AFMECO MINING AND EXPLORATION PTY LTD

Exploration Retention Licences

150, 151 and 152

Arnhem Land, Northern Territory

FIRST ANNUAL REPORT

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SUMMARY

The Exploration Retention Licences are located in Arnhem Land about 250 kilometres east of Darwin. Exploration is being conducted by a joint venture that consists of AFmeco Mining and EXploration Pty Ltd (operator), Cameco Australia Pty Ltd and SAE Australia Pty Ltd.

This report describes the results of the first year of exploration on the tenements.

Eleven drillholes were completed during the year comprising 158 metres RC percussion and 2677 metres diamond drilling. Two of the drillholes were helicopter assisted.

Drilling in the SMLB area (ERL 150) confirmed that the boundary fault is associated with minor uranium mineralisation. The drilling program completed to the south of anomaly N147 (ERL 151) showed that the prospective lower arkosic unit occurs in the area.

The tensor induced polarisation surveys carried out over ERL 150 and 151 have produced a number of anomalous readings. The gravity survey completed over the SMLB area shows that the method can map structures and lithological variations.

No significant uranium mineralisation was found during the year. The definition of zones of strong alteration and prospective lithology in the area south of anomaly N147 is encouraging.

1. INTRODUCTION

The exploration retention licences are being explored in joint venture by AFmeco Mining and EXploration Pty Ltd (operator), Cameco Australia Pty Ltd and SAE Australia 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 tenements are located in West Arnhem Land about 250 km east of Darwin in the Northern Territory of Australia.

Access is either by air to the Nabarlek airstrip which is located close to the tenements, or by road via the Arnhem Highway to Jabiru and then via Cahills Crossing and unsealed roads to Nabarlek.

The sandstone escarpment country is only accessible by helicopter or on foot. The rest of the area is served by 4 wheel drive tracks, which become impassable during the wet season from November to April.

3. TENURE

Exploration retention licences (ERL's) 150, 151 and 152 were granted on 20th May 1999 for a period of five years. The tenements are currently being explored in joint venture by AFmeco Mining and EXploration Pty Ltd – operator (25%), Cameco Australia Pty Ltd (50%), and S.A.E Australia Pty Ltd (25%).

The ERL's replace parts of exploration licence (EL) 2508, which expired on 28th June 1998.

ERL 150 covers an area of 21.2 sq. km and has a work commitment of $150,000 for the first year. ERL 151 covers an area of 4.8 sq. km and has a work commitment of $150,000 for the first year. ERL 152 covers an area of 9.7 sq. km and has a work commitment of $50,000 for the first year.

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 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

Queensland Mines Ltd previously explored the area in the early 1970's. During this time the Nabarlek prospect was discovered by an airborne survey and was tested by drilling.

No exploration was carried out in the area from September 1973 until June 1988 when exploration licence 2508 was granted. EL 2508 was extensively explored for ten years until its expiry on June 28th 1998.

Details of the work completed in the past can be found in previous annual reports submitted to the Mines Department and in the final report on EL 2508 - areas retained under tenure (1998).

6. WORK COMPLETED DURING 1999/2000

Work completed in the first year of tenure has included RC percussion and diamond drilling, ground geophysics and surface sandstone sampling.

6.1. DRILLING

Eleven drillholes were completed totalling 158 metres RC percussion and 2677.1 metres diamond drilling. Two of the drillholes were helicopter assisted. Most of the drilling was done in the anomaly N147 area on ERL 151.

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, As, Ag, Co, Cu, Fe, 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 Al2O3, CaO, Fe2O3, K2O, MgO, Na2O, TiO2, P2O5, U, Th, As, B, Ni, Pb, V and Zn by ICP-MS/OES. When 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. Details of the PIMA method are given in section 6.3.

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

6.1.1. SML boundary area (ERL 150)

Uranium mineralisation was discovered in the SML boundary (SMLB) area in 1992 following blind drilling of the projected extension of the Nabarlek shear. The mineralised zone is associated with a northwest striking reverse fault zone known as the boundary fault.

Two drillholes (632.6m) were completed in this area during 1999 with the intention of further testing the mineralised fault system. The locations of the holes are shown on figure 4.

Drillhole SMLB 1 was sited behind previous drillhole RC 227D and was designed to test for possible extensions of uranium mineralisation. The Kombolgie sandstone was 75.2m thick. It consisted of coarse to pebbly sandstone with some clay and hematitic alteration close to the unconformity.

The basement consisted of meta-arkose, schist and amphibolite of the amphibolitic unit of the lower Cahill Formation. The core was strongly altered and sheared between 176 and 196 metres downhole with anomalous radioactivity (520 c/s at 182m). This zone has been interpreted as being the boundary fault. The hole was completed at 357.5m in unaltered garnet schists and meta-arkose.

Drillhole SMLB 2 was drilled on the same section as previous drillhole RC 228D and was designed to further test the mineralised fault system. The Kombolgie sandstone was 80.9m thick. It consisted of coarse to pebbly sandstone with some zones of strong clay alteration above the unconformity.

The basement rocks were similar to those found in SMLB 1. Altered pyritic rocks were intersected immediately below the unconformity with anomalous radioactivity. The boundary fault zone was found between 172 and 177 metres downhole. Minor uranium mineralisation was intersected in strongly altered amphibolite immediately below the fault zone (1000 c/s at 179m). Some minor graphitic sections were noted in this hole. The hole was finished at 275.1m.

6.1.2. Anomaly N147 area (ERL 151)

Uranium mineralisation was discovered in this area during exploration of EL 2508 in 1988. Two uneconomic zones of primary uranium mineralisation were delineated in Oenpelli Dolerite. Exploration in 1999 was aimed at discovering blind repetitions of the Nabarlek shear structure south of the zones of known mineralisation and at testing various geophysical targets.

Seven drillholes were completed in this area and their locations are shown on figure 5. A total of 158m RC and 1478.5m diamond drilling was completed.

Drillhole N147-1 was sited to test a geophysical target. The Kombolgie sandstone was 192.5m thick. Fine to coarse sandstone occurred from surface to 102.6m, followed by coarse to pebbly sandstone from 102.6 to 176.3m. Chloritised, partly brecciated, pebbly sandstone occurred from 176.3 to 191.7m. A zone of hematite-chlorite rock was intersected immediately above the unconformity from 191.7 to 192.5m.

The basement in this hole consisted of mica schist and meta-arkose of the ?lower arkosic unit. There were some minor altered zones with no anomalous radioactivity. The hole was terminated at 270.6m.

Drillhole N147-2 was also sited to test a geophysical target. The Kombolgie sandstone in this hole was 175.4m thick. Fine to coarse sandstone occurred from surface to 104.0m, followed by coarse to pebbly sandstone from 104.0 to 160.3m. Chloritised, partly brecciated, very coarse to pebbly sandstone occurred from 160.3 to 172.4m, with some zones of silicification and chlorite rock/breccia. A zone of brecciated chlorite rock was intersected between 172.4m and the unconformity at 175.4m.

The basement consisted of mica schist and meta-arkose of the ?lower arkosic unit. There were some minor altered zones with no anomalous radioactivity. The hole was terminated at 269.3m.

Drillhole N147-3 was designed to test a resistivity target. The Kombolgie sandstone in this hole was 141.5m thick. Fine to coarse sandstone occurred from surface to 98.3m, with a possible altered dyke at 87.5m. This was followed by coarse to pebbly sandstone from 98.3 to 125.7m. Strongly altered, partly brecciated, pebbly sandstone occurred from 125.7 to the unconformity at 141.5m.

The basement consisted of mica schist and meta-arkose with minor amphibolite bands of the ?lower arkosic unit. There were some minor altered zones with no anomalous radioactivity. The hole was terminated at 216.5m.

Drillhole N147-4 was designed to test for a possible extension of the Nabarlek shear structure. The Kombolgie sandstone in this hole was 166.3m thick. Fine to coarse sandstone occurred from surface to 98.0m, with some zones of strong silicification. This was followed by hematitic pebbly sandstone from 98.0 to 103.5m. Silicified to chloritised very coarse to pebbly sandstone with some chloritic breccias occurred from 103.5 to the unconformity at 166.3m.

The basement consisted of mica schist and meta-arkose with minor amphibolite bands of the lower arkosic unit. Graphitic schists were intersected from 234.1 to 255.8m. No anomalous radioactivity was found. The hole was terminated at 276.6m.

Drillhole N147-5 was designed to test a resistivity low on the eastern side of the ERL. The Kombolgie sandstone in this hole was 106.1m thick. Fine to coarse sandstone occurred from surface to 63.5m, with some zones of silicification and alteration. This was followed by altered pebbly sandstone from 63.5 to 79.8m, and strongly silicified medium to coarse sandstone from 79.8 to 86.0m. A fault zone was intersected between 86.0 and 99.0m. Silicified pebbly sandstone occurred from 99.0 to the unconformity at 106.1m.

The basement consisted of mica schist and meta-arkose with minor amphibolite bands of the lower arkosic unit. A graphitic fracture was intersected at 150.8m. A minor zone anomalous radioactivity was logged at 146.8m in strongly altered amphibolite. The hole was terminated at 171.5m.

Drillhole N147-6 was sited to test for possible mineralised structures. The Kombolgie sandstone in this hole was 135.9m thick. Fine to coarse silicified sandstone occurred from surface to 78.0m. This was followed by altered pebbly sandstone from 78.0 to 89.7m, and partly silicified medium to very coarse sandstone from 89.7 to 109.8m. A strongly altered ?dyke was intersected between 109.8 and 111.2m. Brecciated sandstone with some chlorite rock occurred from 111.2 to 115.0m. Silicified pebbly sandstone with zones of chloritic and hematitic alteration was found from 115.0m the unconformity at 135.9m.

The basement consisted of mica schist and meta-arkose of the ?lower arkosic unit. There were some minor altered zones with no anomalous radioactivity. The hole was completed at 200.4m.

Drillhole N147-7 was designed to further test possible extensions of the Nabarlek shear structure. The Kombolgie sandstone in this hole was 161.4m thick. Fine to coarse sandstone occurred from surface to 82.4m, and was followed by gravelly to pebbly sandstone from 82.4 to 90.6m. Fine to very coarse sandstone was intersected between 90.6 and 110.0m. Silicified to hematitic pebbly sandstone occurred from 110.0 to 126.6m. Chloritised pebbly sandstone with some breccias and chlorite rock was found from 126.6 to the unconformity at 161.4m.

The basement consisted of mica schist and meta-arkose with minor amphibolite bands of the lower arkosic unit. Some minor bands of graphitic and garnetiferous schist were logged. Minor anomalous radioactivity was measured in a weakly mineralised chloritic shear zone at 203.2m. The hole was terminated at 231.6m.

6.1.3. Anomaly U65 area (ERL 152)

Anomaly U65 was discovered during the airborne radiometric survey conducted over EL 2508 in 1988. The anomaly is caused by minor uranium mineralisation in Oenpelli Dolerite. The area has similarities to the Nabarlek deposit and previous work has included diamond drilling, geological mapping and geophysical surveys.

Two helicopter-assisted holes were drilled in this area, see figure 6. A total of 566.0m of diamond drilling was completed.

Drillhole U65-4 was designed to test a major north-south structure and resistivity target. The Kombolgie sandstone in this hole was 178.6m thick. Fine to coarse sandstone occurred from surface to 91.6m, and was followed by gravelly to pebbly sandstone from 91.6 to 101.6m. Fine to very coarse sandstone was intersected between 101.6 and 129.2m. Silicified to hematitic pebbly sandstone occurred from 129.2 to the unconformity at 178.6m. There was no chloritic alteration or brecciation in the sandstone.

The upper part of the basement consisted of hematitic meta-arkose with minor schist bands of the ?upper arkosic unit from 178.6 to 204.9m. A major fault structure was intersected from 204.9 to 251.0m and this contained zones of hematitic quartz breccia. Below the fault zone from 251.0 to 299.6m altered meta-arkose, schist and amphibolite of the ?amphibolitic unit were intersected. The hole was terminated at 299.6m and no anomalous radioactivity was logged.

Drillhole U65-5 was targeted on an interpreted NW-SE reverse fault. The Kombolgie sandstone in this hole was 171.0m thick. Fine to coarse silicified sandstone occurred from surface to 104.6m, and was followed by altered

pebbly sandstone from 104.6 to 115.5m with minor chlorite. Fine to coarse silicified sandstone was intersected between 115.5 and 146.6m and was brecciated in part. Brecciated hematitic pebbly sandstone occurred from 146.6 to 150.4m. A zone of hematite rock was intersected from 150.4 to 151.8m. Brecciated altered pebbly sandstone with some zones of hematite/chlorite rock was found between 151.8 and 160.0m. Altered pebbly sandstone with chloritic fractures was intersected from 160.0 to 166.8m. Altered pebbly sandstone occurred from 166.8m to the unconformity at 171.0m, the sandstone was very coarse at the bottom and the contact was possibly faulted.

The basement in this hole consisted of schist and meta-arkose of the ?upper arkosic unit. There was a minor dolerite sill at 214.4 to 215.4m. Some zones of alteration were found but there was no anomalous radioactivity.

6.2. GEOPHYSICS

Ground electromagnetic (EM) and induced polarisation (IP) surveys were carried out by Zonge Engineering and Research Organisation in a number of areas within the ERL's during 1999. A microgravity survey was carried out by Haines surveys in the SMLB area of ERL 150.

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 1998. The survey method was the same for each area. 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 surveys were done on grid lines pegged using compass and tape. The results of the work may be found in appendices 5 - 7.

Tensor IP (TIP) measurements were completed over ERL's 150 and 151 to determine if the method had any applicability in the exploration for uranium deposits. The fixed transmitter was set out between the two survey areas. A description of the survey method and results can be found in appendix 3.

A gravity survey was completed over the SMLB area in ERL 150. Details of the survey method and results can be found in appendix 4.

6.2.1. ERL 150

The locations of the geophysical surveys completed within ERL 150 are shown on figure 7.

Five NanoTEM lines were surveyed, however due to the rugged terrain the lines were too short to enable the data to be useable. The EM data are shown in appendix 5.

A TIP survey was completed over the entire tenement using a helicopter. The readings were collected at approximately 500m intervals. Unexplained anomalous resistivity and phase responses were measured in the central part

of the survey area. This anomalous zone is underlain by Kombolgie sandstone and the significance of the responses is not fully understood at present. Pseudocolour plots of the resistivity and in-phase results are shown in figures 8 and 9, respectively.

A microgravity survey was conducted over the SMLB area. A total of 524 gravity stations were observed over a local grid (see figure 7). The aim of the survey was to determine if gravity could be used to detect mineralisation and/or alteration haloes, and structures in sandstone covered areas. A contour map of the bouguer anomaly results from the survey is shown on figure 10. There is a gravity low over the central part of the grid with a strong gradient increasing to the north. There is also a gravity high in the southwest where Oenpelli Dolerite is known to occur.

6.2.2. ERL 151

The locations of the geophysical surveys completed within ERL 151 are shown on figure 11.

Seven NanoTEM lines were surveyed in the area south of anomaly N147. The aim of the survey was to test for structures and determine the thickness of the Kombolgie sandstone. The NanoTEM data is presented in appendix 6. The data show a number of resistivity anomalies, some of which were tested by subsequent drilling (see section 6.1.2). The significance of these anomalies is currently being assessed.

A TIP survey was completed over the ERL. Pseudocolour plots of the resistivity and in-phase results are shown in figures 12 and 13, respectively. Forty-two readings were taken at a nominal 500m spacing. An anomalous resistivity low was measured in the north of the area over the known mineralisation at anomaly N147. Some other weak resistivity and phase anomalies were delineated and followed up by drilling (see section 6.1.2). The drilling failed to explain the anomalies.

6.2.3. ERL 152

The locations of the geophysical surveys completed within ERL 152 are shown on figure 14.

Four NanoTEM lines were surveyed in the ERL. The aim of the survey was to test for structures and determine the thickness of the Kombolgie sandstone. The NanoTEM data is presented in appendix 7. The data from lines 2 and 3 show a strongly resistive zone associated with a major north south fault, this zone was tested by drillhole U65-4 (see section 6.1.3). The other two NanoTEM lines did not show any anomalous features.

A single TIP reading was taken within the ERL to assess the effect of an increased distance from the transmitter. The data was very noisy and the

conclusion reached was that TIP readings greater than 10km from the transmitter could not be used due to the excessive noise.

6.3. SANDSTONE MINERALOGY (PIMA STUDIES)

Surface sandstone samples were collected in a number of areas within ERL's 150 and 151, and were analysed with a PIMA spectrometer to determine their clay mineralogy. Underlying uranium mineralisation may cause changes in the clay mineralogy of the Kombolgie sandstone.

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.

6.3.1. ERL 150

Thirty-seven samples of sandstone were collected in the northern part of the ERL to complete the sampling programme that was begun in 1997. The sampling has now been completed over the ERL at a nominal spacing of 1 sample per 500m. The results of this work are shown on figure 15.

There is some evidence that the mineralogy of the clays in the sandstone is not homogeneous over the area. The northern part of the tenement has sericite-dominant clay minerals. The southern part of the ERL also has sericitic clays, however kaolinitic clays are also present. The reason for this differentiation is not known.

6.3.2. ERL 151

Twenty-one samples were collected in this area, however due to poor sandstone outcrop the sampling was not systematic. Four of the samples returned unusable spectra. The results of the work are shown on figure 16.

Kaolinite is the dominant clay in the sandstone in this area. However three of the samples had a dominant dickite clay content. Further sampling is required to determine the significance of the differing clay content.

7. CONCLUSIONS

Drilling in the SMLB area (ERL 150) confirmed that the boundary fault is associated with minor uranium mineralisation, however no ore zones were found.

The drilling program completed to the south of anomaly N147 (ERL 151) showed that the prospective lower arkosic unit occurs in the area. Chloritic alteration was also found in the overlying sandstone. Further drilling will be required to explore the area.

The two drillholes completed within ERL 152 did not intersect any uranium mineralisation. The strong alteration affecting the sandstone in drillhole U65-5 is encouraging, and on-going drilling is required in this area.

The trial tensor IP surveys carried out over ERL 150 and 151 have produced a number of anomalous readings that are not fully understood.

Ground NanoTEM surveys were conducted over parts of the ERL's. The results of these surveys were used to define drilling targets. The NanoTEM results should be reassessed in the light of the drilling that was completed.

The gravity survey completed over the SMLB area shows that the method can map structures and lithological variations. Further modelling of the data may be required.