U-bearing fluids. Alternatively, the mafic gneiss may be a preferentially U-enriched source unit. Abundant Monazite grains were identified in one sample submitted for petrographic description (sample KRD1155- 2147). These may be partly responsible for a radiometric response at this depth.

Composite sampling avoided the mineralised veins. Geochemistry differentiates between main lithological types; the 'mafic gneiss' is enriched in Ca, Fe and Na plus Co-Cu-V-Zn; whereas the post deformational mafic intrusives are subtly different with relative depletions in Al, Fe and Na and enrichments in Cr and Ni. Quartzofeldspathic rocks exhibit opposite geochemical trends in the rock forming elements and common metal suite.

Grade sampling failed to duplicate the down hole radiometric results primarily due to the very localised widths of the anomalous structures.

Kuroikin - two of the three holes intersected varying amounts of Kombolgie sandstone, basement gneiss and Oenpelli dolerite indicating that their positioning was either east of or within the Aurari Fault zone. As a result both holes failed to intersect the desired geological environment. As previously stated, there is a lack of 'real' subsurface geological knowledge in the immediate area although geophysics, specifically magnetics, provides a general guide to the geological framework. To date, comparison of drill hole results with the magnetics is still not providing a clear subsurface picture.

The most southerly hole, KRD1158 intersected the host granodiorite containing veining, alteration and some mineralisation. The intersected geology in KRD1157 and 1158 and their positions relative to each other indicates a structural disruption separating the two holes, possibly related to a major surficial feature evident in the adjacent sandstone. The feature is a curvi-linear east-west striking structure , which extends for several kilometres into the sandstone. The structure divides the MP1 and MP2 sandstone blocks and is occupied in part by a shallow dolerite intrusion, which terminates against the Aurari Fault. The drilling results suggest that the structure traverses the fault causing the apparent offset. This is supported by satellite imagery, which implies a 'jog' illustrated on surface by outcrop pattern and changes in drainage direction. Interpretation based on magnetics suggests the intersection of several linears in the immediate area, however this is the first subsurface indication that there is some structural disruption. These features indicate that a suitable environment may exist in the vicinity for the development of an increased volume of vein density and associated mineralisation.

KRD1156

The hole was precollared to 96m through quartz-rich sands. Elevated radioactivity was recorded from 64m, which is most likely the Cretaceous / Kombolgie unconformity. Quartz-feldspar-biotite gneiss was intersected to a depth of 126 m. followed by Oenpelli Dolerite to EOH at 476.8m. The intersected sequence implies that the hole has traversed the hanging wall side of the structure although there is little evidence of major faulting.

Compositionally, the dolerite becomes increasingly quartz-rich down hole. From approximately 340m, the composition is interpreted to be more dioritic with the magnetic susceptibility distinctly less noisy and subdued. The dolerite body can be projected into the adjacent holes, KRD777 to the north (relatively shallow intersection) and KRD778 to the west (deep intersection), based on the assumption that we are dealing with the same intrusion. Faulting is evident in the dolerite but only locally, suggesting that the main fault zone was not traversed.

As the hole is predominantly dolerite there is negligible variation in bulk geochemistry as indicated by the composite five metre sampling. The initial 15m of coring (96 to 111m) intersected “saprock” described as clay altered basement gneiss, which is slightly enriched in several elements including uranium. This interval is within a radiometrically anomalous section of the hole (precollared) with peaks marginally exceeding 140 eppm U_3O_8 at 90m.

KRD1157

The most easterly drilled hole on the discovery drilling fence (the ‘410 traverse’) although it’s position was moved about 100m south of the section due to swampy ground. The precollar reached 54m before intersecting Kombolgie sandstone. The sandstone extends to 226.5m followed by basement to 425.4m then dolerite to EOH at 436m.

The Kombolgie is represented by alternating banded/well bedded fine to coarse sandstone with some pebbly sections. Colours vary from cream to pink (bleached) to mottled grey and mauve (diagenetic hematite). Alteration styles include pervasive clay, both interstitial and as fracture coatings, and hematite (purple-mauve, red and brick-red). Some localised yellow-brown limonite-rich intervals are also present. Occasional thin (1 to 35cm thick) bands of fine clayey, silty and sandy sediments are present throughout representing abrupt breaks in the sedimentation cycle. Two narrow mafic dikes intrude the sandstone at 102 and 142m.

The contact zone between the Kombolgie and basement is extensively altered and structurally disturbed. For several metres above the contact the sandstone is pervasively bleached. At and below the contact there appears to be a ‘mixing’ of the two lithologies, forming a mostly chocolate-coloured, very hematitic melange over a 10 metre section. Some greenish clay alteration is also evident immediately beneath the undisturbed sandstone. A strong fabric is developed in places as is brecciation. These zones have been observed previously in some King River drill holes and are interpreted as “milled / cataclastic breccias” in which fragments of sandstone are enveloped in highly deformed basement (Thomas 2001).

The basement intersection initially comprise about 30m of fine grained strongly foliated gneiss, which has undergone ductile deformation. It is extensively broken and rubbly for much of the interval, becoming more competent with depth. At 270.7m there is a sharp contact with a monotonous coarse grained, sometimes porphyritic quartz feldspar gneiss (?granitoid) characterised by pink to pale green altered feldspars and zones of chloritic alteration. In contrast, this lithotype is extremely broken and fragmented throughout with extensive rubbly zones. Dolerite is present from approximately 425.4m to EOH.

Down hole radiometrics show the sandstone has a 'spikey' signature with occasional peaks in the 300 to 600cps range. An overview of the Th and U geochemistry indicates the radiometric variation is most likely attributable to Th rather than U. A maxima of 180ppm U₃O₈ at 142.85m correlates with the altered lower contact of a mafic dike.

Geochemistry results from the 5m composite sampling show the highest analytical uranium correlating with the mafic dikes and the sandstone-basement contact zone. The maxima of 40.5ppmU at 143m (Th = 2.41ppm), corresponds to the lower dike. Associated anomalous elements include Co-Cr-Ni-Ti-V. Two samples in basement, immediately at and beneath the unconformity, gave slight enrichments in U of 10 to 25ppm. Thorium values of 13ppm in these samples appear to be neither enriched or depleted compared to elsewhere.

Half metre sampling upgraded the composite figures giving a maximum for the altered mafic dike of 620ppm U (731ppm U₃O₈). There is also a precious metals enrichment with Au 151ppb, Pd 30ppb and Pt 28ppb. Apart from those recorded in the composite sampling, other anomalous elements of note are Cu at 0.208% and As 41.5ppm. The anomaly within the 'red zone' is closely associated with the hematitic "milled breccia". Uranium reaches a maximum of 87.2ppm over a 1m interval (239 to 240m) indicating some fluid movement along the disrupted unconformity.

KRD1158

Coring commenced at 83.4m. The hole was collared in Cretaceous, passing into Kombolgie sandstone between 75 and 80m (deduced from the gamma log) then basement at 84.8m. The latter is typical Kuroikin 'granodiorite'. Weathering of the basement is intense at first producing pervasive clay alteration but becoming progressively less intense with depth and passing into fresh biotite-feldspar-quartz gneiss at 125m.

Only about one metre of sandstone was cored. It is pale pink in colour, coarse grained with a few pebbles. Contact with underlying basement is quite clean and sharp. Basement is typical of Kuroikin, a biotite-rich granitoid with coarsely porphyritic intervals. There are concentrated sections of quartz veining, some hosting uranium mineralisation, enveloped within extensive decimetric zones of dark chloritic alteration. Vein composition and morphology is typical of that found elsewhere at Kuroikin. Some localised breccias were also noted, these being associated with a lighter green chloritic alteration, which is seen to be overprinting the earlier formed darker coloured chlorite. Elsewhere 'domains' of dark coloured chlorite-altered host are seen to be surrounded and invaded by the later light green alteration event.

By comparison with other mineralised holes in the vicinity, KRD1158 has a lower degree of competency. A review of the core indicates wider sections where there is more intense fracturing and a greater frequency of rubbly, broken intervals. Contrary to the suggestion that mineralisation might increase as the fault zone was approached, there are fewer intersections in this hole and the overall intensity of mineralisation within those intersections is quite low. Despite this there remains a

high frequency of veining coupled with numerous intervals of dark alteration varying in width from several metres to over 20 metres.

Down-hole radiometrics indicate a Cretaceous / Kombolgie contact at approximately 70m; a thin peak within the sandstone produced an average grade of 0.049e% U_3O_8 at 79.5m. Both of these features are within the precollared section. The intensely clay-altered section of basement gneiss exhibits slightly elevated radiometrics leading into a series of low to high order radiometric peaks from 117m to 168.5m. Several of these peaks have averaged equivalent U_3O_8 values ranging between 0.0498% and 0.147 %. Best radiometric intersection is 0.88m at 0.147% between 137.45 and 138.35m. Elsewhere widely scattered intervals of anomalous radiometrics in the 1000-2000cps range correlate with quartz veining, which are enclosed by wide intervals of dark chloritic alteration.

The composite sampling has outlined the broad zones of uranium enrichment and depletion, which can be correlated with the enrichment/depletion of the various associated elements. The zone of weathering in the upper part of the basement intersection exhibits defined elemental trends, which differ slightly from the fresher rock. Uranium values are anomalous, ranging between 30 and 62ppm and there is noticeable elevation in several other elements including Ag, As, Be, Mo, Pb and V. High Fe, around 10% correlates with relatively low Mg content of 0.9 to 1%. There is no visible evidence of mineralisation.

Overall there is a trend within the hole of decreasing intensity of mineralisation with depth. The upper 80 metres is the most mineralised/anomalous followed by a 60 metre 'transition' zone of predominantly x2 to x3 background U, merging into mostly barren rock with the majority of values less than 1ppm. Three slightly anomalous samples within the latter correlate with some minor veining and alteration.

Fourty-four grade samples were collected with 19 of those samples returning uranium grades in excess of 50ppm . The U content in the remaining samples range from 'background' to variably anomalous. The intervals represented by this sampling procedure are from 130 to 150m, 166 to 171m and 340 to 347m, all of these being the most intense sections of veining and alteration. Using a cut-off of 0.05% U_3O_8 best grades are:

- from 133.9m: 0.49m at 0.0516%
- from 139.3m: 0.30m at 0.8583%
- from 139.6m: 0.40m at 0.0883%

Figure 3. [Kuroikin: Drill Hole Layout, Intersected Lithologies, and Magnetics](#)

Figure 4. [Kuroikin: Drill Hole Cross Sections](#)

Table 2. [Summary Geological Logs: KRD1153-1158](#)

RAB Drilling

The program commenced on the September 10 and was completed on September 15. A total of 49 holes was drilled for 968 metres. Two separate areas were investigated, Sandy Point and Sandy Point East (Bald Rock).

The Sandy Point program consisted of two additional traverses located to the east of the main prospect and one traverse to the west. The two 'extension' traverses, consisting of 17 holes were successful in locating the unconformity in the majority of holes however no uranium anomalism was detected. Holes were drilled at 50 metre intervals on two north-south lines. The drilled area is covered by Kombolgie-derived sands and loose pebbles, which overlie a thin sandstone remnant resting on basement gneiss. Some alteration was noted near the unconformity.

The western traverse (five holes) encountered sandstone at shallow depth with one hole intersecting the unconformity. The latter, KRR1211 (the most southerly), has elevated basement-contained uranium of 33ppm coincident with the saprolitic zone beneath the unconformity. All other holes failed to locate elevated or anomalous uranium.

Sandy Point East (Bald Rock) is an airborne radiometric anomaly located approximately 2.5 kilometres to the northeast of Sandy Point. The environs consist superficially of sand cover, pisoliths, some basement gneiss fragments and a small area of ferruginous material. Scintillometer (SPP2) readings at surface reach x3 background (50-60cps).

Four holes returned anomalous uranium:

- KRR1180: 4m at an average of 46.9 ppm U (16.9 ppm Th) from 17 m to EOH. This result is from two contiguous 2 metre composite samples in moderately haematized weathered quartz-feldspar gneiss.
- KRR1188: 2m at 43 ppm U from 15 m (16.1 ppm Th) in bleached quartz-feldspar gneiss with quartz veining.
- KRR1205: highest U is 75.6ppm associated with Au (68ppb), Pd (10ppb) and Pt (8ppb). The anomalous interval is within clay altered basement gneiss located about 5 metres below the unconformity.
- KRR1206: located 50m north was also anomalous in uranium. Two samples gave 24 and 40.8ppm U associated with detectable Au-Pd-Pt.

The combined results indicate a well defined sub-surface uranium anomaly trending in a northwest direction, paralleling an adjacent major structure. The trace of the structure can be observed crosscutting the sandstone plateau to the north; it extends southeastwards into the regolith covered, low lying country immediately east of the drilled area. Another radiometric anomaly, yet to be investigated in detail, is located at the base of the sandstone escarpment about 750m to the northeast, corresponding to the abovementioned structure.

All data for 2005 RAB drilling at Sandy Point is contained in the Data Folder of this report.

Geophysics

In August 2005, Gtek Australia Pty Ltd (Gtek) undertook a trial SAM (sub-audio magnetics) survey over the Kuroikin prospect. The survey was designed to image conductive structures (i.e. due to alteration and/or deep weathering) and was considered an orientation survey since it was the first time SAM has been used in Arnhem Land. The attributes of SAM contribute to its attractiveness as an exploration technique:

- High spatial resolution of 5 m along 50 m lines;
- Sensitivity to subtle conductive features due to current channelling (as long as they are sub-parallel to current electrodes);
- The magnetic receiver avoids potential electrodes (which can be time consuming and difficult in highly resistive environments); and
- It is logistically feasible along the escarpment edge (since current electrodes are placed along the structure strike).

The SAM survey was undertaken using a Zonge GGT-10 transmitter (Frequency 4.0 Hz) and a Geometrics G856 magnetometer. Lines were oriented 73 deg, perpendicular to the Aurari Fault Zone (AFZ) and the survey totalled 46.5 line km. The logistics report further elaborates on the survey specifications and processing Gtek used to generate the EQMMR (Equivalent Magnetometric Resistivity) response indicative of conductivity and magnetic grids. The high quality EQMMR data is sufficient to utilise high-pass filtering methods such as first vertical derivatives, which are usually reserved for magnetics and particularly beneficial when identifying structure. Processing to extract the EQMMIP (Equivalent Magnetometric Induced Polarisation) response is still under development by Gtek and could not be calculated for this survey.

Shortly after completion of the SAM survey Gtek went into receivership and since then the technology has been spun-off into a new company called Gap Geophysics Australia Pty Ltd.

Appendix 6. [Logistics Report for SAM survey by GTek](#)

Figure 5. [SAM - EQMMR](#)

Figure 6. [SAM – 1st Vertical Derivative of EQMMR](#)

Figure 7. [SAM – Magnetics](#)

Figure 8. [SAM - With Previously Mapped Geology](#)

Results

The EQMMR response is made up of a number of second order features rather than any that can be regarded as particularly strong and coherent. Within the survey bounds the Aurari Fault Zone is mapped in plan view as two sub-parallel north-northwest structures. The more easterly of these corresponds to the eastern edge of the most prominent EQMMR conductive feature, which is “v” shaped. The more westerly aspect of the “v” like response appears to correspond to an unnamed structure oriented northwest and observed within the sandstone to the southeast. There is no obvious response associated with the Kuroikin (410) Fault in either the EQMMR or magnetics.

Drill holes KRD0777, KRD0778, KRD0779 are all located on or at the edge of EQMMR conductors. These holes have all intersected carbonaceous or black shales within the cover sediments. Therefore, it is possible that shales may have an impact on the SAM response and could mask underlying basement structures.

Many low-order linears can be identified by the EQMMR response and should be utilised for future drill targeting. For instance the EQMMR data may help identify possible cross cutting faults along the AFZ. Once such possibility is a previously recognised northwesterly structure, which is inferred from sandstone to the southeast and appears to related to the EQMMR. The strongest EQMMR conductor is located in the far northeast. This could represent an alteration target away from the AFZ, although it should be regarded as low-order since the influence of cover cannot be discounted.

There are fewer linears/structures, which can be identified from the SAM magnetics. This data suffers from high frequency noise (i.e. due to surface laterite) and the airborne magnetics is considered to be superior with broader coverage.

CONCLUSIONS & RECOMMENDATIONS

In summary, diamond drilling at Aurari North has further constrained the mineralised zone and in doing so downgraded the prospect by indicating non-continuity between the two most important intersections. The presence of weak vein-style mineralisation in a hole 1 kilometre north of the prospect may be related to another zone of uranium mineralisation similar to Aurari North or Laterite. Further wide-spaced exploratory diamond drilling is warranted in this area.

Another factor, which may have important implications on future exploration at King River is whether the 'No-Go' to the north of the Aurari North trend is lifted. This action will depend upon the outcome of the granting of the SELs and approval by the relevant traditional land owners. If approved, as yet unexplored country would be made available along a highly prospective structural trend.

The boundaries of the Kuroikin mineralised zone continue to expand although the 2005 drilling placed an eastward constraint on the distribution of the mineralised host on two additional drill fences. Continued exploratory drilling at the current spacing of 500m is warranted in both a southerly and westerly direction to fully outline the system. Closer spaced drilling in the northern part of the prospect is also recommended as several holes have intersected significant vein systems and grades. The presence of an east-west structure with confirmed offset in this northern area may be directly related to the vein concentration and could provide clues to additional target zones at Kuroikin.

There is some scope for further work at Sandy Point East where additional shallow investigative drilling is warranted. At some time in the future there may be a requirement to follow up with deep drilling methods. Surface prospecting is also recommended as there are both surface radiometric anomalies with coincident structures to target.

The southern extremity of the Wellington Range, east of the Aurari Fault, now has several prospects where uranium mineralisation and anomalism has been discovered. Sandy Point, Sandy Point East and ANG 3 are unconformity-related occurrences, the first two with

obvious structural control, both local and regional. Their position adjacent to the base of the sandstone massif and location in the stratigraphy would imply a period of active uranium-bearing fluid movement along the unconformity with near-surface showings in the vicinity of regional post sandstone structures. Oenpelli Dolerite is present, as indicated by magnetics and core drilling, and may be a factor in the localising process.

EXPENDITURE 2005

Proposed estimated expenditure for the year, as stated in the 2004 work program was \$487,000. Actual expenditure amounted to \$705,758.59. Details are contained in the link below 'Summary of Expenditure'.

Table 3. [EL5891 Summary of Exploration Expenditure](#)

WORK PROGRAM PROPOSALS 2006

The tenement has reached its tenth and final year. In combination with the remaining King River tenements, EL5891 is in the initial process of being converted to an SEL (Substitute Exploration Licence). As the 'Consent to Negotiate' for the SELA has been granted by The Minister, then EL5890 has been automatically surrendered and the negotiation process for the Substitute Exploration Licence has commenced. There will be no exploration activities undertaken in 2006.

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