ELKEDRA DIAMONDS NL

Altjawarra Craton Diamond Project

Final Relinquishment Report for

EL 22540 (Bundey River)

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Map Sheets:
1: 250,000: Elkedra (SF53-07)
1:100,000: Ammaroo (5954); Sandover (6054)

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Elkedra Diamonds NL Perth library
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1 INTRODUCTION
Exploration License EL 22540 is located on the Elkedra (SF53-07) 1:250,000 sheet in central Northern Territory (Figure 1). This report details all work carried out on the relinquished portion of the tenement up to August 22, 2004 by Elkedra Diamond NL.

2 CONCLUSION
Fourteen low, moderate and high-priority aeromagnetic anomalies were identified within the relinquished area. One picro-ilmenite was recovered from a loam sample over one aeromagnetic anomaly. However, due to higher priorities in other areas of the Altjawarra Craton the relinquished area ranked low priority and no further work is warranted by Elkedra at this time.

3 GEOLOGICAL SETTING
3.1 Regional Geology
The Altjawarra diamond project is located on the North Australian Craton, which represents an amalgamated terrain that was consolidated around 1,800 Ma. From a diamond exploration perspective, the significance of the North Australian Craton is that it hosts all of Australia’s diamond mines to date including the recently discovered diamondiferous Merlin kimberlites located on the eastern portion of the North Australian Craton. Of particular importance is the age of the Merlin pipes, which have been dated as Devonian (~380 Ma). Elkedra Diamonds are targeting this same kimberlite event, or younger, in the southern Georgina Basin located south of the Merlin field.

The project area incorporates several kilometers of Cambro-Ordovician platform sediments of the southern Georgina Basin, which wholly veneer a basement continental block referred to as the Altjawarra Block. The southern Georgina basin and the underlying Altjawarra Block in particular, are associated with a zone of anomalously thick lithosphere extending to at least 200km depth as recognized from recent seismic tomography studies (Kennett, 1997; Van der Hilst et al., 1998; Debayle and Kennett, 2000). The geophysical data highlight the area as highly prospective for the emplacement of diamond-bearing kimberlites.

3.2 Tenement Geology
The relinquished portion of the tenement is underlain predominantly by Quaternary sediments.

4 EXPLORATION COMPLETED
Exploration activities undertaken include:
   1) Processing and targeting for aeromagnetic anomalies off the Elkedra survey.
   2) Ground magnetic surveys.
   3) Loam sampling.

4.1 Aeromagnetic Interpretation
The release of the Elkedra aeromagnetic survey flown by Tesla Airborne for the NTGS has proved critical in this early stage of exploration and forms the basis of all geophysical work undertaken in the tenement. A total of 14 anomalies were identified from the aeromagnetic data (Figure 2) with ground magnetic surveys over selected higher priority anomalies (Figure 3).

All aeromagnetic interpretation and processing were undertaken by Dr. Duncan Cowan of Cowan Geodata Services, Perth.
Figure 2
EL22540 BUNDEY RIVER
Aeromagnetic Anomaly

Tenement Area
- EL22540
- Relinquished area

Aeromagnetic Interpretation
- Centre of anomaly

Author: JL
Office: Bullsbrook
Drawing: 0152_Fig2
Date: 18/11/2004
Scale: 1:250000
Projection: MGA Zone 53 (GDA 94)
The aeromagnetic, altimetric dtm and radiometric data covering the tenement area were windowed out of the Elkedra NTGS dataset. The windowed area was initially analyzed by running the “Smart” filter program of Cowan Geodata Services. The filter is a simple pattern recognition technique developed by Cowan Geodata Services. The program uses regression analysis between a window of the grid data and a typical model anomaly to identify roughly circular anomalies. The model data calculated is a full 3D vertical cylinder implementation. The method involves various inputs to the program including window size, model cylinder radius, top and bottom depths and amplitude response. The filter was run once to test response using a standard 200m diameter cylindrical model with a 30m depth, 400m grid window, and 25-200nT amplitude range.

Further data enhancement and preliminary kimberlite target screening was later undertaken using a combination of techniques which included:

- 1D Wavenumber filtering
- 2D Euler deconvolution depth calculation
- 2D Werner deconvolution depth calculation
- Modelling and inversion of individual anomalies

The focus was on identifying possible kimberlite targets in the presence of significant intrasedimentary background noise due to maghemite channels, areas of ferricrete, clay-pan and sinkholes and cultural sources. The altimetric dtm and radiometric data were used to assist in anomaly screening. Identifying possible kimberlite magnetic anomalies in an area of extensive drainage and palaeosurface related magnetic anomalies is difficult due to a high degree of anomaly overlap as well as interference from anomalies due to shallow basement rocks. The relatively wide line spacing of 400-m limits spatial resolution of small sources as small kimberlites located between flight lines may not be detectable or produce only weak magnetic anomalies with magnetic attributes similar to sinkholes etc.

Fourteen low, moderate and high priority magnetic anomalies were identified and are summarized in Appendix 1.

4.2 Ground Magnetic Surveys

The ground magnetic survey was done using a GEM System GSM-19W V6 Magnetometer equipped with a GPS for collection of data in real-time walk-mag mode. The digital data is dumped into Toshiba notebook computers in the field and is processed and grided using the windows version of Chris.dbf. Digital data is also e-mailed via satellite connection facilities to the company’s consultant geophysicist, Dr. Duncan Cowan of Cowan Geodata Services for further processing and review. Digital data results are summarized in Appendix 2.

The ground magnetic surveys were used successfully to test aeromagnetic anomalies and thus generate drill targets. A total of 2 ground magnetic surveys were undertaken over 2 high-priority aeromagnetic anomalies (CWN-136; CWN-142) during the reporting period for a total of 10.4 line-kms (Figure 3).

Further ground magnetic surveys were planned for CWN-142, 136, 012, and 141 during the 2004 field season but due to logistical reasons the surveys were not completed.
Ground Magnetic Survey Locations

CWN-136
CWN-142

Tenement Area
- Survey point

EL22540 Relinquished area

Figure 3
EL22540 BUNDEY RIVER Ground Magnetic Survey Locations

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Date: 18/11/2004
Scale: 1:250000

Projection: MGA Zone 53 (GDA 94)
4.3 Surface Sampling
One surface loam sample (AR00WT002) was taken over one moderate-priority aeromagnetic anomaly (HUC-28 later renamed to CWN-012) within the relinquished area (Figure 4).

5 LABORATORY RESULTS
5.1 Heavy Mineral Analysis – Surface Sampling
The surface sample was collected for heavy mineral concentrate analysis and processed at the Independent Diamond Laboratory in Perth. The sample was weighed and screened so that the +2mm material was removed and discarded and the -2mm +0.3mm retained, and further processed to obtain a concentrate for observing. The -0.3mm +0.1mm was sent for fusion for microdiamond testing. The -0.1mm slimes were discarded. No indicator minerals or diamonds were recovered.

After observing by IDL further processing was done at the Diatech Laboratory in Perth for additional background and indicator mineral observing. One picro-ilmenite was identified.

Results are summarized in Appendix 3.

5.2 Isotope Analysis – Surface Sampling
Three rutiles recovered from one loam sample were dated by the U/Pb method by Lazer ICPMS at the Australian National University using the 1440 Ma Mt Isa standard. Results are attached in Appendix 3.

6 REFERENCES


Surface Sample Locations by Sample Type

- **Loam** (1)

Tenement Area
- EL22540
- Relinquished area

Figure 4
EL22540 BUNDEY RIVER Surface Sample Locations

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Date: 18/11/2004
Scale: 1:250000 Projection: MGA Zone 53 (GDA 94)