Exploration Licence 3347
(Kunbohwinjgu Joint Venture)
Arnhem Land, Northern Territory

RELINQUISHMENT REPORT
28/7/1997 – 27/7/2000

Darwin NT
September 2000
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SUMMARY

Exploration Licence 3347 is located in Arnhem Land about 300 kilometres east of Darwin. Exploration is being conducted by a joint venture which consists of AFmeco Mining and EXploration Pty Ltd (operator), SAE Australia Pty Ltd, Kumagai Gumi Co Ltd, UAL Pty Ltd and Pasminco Exploration Pty Ltd.

This report describes the results of exploration for unconformity-related uranium deposits carried out in those portions of the tenement relinquished in July 2000.

Radiometric anomalies delineated by an airborne geophysical survey were shown to be related to uranium concentrations in laterite and soil. There was no evidence for the existence of primary uranium deposits.

A regional stream sediment survey failed to locate any uranium anomalies related to uranium mineralisation.

The single drillhole completed in the northern part of the tenement showed that the Kombolgie sandstone was underlain by granitic rocks of the Nimbuwah Complex, which are thought to be less prospective for unconformity-related uranium deposits.
1. INTRODUCTION

The exploration licence is being explored in joint venture by AFmeco Mining and EXploration Pty Ltd (operator), SAE Australia Pty Ltd, Kumagai Gumi Co Ltd, UAL Pty Ltd and Pasminco Exploration Pty Ltd.

The tenement is located within the Arnhem Land Aboriginal Reserve and is shown on figure 1.

This report details the work carried out on those blocks relinquished in July 2000.

2. LOCATION AND ACCESS

The tenement is located in West Arnhem Land about 300 km east of Darwin in the Northern Territory of Australia, see figure 1.

Access is either by air to the Nabarlek or Mamadawerre airstrips, or by road via the Arnhem Highway to Jabiru and then via Cahills Crossing and unsealed roads Mamadawerre outstation.

Most of the tenement is located in sandstone escarpment country which is only accessible by helicopter or on foot.

3. TENURE

Exploration licence (EL) 3347 was granted on 28th July 1997 for a period of six years. The tenement is currently being explored in joint venture by AFmeco Mining and EXploration Pty Ltd – operator (19.6%), S.A.E Australia Pty Ltd (19.6%), Kumagai Gumi Co. Ltd (19.6%), UAL Pty Ltd (19.6%), Pasminco Exploration Pty Ltd (formerly Savage Australian Exploration Pty Ltd) (19.6%) and Kunbohwinjgu Land Corporation Pty Ltd (2%).

EL 3347 covers an area of 770 sq km and consists of 230 blocks. The tenement was granted waivers of reduction in area for years 2 and 3. A 50% reduction comprising 150 blocks, see figure 2, was carried out in July 2000.

4. GEOLOGY

The regional geology of West Arnhem Land has been described in detail in many previous reports and only a brief overview will be given here. The regional geology of the tenement is shown on figure 3 and a stratigraphic chart is shown on figure 4.

The oldest rocks exposed in the area are gneisses belonging to the Mount Howship Gneiss of the Kakadu Group of lower Palaeoproterozoic age. Further to the west in the Alligator Rivers uranium field, similar rocks overlie the
Archaean Nanambu complex. The Mt Howship Gneiss is overlain by the Kudjumarndi Quartzite which is one of the main marker horizons in the region.

The psammitic rocks of the Kakadu Group are overlain by the Cahill Formation also of lower Palaeoproterozoic age, which is the host of the main uranium ore bodies in the area. The Lower Cahill Formation consists of a basal calcareous unit which is overlain by a sequence of pelitic schists, meta-arkose and amphibolite. A well defined amphibolitic unit at the top of the Lower Cahill Formation hosts the Nabarlek uranium deposit. The Upper Cahill Formation and Nourlangie Schist consist of a monotonous sequence of meta-arkose, schist and amphibolite.

East and south of the area of the Palaeoproterozoic sediments lie the granitoid rocks of the Nimbuwah complex. These granitoids were extensively migmatised during the Top End Orogeny which is dated at about 1800my. The relationship between the Cahill Formation and the Nimbuwah Formation is problematical as the contact zone has not been seen.

Later post-orogenic Proterozoic granites have intruded the meta-sediments in the east of the area.

The upper Palaeoproterozoic Kombolgie Formation overlies the older rocks unconformably. This formation consists of sandstones with a prominent basaltic horizon (Nungbalgarri Volcanic Member). The flat-lying sandstones form the Arnhem Land escarpment.

The Oenpelli Dolerite (1700my) intrudes the early Palaeoproterozoic metasediments and the Kombolgie sandstone, and forms large lopolithic bodies. It is the youngest Precambrian rock outcropping in the area.

5. PREVIOUS WORK

The area covered by the tenement had not previously been explored prior to the EL being granted in 1997.

Regional mapping of the area has been done by the BMR and the Northern Territory Geological Survey.

6. WORK COMPLETED IN THE RELINQUISHED BLOCKS

Work completed in the relinquished blocks has included an airborne geophysical survey, helicopter-assisted diamond drilling, radiometric anomaly assessment, regional stream sediment sampling and ground reconnaissance.

6.1. AIRBORNE GEOPHYSICAL SURVEY

A helicopter-borne radiometric and radiometric survey was carried out by Geoterrex-Dighem Pty Ltd in September 1997 over the entire tenement.
Data pertaining to the relinquished blocks are stored on the accompanying CD-ROM disc. Details of the survey are given in the logistics report in appendix 1.

The helicopter flew at a height of 60 metres above ground with the towed magnetic sensor at a height of 30 metres above ground. The sample interval was 0.1 seconds (3 metres) for the magnetic data and 1.0 seconds (33 metres) for the radiometric data. The nominal aircraft speed was 100 km/hour. The north/south flight lines were spaced at 100 metres apart. Two rim flights were flown and their locations are shown in appendix 1 (figure 1).

Processing of the radiometric data led to the delineation of a number of anomalies to be followed-up.

6.2. AIRBORNE RADIOMETRIC ANOMALY FOLLOW-UP

Thirty-six radiometric anomalies were examined on the ground within the relinquished blocks. Thirty-one of these were checked in 1998 and five were checked in 1999. The locations of these anomalies are shown on figure 5. Each of the anomalies was visited by helicopter, sampled and checked using a scintillometer or a spectrometer. The results of these field checks are shown on table 3. Most of the anomalies were related to surface concentrations of uranium in soil and laterite. None of the anomalies were considered to be caused by underlying uranium mineralisation.

6.3. DRILLING

One helicopter-assisted drillhole was drilled in the relinquished area. The location of the hole is shown on figure 6.

Details of the drillhole can be found in tables 1 and 2. The diamond drillhole log is presented in appendix 2.

The hole was probed with a downhole natural gamma Auslog tool. No anomalous radioactivity was detected.

Sandstone drillcore was sampled at 50 metre intervals with 3 samples taken in the last 20 metres above the unconformity. The samples were sent to Ultratrace to be analysed for Al2O3, Fe2O3, K2O, MgO, P2O5, U, Th, B and Pb by ICP-MS/OES (see table 4). Where the original U value was >2 ppm the sample was reanalysed using an aqua-regia digest to get a value for labile uranium (U_AR). The results are shown in table 4.

XRD and PIMA mineralogical analyses were done on sandstone core at regular intervals, results are shown in tables 5 and 6 respectively.
The PIMA II spectrometer measures the spectra of samples in the short wavelength infrared band from 1300 to 2500nm. When a sample is illuminated by the PIMA instrument certain wavelengths of light are absorbed by the minerals in the sample. These absorption features are represented in the reflectance spectrum as troughs and are characteristic of the minerals present.

Most of the absorption features in the PIMA spectra are caused by the presence of the following ions in the specimen: Hydroxyl (OH), Carbonate (CO3), and Ammonia (NH4); water is also important. Minerals that PIMA can detect include: phyllosilicates (clays and chlorite), hydroxylated silicates (epidote and amphibolite), sulphates (alunite, jarosite and gypsum) and carbonates (calcite etc). The main minerals of interest in the Kombolgie sandstone are the phyllosilicates such as sericite, kaolinite and chlorite.

Drillhole KBW 05 was located in the northern part of the EL adjacent to a major north/south fault line known as the Daniel Fault, see figure 6.

The hole was collared in Kombolgie sandstone and medium to coarse, weakly altered sandstone was intersected to 119.6 metres. From 119.6 to 154.5 metres the sandstone was pebbly to gravelly with weak to moderate hematite and clay alteration. The basal sequence from 154.5 to the unconformity at 158.3 metres consisted of medium to coarse sandstone with minor gravel bands.

The basement rocks in this hole consisted of granite or granite gneiss of the Nimbuwah Complex. The granitoid was porphyritic in part and was weakly to moderately altered. Some shearing was noted. No anomalous radioactivity was logged.

6.4. REGIONAL STREAM SEDIMENT SURVEY

A helicopter supported regional stream sediment survey was conducted over EL 3347. The aim of the survey was to detect any uranium or gold anomalies which had not been detected by the airborne radiometric surveys.

Twenty nine bulk stream sediment samples were collected from the locations shown in figure 7 by helicopter. The samples were returned to Myra base camp where they were sieved to –80#. The samples were sent to Ultratrace to be analysed for Au, U, Th, As, Co, Cu, Ni, Pb, V and Zn by ICP-MS/OES. The results are shown in table 7.

The uranium results are generally not anomalous. Higher values tend to be related to areas of laterite developed on Nungbulgarri Volcanics which are known to contain higher uranium values.
7. CONCLUSIONS

Radiometric anomalies delineated by the airborne geophysical survey were shown to be related to uranium concentrations in laterite and soil. There was no evidence of the existence of primary uranium deposits.

The regional stream sediment survey failed to locate any uranium anomalies related to uranium mineralisation.

The drillhole completed in the northern part of the tenement showed that the Kombolgie sandstone was underlain by granitic rocks of the Nimbuwah Complex, which are thought to be less prospective for unconformity-related uranium deposits.