ABERFOYLE RESOURCES LIMITED
ACN 004 664 108
Exploration Division

EXPLORATION LICENCE 9065 (MATCHBOX CREEK)

(Walhallow 1:250,000 sheets)

ANNUAL EXPLORATION REPORT
AND FINAL REPORT
to 26th April, 1998

Title holder: ABERFOYLE RESOURCES LIMITED

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3. Aberfoyle Resources Ltd, Townsville
4. Noranda Exploration, Canada

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# TABLE OF CONTENTS

1. **Summary:**  

2. **Introduction:**  
   2.1 Location & Access  
   2.2 Tenure  
   2.3 Regional Geology  
   2.4 Mineralisation  

3. **Work Completed In The Current Year:**  

4. **Interpretations & Conclusions:**  

5. **Environmental Audit:**  

6. **References:**
LIST OF TABLES

Table 1  Results from the three layered earth inversion over MC06 using depth sounding data collected at loops 6, 7 and 8.  Page 5

LIST OF FIGURES

Figure 1  1:250,000 location plan of tenements (located in map pocket at end of report) (McA-009A)  Page

Figure 2  EL 9065 sub-block location plan (McA-032)  4

Figure 3  Interpretation model for the migrating Geotem anomalies observed within the southern half of Block A.  7

LIST OF PLATES:

Plate McA26a  EL9065 - GEOTEM 25Hz image. Z channel 13 - southern half

LIST OF APPENDICIES

Appendix 1  Expenditure statement for EL 9065
1. **SUMMARY:**

Exploration Licence 9065 was granted to Aberfoyle Resources Ltd on April 27, 1995. The tenement was taken out to explore for Zn-Pb-Cu mineralisation in the Middle Proterozoic lithologies of the McArthur Basin. The proximity of this tenement to others in the district, its similar geological setting and proposed program has led to EL 9065 and others in the project being explored as one block.

Exposed bedrock in EL 9065 is limited to the far northern corner of the tenement only. Interpretation of existing aeromagnetic data identified prospective structures which lie in close proximity to favourable sediments for SEDEX mineralisation inferred from Government mapping.

Work completed on the tenement in the first year of tenure consisted of a compilation of open file data and a regional geophysical interpretation based on the BMR 1:1 000 000 aeromagnetic pixel map series for Newcastle Waters (Hicks, 1996). In the second year of tenure, all of EL 9065 was covered by an airborne EM survey (GEOTEM 25 Hz) which totalled approximately 890 line kilometres of data. Several strongly conductive features were interpreted from the data, however the coincidence of these features with topographic highs led to some doubt as to their origin (Hicks, 1997).

In the current year, one of these GEOTEM anomalies was investigated with ground EM soundings. The soundings confirmed a formational conductor preserved beneath a resistive Mesa cap in post Proterozoic cover (Venn, 1997). In the light of these findings and the absence of interpreted bedrock conductors the tenement was recommended for surrender.
2. **INTRODUCTION**

2.1 **Location and Access:**

EL 9065 is located approximately 300 kilometres ENE of Tennant Creek in the Northern Territory (see Figure 1). Access to the tenement is achieved along the Tablelands Highway which transects the tenement in a N-S direction. Minor station tracks provide access off the bitumen in the dry.

2.2 **Tenure**

Exploration Licence 9065 - Matchbox Creek (92 sub-blocks) was granted to Aberfoyle Resources Ltd on April 27, 1995 for a period of six years. A reduction of 50% of sub-blocks is required at the end of the second year of tenure, and each and every year after that date. Sub-block details, including relinquishments, are shown on Figure 2.

Noranda Mining & Exploration Inc entered into an exploration joint venture with Aberfoyle Resources which included EL 9065 on July 1, 1997.

2.3 **Regional Geology**

The tenement lies on mostly covered portions of the southern McArthur Basin. Interpolations of mapped geology to the immediate north and northeast of EL 9065 suggest buried Proterozoic lithologies would probably be McArthur Group and some units of the Talwallah Group.

2.4 **Mineralisation**

The McArthur Basin is host to numerous mineral occurrences both large and small. These range in style from replacement copper to vein-style lead-zinc to SEDEX style stratiform mineralisation. The best example of this latter style is the HYC deposit, situated approximately 100 Kilometres northeast of EL 9065.
A number of papers have been published describing all aspects of HYC geology, genesis, mineralisation, sedimentology and so on, but the most pertinent reference for exploration in EL 9065 is by Shalley and Harvey (1992). This paper deals with the geophysical response of the HYC deposit, providing useful data to compare to what is expected to be generated from the geophysically driven exploration program for the tenement. A general reference to the HYC deposit is given in Logan, et al. (1990).
3. **WORK COMPLETED IN THE CURRENT YEAR**

Field work carried out in the current tenure year consisted of ground EM soundings at the MC06 GEOTEM anomaly site (Plate McA26a). Three depth soundings using three 400m by 400m loops were taken at three different positions over MC06. Two, three and four layered earth models were run using a layer inversion program and it was found that the best results were produced by the three layer model (Venn, 1997). The outcome from the three layered inversion are shown in Table 1.

**Table 1**: Results from the three layered earth inversion over MC06 using the depth sounding data collected at loop 6, 7 and 8. Resistivity values are in ohm m and layer thickness estimates are in metres.

<table>
<thead>
<tr>
<th>Loop Number</th>
<th>Parameter</th>
<th>Estimation</th>
<th>Lower Limit</th>
<th>Upper Limit</th>
<th>Importance</th>
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<tr>
<td>6</td>
<td>Layer 1 Resistivity</td>
<td>154.3</td>
<td>83.43</td>
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<td>7</td>
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<td>9.818</td>
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<td>8</td>
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<td>10.22</td>
<td>270400</td>
<td>0.08</td>
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<td>6</td>
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<td>0.2773</td>
<td>0.835</td>
<td>0.93</td>
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<td>7</td>
<td>Layer 2 Resistivity</td>
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<td>2.318</td>
<td>2.675</td>
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<tr>
<td>8</td>
<td>Layer 2 Resistivity</td>
<td>0.6879</td>
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<tr>
<td>6</td>
<td>Basement Resistivity</td>
<td>2345</td>
<td>0.2983</td>
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<td>26.41</td>
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<td>26.53</td>
<td>59760</td>
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<tr>
<td>6</td>
<td>Layer 1 Thickness</td>
<td>13.35</td>
<td>7.869</td>
<td>22.64</td>
<td>0.96</td>
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<tr>
<td>7</td>
<td>Layer 1 Thickness</td>
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<td>33.34</td>
<td>38.36</td>
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<td>Layer 1 Thickness</td>
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<td>16.82</td>
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<tr>
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<td>9.914</td>
<td>5.819</td>
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<td>7</td>
<td>Layer 2 Thickness</td>
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<td>53.23</td>
<td>64.64</td>
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<tr>
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<td>Layer 2 Thickness</td>
<td>16.28</td>
<td>11.18</td>
<td>23.7</td>
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</table>
Although the inversion has had difficulty in constraining the resistivity values of the 1 layer and the basement, the results clearly indicate the presence of a highly conductive layer between 15 and 30 metres from the top of the mesa. The results also allude to the presence of a resistive cap to the mesa and a resistive basement. The depth estimates at loops 6, 7 and 8 have also supported the model illustrated in Hicks (1997) (Figure 3) by confirming that depth to the conductive layer is less on the outer margins of the mesa (x) and greater at the centre of the mesa (xx). Furthermore, more results within Table 1 indicate a thickening of the conductor at xx and a thinning towards the outer margins of the mesa.

The conclusion is that depth soundings over MC06 confirmed that a conductor exists beneath a resistive mesa cap. Depth soundings support the model illustrated in Hicks (1997) and a formational conductor is believed to be the source of increased conductivity at MC06 (Venn, 1997). No further work is recommended for this target or similar features in EL 9065.
Figure 3: Interpretation model for the migrating Geotem anomalies observed within the southern half of Block A.
4. INTERPRETATIONS AND CONCLUSIONS

Exploration completed on EL 9065 has centred around the Geotem survey as discussed above. Five conductivity anomalies were identified in EL 9065. All of these features coincided with topographic highs. Ground EM soundings on one of these anomalies, MC06, confirmed a formational conductor beneath a resistive mesa cap in post Proterozoic cover.

In the light of these findings and the absence of interpreted bedrock conductors the tenement is recommended for surrender
5. ENVIRONMENTAL AUDIT

The only field work carried out in the tenement was ground EM surveying. Existing station tracks were used for access. All materials used in the survey with the exception of wooden grid pegs were removed upon completion of the program.
6. REFERENCES:

Hicks, D. J. (1996). Exploration Licence 9063 (Pollyara) and Exploration Licence 9065 (Matchbox Creek), Combined Annual Exploration Report to 26th April, 1996. ARL Report No. NT0004-4/96.


APPENDIX 1:

Expenditure Statement for EL 9065
EL 9065 MATCHBOX CREEK

Expenditure Statement

12 Months to 26/04/98

<table>
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<td>Geophysics</td>
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<td>Other Services</td>
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<tr>
<td>Administration</td>
<td>1483.28</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$15411.63</strong></td>
</tr>
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</table>
Plate McA26a: Lower half of block A showing the position of anomaly MC06.