

AFMECO **M**INING AND **EX**PLORATION PTY LTD

Exploration Licence 3346

Arnhem Land, Northern Territory

Second Annual Report

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DARWIN NT

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Milingimbi

1:250,000

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Summary

Exploration Licence (EL) 3346 is being explored in joint venture by AFmeco Mining and EXploration Pty Ltd, S.A.E. Australia Pty Ltd, and UAL Pty Ltd. The tenement is situated approximately 330 km to the east of Darwin, and is wholly within the Arnhem Land Aboriginal Reserve.

During the 2001-2002 reporting period, interpretation of a detailed airborne magnetic and radiometric survey was completed and an airborne electromagnetic survey was flown. The results of the airborne EM survey are pending. Due to tenement access problems, proposed ground follow-up and geological reconnaissance has not been completed during the current reporting period.

The airborne magnetic and radiometric survey failed to highlight significant outcropping or subcropping uranium anomalies, however the magnetics indicated the presence of several major structures. Tenement prospectivity will be further assessed once results from the ground follow-up and airborne EM survey have been received.

1. INTRODUCTION

Exploration Licence (EL) 3346 is being explored in joint venture by AFmeco Mining and EXploration Pty Ltd (operator), S.A.E. Australia Pty Ltd and UAL Pty Ltd.

The tenement is located wholly within the Arnhem Land Aboriginal Reserve and is shown on [figure 1](#).

This report details the work carried out during the 2001/2002 field season.

2. LOCATION AND ACCESS

The tenement is located in West Arnhem Land approximately 330 km east of Darwin in the Northern Territory of Australia, and is wholly within the Arnhem Land Aboriginal Reserve.

The tenement can be accessed by road via the Arnhem Highway to Jabiru, and then via Cahills Crossing and unsealed roads towards Maningrida. As this is the only road crossing the tenement, primary access to the tenement is by helicopter.

3. TENURE

Exploration Licence (EL) 3346 was granted on 6th September 2000 for a period of six years. The tenement is currently being explored in joint venture by AFmeco Mining and EXploration Pty Ltd – operator (41%), S.A.E Australia Pty Ltd (41%) and UAL Pty Ltd (18%). EL 3346 covers an area of 597.6 sq km and consists of 178 blocks.

An application for a waiver of partial relinquishment has been lodged with the DBIRD.

4. GEOLOGY

EL3346 lies entirely within the Milingimbi 1:250,000 sheet (Sheet SD53-2). A regional geology map (data supplied by the NTGS) is included as [Figure 2](#), and a stratigraphic correlation chart for the East Alligator Region is included as [Figure 3](#).

The oldest rocks exposed in the area are the granitoid rocks of the Nimbuwah Complex. These granitoids are the result of an extensive migmatisation during the Top End Orogeny, which is dated at about 1800my. The Complex is dominated by weakly to strongly foliated, medium to coarse-grained porphyroblastic granitoid.

The Palaeoproterozoic Kombolgie Subgroup unconformably overlies the Nimbuwah Complex. The Subgroup comprises a number of conformable arkosic units, interspersed with volcanic horizons of varying thicknesses. The sandstones and volcanic members are predominantly flat-lying, and form extensive outcrops and escarpments throughout the region.

The Oenpelli Dolerite (1710my) intrudes the Nimbuwah Complex and Kombolgie Subgroup as both dykes of various thicknesses and extensive sills and lopoliths.

The Neoproterozoic Wessel Group unconformably overlies the older lithologies. The unconformity is interpreted as being angled, dipping shallowly to moderately to the northeast. The Group comprises flaggy, fine to coarse-grained sandstone (calcareous in the upper units), shale and mudstone. These lithologies outcrop poorly, and are more often than not covered by Cainozoic and Quaternary coastal sediments or swampy accumulations.

The region is intruded by a large dyke swarm of indeterminate age. The dyke swarm trends roughly NNE-SSW and appears to crosscut most Proterozoic lithologies.

5. PREVIOUS WORK

Prior to the granting of the tenement, no exploration had been conducted in the area. During the first year of tenure, exploration involved a 100m-spaced airborne magnetic and radiometric survey.

6. WORK COMPLETED DURING 2001 – 2002

Work completed during the reporting period has included interpretation of the 2001 airborne geophysical survey, a survey that was completed late in the previous reporting year. Work conducted during the current reporting period has included a small airborne electromagnetic survey. Follow-up to the 2001 radiometric survey and general geological reconnaissance were to be completed during the current reporting period, however NLC approval of the work programme was yet to be granted at the time of writing. If possible, these activities will be conducted late in the 2002 field season, and the results will be reported in 2003.

6.1 Airborne Magnetic and Radiometric Survey

UTS Geophysics were contracted to acquire detailed airborne magnetic, radiometric and digital terrain data over the whole tenement ([Figure 4](#)). Data was acquired without incident during September 2001 but was hampered by wind turbulence, bush fire smoke and equipment failure. Recording of 256 channel radiometric data was requested. Survey specifications are listed below in [Table 1](#). The contractor logistics report is included as [Appendix A](#).

Radiometric data suggests a substantial area of EL 3346 is predominantly sandstone and low activity Cainozoic cover. No radiometric response within the survey boundary is considered particularly anomalous. Most responses are of low tenor and appear spatially related to dykes, volcanics or Cainozoic cover. Interpretation of magnetic data

Survey Name	EL3346
Map Sheet	Milingimbi SD5302
Contractor	UTS Geophysics
Total Line Kilometres	6556 km
Aircraft	Fletcher FU24-954
Navigation	Real Time Differential GPS
Flight Line Spacing	100 m
Flight Line Direction	AMG 000-180
Sensor Height	60 m
Magnetometer	Scintrex CS-2
	Sample Rate: 10 Hz
Gamma Ray Spectrometer	Exploranium GR820
	Volume: 48 litres
	Sample Rate: 1Hz

Table 1. Airborne Magnetic – Radiometric Survey Specifications

suggests most of the tenement has a substantial thickness of sandstone cover, increasing towards the northeast. Major structures have been identified in magnetic data. Movement along these structures is difficult to interpret given the poor magnetic contrast prevalent in much of the stratigraphy. Favourable structural settings would play a major role in determining mineral prospectivity in the region and as such the structures identified in this survey could assist in assessing this potential, and require some follow-up.

6.2 Airborne Electromagnetic Survey (Tempest)

An airborne electromagnetic survey (Tempest) was flown over a small area in the central portion of the tenement ([Figure 5](#)). The survey details are provided in [Table 2](#). The survey was flown towards the end of the reporting period and the results have not been received. An interpretation of the results will be presented in the 2002 – 2003 Annual Report. The survey area was chosen based upon relatively shallow depth to basement and the presence of some of the major structures identified in the airborne magnetic interpretation.

Contractor	Fugro Airborne Surveys
Approximate Line Kilometres	450 km
Flight Line Spacing	200 m
Flight Line Direction	AMG 90 – 270

Table 2. Airborne Electromagnetic Survey Specifications

7. CONCLUSIONS

Due to ground access difficulties, much of the work proposed for the 2001 – 2002 reporting period has yet to be completed. Interpretation of detailed airborne radiometrics has failed to highlight any significant radiometric anomalies, however ground checking of some minor radiometric features will provide more information on the region's prospectivity. The results of the ground follow-up and geological reconnaissance will be reported in 2003. Major structural features were highlighted in the magnetics, and a small airborne electromagnetic survey has been flown over one region to follow up on some of these targets. The results are pending, and will be reported in 2003.