AFMECO MINING AND EXPLORATION PTY LTD

Exploration Licence 3347

(Kunbohwinjgu Joint Venture)

Arnhem Land, Northern Territory

THIRD ANNUAL REPORT

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J.Fabray, A.Bisset, D.Ewington and P.Wollenberg

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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 that consists of AFmeco Mining and EXploration Pty Ltd (operator), SAE Australia Pty Ltd, Kumagai Gumi Co Ltd, UAL Pty Ltd, Pasminco Exploration Pty Ltd, and Kunbohwinjgu Land Corporation Pty Ltd.

This report describes the results of the third year of exploration for unconformity-related uranium deposits on the tenement.

Five helicopter-assisted drillholes were completed during the year comprising 1359.3 metres diamond drilling. Nimbuwah Complex granitoid forms basement in the area and is overlain by a variable thickness of Kombolgie Formation sandstone.

Five NanoTEM traverses were done across a major structure. A test regional gravity line was completed in the west of the tenement.

A regional stream sediment survey was carried out with helicopter support.

The contact zone between the Nimbuwah Complex and the metasediments of the Cahill Formation is thought to occur close to the western border of the EL. This zone is considered to be prospective for uranium mineralisation. The granitic rocks of the Nimbuwah Complex are thought to be less prospective.

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, Pasminco Exploration Pty Ltd, and Kunbohwinjgu Land Corporation Pty Ltd.

The tenements are located within the Arnhem Land Aboriginal Reserve and are shown on figure 1.

This report details the work carried out during 1999/2000.

2. LOCATION AND ACCESS

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

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 that 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 has been granted a waiver of reduction in area for year 3.

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 is shown on figure 2 and a stratigraphic chart is shown on figure 3.

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 that 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 problematic.

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.

Work completed in the previous two years of tenure has included airborne geophysical surveys, helicopter-assisted diamond drilling and ground reconnaissance. Details of this work may be found in the annual reports submitted to the Mines Department.

6. WORK COMPLETED DURING 1999/2000

Work completed in the third year of tenure has included diamond drilling, ground geophysics, radiometric anomaly assessment and a regional stream sediment survey.

6.1 NEW RESULTS RE 1998 CORE

Subsequent to the submission of the Second Annual Report, a petrographic report (GST 8919) has been received for a U and Th anomalous zone within the sandstone in the 1998 hole KBW-4 (72.85m). The anomaly is associated with a phosphatic mineral (Appendix 2).

An anomalous zone in 1998 drillhole KBW-2 (244.0 to 244.3m) was sampled in 1999 for assay and petrography. The sample returned 180ppm U and 11ppm Th (Table 3) and petrography (GST Report 8943) indicated trace pitchblende associated with phosphates (Appendix 2).

6.2 DRILLING

Five helicopter-assisted drillholes were completed totalling 1359.3 metres diamond drilling. The locations of the holes are shown on figure 4.

Details of the drillholes can be found in tables 1 and 2. Diamond drillhole logs are presented in appendix 1.

All of the holes were probed with a downhole natural gamma Auslog tool. The drillholes were sampled where anomalously radioactive and the samples were sent to Ultratrace to be analysed for Au, U, Th, Pt, Pd, As, Co, Cu, Ni, Pb, V and Zn by ICP-MS/OES (see table 3).

Sandstone drillcore was composite sampled over 10 metre lengths and the samples were sent to Ultratrace to be analysed for Al_2O_3, CaO, Fe_2O_3, K_2O, MgO, Na_2O, TiO_2, P_2O_5, U, Th, As, B, Ni, Pb, V and Zn 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 the PIMA instrument illuminates a sample the minerals in the sample absorb certain wavelengths of light. 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.

Some samples of drillcore were sent for petrographic study and the descriptions may be found in appendix 2.

Drillhole KBW 06 was located in the western part of the EL and was designed to test a number of structures. The sandstone in this drillhole was 192.5m thick. Fine to medium sandstone with some silicification and weak hematitic alteration was intersected from the surface to 119.5m downhole. From 119.5 to 181.0m silicified to hematitic pebbly sandstone was logged. The basal sequence, from 181.0 to the unconformity at 192.5m, consisted of coarse to pebbly sandstone with some siltstone bands.

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

Drillhole KBW 07 was sited on a major north-south structure (Daniel Fault) which was thought to be prospective for the development of uranium deposits. Drilling difficulties caused the hole to be abandoned at 24.0m. The hole was redrilled as KBW 07R close to the original site. The sandstone was 102.8m thick in the re-drill. A major fault zone was intersected from the surface to a depth of 33.0m and is interpreted as being the Daniel Fault. From 33.0 to 85.1m hematitic fine to coarse sandstone was found which became coarser with some gravel bands at the bottom. The basal sequence, from 85.1 to the unconformity at 102.8m, consisted of hematitic pebbly sandstone to sandy conglomerate.

The basement rocks in this hole consisted of altered granites of the Nimbuwah Complex. The granites in this hole were weakly to moderately sericitised and chloritised. Minor shearing was also logged. A minor zone of anomalous radioactivity associated with a 5mm wide hematite vein was logged at 148.6m and assayed 224ppm U and 17ppm Th over 0.1m (Table 3). Petrography (Appendix 2) indicates that this anomaly is associated in apatite veinlets with iron/titanium sulphides/oxides.

Drillhole KBW 08 was located about 4.5 km south of KBW 07 on the Daniel Fault zone. This hole intersected 323.3m of Upper Kombolgie sandstone overlying at least 100m of Nungbulgarri Volcanics. The considerably increased thickness of the sandstone sequence compared to that found in drillhole KBW 07R was surprising. The Upper Kombolgie sandstone consisted of alternating bands of medium to coarse sandstone with pebbly sandstone. Some weak silicification and hematitic alteration was noted. Minor thin shale bands were logged between 254 and 262m downhole. A poorly developed conglomerate marked the base of the sandstone.

A sequence of altered basaltic flows assigned to the Nungbalgarri Volcanics was intersected below the sandstone. The top of the basalts was palaeoweathered and sheared. Alternating massive and amygdaloidal basaltic flows with chlorite-filled vesicles were observed in the sequence, which was generally hematitic. Quartz veins occurred throughout the basalts. At a depth of 422.5m the base of the basalts had still not been intersected, and the hole was terminated.

Drillhole KBW 09 was designed to test the possible contact zone between the Nimbuwah Complex and the Proterozoic metamorphic sequence. The Kombolgie sandstone was 176.3m thick in this hole. Fine to coarse sandstone was intersected from the surface to 119.6m downhole, silicification with some minor chloritic alteration was found. From 119.6 to 142.6m pebbly sandstone with patchy chloritic alteration was found. The section from 142.6 to 164.9m consisted of alternating pebbly sandstone and medium/coarse sandstone, hematitic to clayey alteration was common. From 164.9 to the unconformity at 176.3m coarse to pebbly sandstone with chloritic to hematitic alteration was logged. A minor basal conglomerate was noted at the unconformity.

The basement sequence in this hole consisted of altered porphyritic granite of the Nimbuwah Complex. A narrow zone of possible palaeoweathing occurred immediately below the unconformity. No anomalous radioactivity was logged in the hole.

The final hole completed during 1999, KBW 10, was also designed to test the possible margin of the Nimbuwah Complex south of drillhole KBW 09. The Kombolgie sandstone was 180.8m thick in this hole. Fine to coarse sandstone was intersected from the surface to 95.3m downhole, silicification with some hematitic alteration was found. From 95.3m to the unconformity at 180.8m coarse to pebbly sandstone with clayey to hematitic alteration was logged. A basal conglomerate occurred at the unconformity.

The basement sequence in this hole consisted of altered coarse to porphyritic granite of the Nimbuwah Complex. No anomalous radioactivity was logged in the hole.

6.3 GEOPHYSICS

A number of ground electromagnetic (EM) traverses were carried out by Zonge Engineering and Research Organisation within the EL during 1999. A regional gravity traverse was measured by Haines surveys in the western part of EL 3347.

6.3.1 EM traverses

The locations of the EM traverses completed within EL 3347 are shown on figure 5.

The NanoTEM method was used to map sandstone thickness and to determine the vertical movement of faults in the sandstone. The equipment is portable by helicopter and the method had given satisfactory results in other areas of Arnhem Land. The survey method was the same for each traverse. The transmitter loop was 50 x 50m with a receiver loop of 10 x 10m. The station spacing was 50m and the configuration was 'In-loop'. All of the traverses were done on lines pegged using compass and tape.

Five NanoTEM lines were surveyed and the data are shown in appendix 4. The lines were designed to determine the offset on the Daniel fault and to locate any zones of alteration possibly related to uranium mineralisation.

6.3.2 Regional gravity traverse

The location of the regional gravity traverse completed in the western part of EL 3347 is shown on figure 5.

The line was 13 kilometres long and the station interval was approximately 500 metres. All of the stations were accessed by helicopter. The height and coordinates of each station were measured by GPS. The gravity data is presented in appendix 3.

The gravity traverse shows a strong regional increase in the bouguer gravity anomaly to the east possibly due to the underlying Nimbuwah Complex.

6.3.3 Airborne radiometric anomaly follow-up

Nine airborne radiometric anomalies that had not been checked in 1998 were followed up. The locations of these anomalies are shown on figure 6. The follow-up procedure consisted of field checking with a GR310 spectrometer and the results of this work are shown below.

Anomaly	Easting	Northing	K (e%)	Th (eppm)	U (eppm)	Comments
96	347218	8624231	0	7.9	13	pisolitic colluvium
97	346767	8627004	0	9	2.6	laterite, pisolite
98	348609	8626534	0	0	18	pisolites
99	349666	8626008	0.5	0	11	termite mound, pisolitic colluvium
101	350434	8627020	0.1	2.9	9.2	pisolitic colluvium
104	359185	8631687	0	0	3.5	creek, swampy, black mud
111	360968	8635882	0.2	0	18	termite mound, pisolitic colluvium
120	367116	8645608	0.6	4.7	19	laterite, pisolitic colluvium
127	348130	8634410	0.9	1.7	139	termite mound, 50m east

Most of the anomalies are related to surface concentrations of uranium in soil and laterite. None of the anomalies are considered to be caused by underlying uranium mineralisation.

6.4 GEOCHEMISTRY

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 that had not been detected by the airborne radiometric surveys.

6.4.1 Regional stream sediment survey

Sixty-seven bulk stream sediment samples were collected from the locations shown in figure 7. 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. Sample 610027 has the most anomalous uranium value (17ppm U) and requires field checking. Further assessment of the base metal results is required to determine if any of the results are anomalous and require follow-up.

7. CONCLUSIONS

The drilling program completed in the EL during 1999 has shown that the majority of the tenement is underlain by granitoids of the Nimbuwah Complex. A cover sequence of Kombolgie sandstone overlies the Nimbuwah complex and varies in thickness from 100 metres in the north to over 450 metres in the south.

The contact zone between the Nimbuwah Complex and the metasediments of the Cahill Formation is thought to occur close to the western border of the EL. This zone is considered to be prospective for uranium mineralisation. The granitic rocks of the Nimbuwah Complex are thought to be less prospective.