Altjawarra Craton Diamond Project

Final Technical Report
EL23202 Marqua

Reporting Period: 29/11/2002 to 29/11/2005

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Map Sheets: 1: 250,000: Tobermory (SF53-12), Hay River (SF53-16)
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1 INTRODUCTION

Exploration License EL23202 (Marqua) is located within Elkedra Diamonds NL’s Altjawarra Project Area. This report details all work carried out on the tenement up to 29th November 2005 by Elkedra Diamonds NL.

The Altjawarra Project Area is located approximately 400km east-northeast of Alice Springs in the Northern Territory. The relinquished tenement falls within the Tobermory (SF53-12) and Hay River (SF53-16) 1:250,000 sheets. Access to the tenement areas is via the Plenty Highway and then via secondary roads and station tracks (Figure 1).

2 GEOLOGICAL SETTING

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 a possible younger event or events, in the southern Georgina Basin.

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 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 EXPLORATION COMPLETED DURING REPORTING PERIOD

Exploration activities undertaken during the tenure period includes:

1) Aeromagnetic interpretation
2) Aerial photography interpretation
3) Ground magnetic surveying
4) Manganese exploration – helicopter reconnaissance
5) RAB and RC drilling
6) Surface sampling

3.1 Aeromagnetic Survey Interpretation

The release of the 1999 Elkedra aeromagnetic survey flown for the NTGS has proved critical in this early stage of exploration and forms the basis of all geophysical work undertaken in the tenement. This survey was merged with data obtained from the 1983 Huckitta East survey. All aeromagnetic interpretation and processing were undertaken by Dr. Duncan Cowan of Cowan Geodata Services, Perth.

The aeromagnetic, altimetric DTM and radiometric data covering the Central Craton target 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. In the Central Craton area 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 in a smaller area referred to as the central craton area 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-pans 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 palaeo-surface 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.

Five anomalies were identified. Two of these were further screened by ground magnetic surveying.

A recent data review by Elkedra coupled with reprocessing of the aeromagnetic data led to the definition of a number of possibly significant buried palaeo-drainages and two palaeo-lakes. The identification of a probable near-surface Cenozoic drainage system was considered an important exploration breakthrough because the drainages should be ideal uncontaminated trap sites for concentrating indicator minerals and diamonds. Testing of these channels within the relinquished area are discussed below.

3.2 Ground Magnetics Surveying

Seven programmes of ground magnetic surveying were completed as shown in Figure 3. The data is presented in Appendix 2.

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 was dumped into Toshiba notebook computers in the field and processed and gridded using the windows version of Chris.dbf. Digital data was forwarded to Dr. Duncan Cowan of Cowan Geodata Services for further processing and review.
The ground magnetic surveys were used successfully to test air photo and aeromagnetic anomalies and thus generate drill targets. A single line was conducted over the Gravehole Creek Palaeochannel but did not yield any useful information with regards further defining the channel.

3.3 Aerial Photography Interpretation

An aerial photography interpretation study was undertaken by Dr. Nick Lockett of Nick Lockett & Associates Pty Ltd, Perth to identify possible outcropping manganese rocks and any potential geomorphic anomalies that may be related to possible intrusive pipes.

No anomalies were identified within the relinquished area.

3.4 Manganese Helicopter Reconnaissance Survey

In late 2002 a helicopter reconnaissance survey was conducted over Elkedra’s tenements in order to identify surficial manganese oxide accumulations that could lead to deposits of potential economic significance. Targets visited during the survey were generated from Landsat and aerial photographic imagery and from analysis of the radiometrics flown over the area in conjunction with the Elkedra and Huckitta East aerial magnetic surveys.

3.5 Drilling

Thirty-seven RAB holes were drilled in 2003 and 2004 to test the palaeochannels for diamonds and diamond indicator minerals for a total of 469m. Two of these holes drilled in 2003 in the northwest of the EL (ERB0216 and ERB0217 located north of Red Heart Bore) were also designed to investigate base metal anomalous strata across the Neoproterozoic-Cambrian contact. The 2003 drilling was conducted by Leonora Drilling, the 2004 by Orbit.

Selected intervals where palaeogravels were identified were used to create multi-drillhole composite samples. These were analysed for heavy minerals as discussed below.

Two RC holes were also drilled for a total of 306m to test aeromagnetic anomaly CWN-168 which turned out to be magnetic granitoid basement. Results were negative for kimberlite or lamproite.

3.6 Surface Sampling

19 rockchip and 69 stream sediment samples were collected over the relinquished ground. The stream sediments were generally collected as pairs of samples, with one submitted for heavy mineral analysis and the other for geochemical analysis.

3.7 Heavy Mineral Analysis

3.7.1 Drilling Samples

Composited samples from the RAB drilling as discussed above were sent to Diatech Heavy Mineral Services and Global Laboratories for preparation and observation for diamonds and diamond indicator minerals.

One chromite grain was recovered from sample A102101 which was composited from drillholes ERB0194, ERB0195, ERB0196, ERB0202 and ERB0204. This sample also yielded two Cr-
Figure 4
Altawarra Project
EL23202 Marqua
Manganese Exploration

Laterite
Fe/Mn lag
Fe lag
Fe cap
Fe/Mn lag
SST/carbonate contact
Fe cap
Laterite
Fe cap/laterite
Fe lag

Scale: 1:50000
Date: 29/11/2005
Author: JL
Office: Bullsbrook
Projection: MGA Zone 53 (GDA 94)

Manganese Helicopter Survey
- Flight Path
- Field information
- Region
- Reconnaissance point

Tenements
- EL23202 Relinquished Area

Roads
- Highway
- Minor roads and tracks

0 5 10 20
0 5 10 15 20
Kilometres

East

North Australian Craton
Figure 5
Altjava Project
EL23202 Marqua
Drillhole Collar Locations

DH Collars
- RAB Blade (14)
- RAB Undifferentiated (23)
- RC Undifferentiated (2)

Tenements
- EL23202 Relinquished Area

Roads
- Highway
- Minor roads and tracks
Surface Samples
- Rockchip sample (19)
- Stream sediment sample (69)

Palaeodrainage
- Interpreted channel boundary

Tenements
- EL23202
- Relinquished Area

Roads
- Highway
- Minor roads and tracks

Figure 6
Atjipara Project
EL23202 Marqua
Surface Sample Locations

Scale: 1:250000

Author: JL
Office: Bullsbrook
Projection: MGA Zone 53 (GDA 94)
Drawing: 217E_00ES_001
Date: 29/11/2005

Surface Samples
- Rockchip sample
- Stream sediment sample

Palaeodrainage
- Interpreted channel boundary

Tenements
- EL23202
- Relinquished Area

Roads
- Highway
- Minor roads and tracks
bearing Titanomagnetite grains. One Cr-bearing pseudobrookite grain was recovered from sample A102102 composited from ERB0198 – ERB0201.

### 3.7.2 Surface Samples

Two regional stream sediment samples collected in 2001 were submitted to Diatech Heavy Mineral Services for analysis. TK01WT002 returnd 29 chromites.

The other stream sediment samples were prepared and the macro fraction analysed at Diatech heavy mineral services. The micro fraction was analysed by KDC and Global laboratories. A small number of chromites and two niobian rutiles were recovered from the paired stream sediment sampling programme.

### 3.8 Mineral Chemistry

SEM analysis was conducted on the chromite and pseudobrookite grains recovered from the composite drilling. The analyses were carried out by Dr. Wayne Taylor using a JEOL 6400 analytical SEM at the Centre for Microscopy and Microanalysis, University of Western Australia.

Forty grains were analysed, predominantly chromites, but including pseudobrookite, picro-ilmenite and rutile. The analyses were carried out by Dr. Wayne Taylor using a JEOL 6400 analytical SEM at the Centre for Microscopy and Microanalysis, University of Western Australia. High precision element analyses on the chromite grains were also undertaken by Dr. Wayne Taylor using a Cameca SX-50 electron microprobe at the Electron Beam Laboratory, CSIRO Division of Exploration and Mining, ARRC, Bentley, WA.

Results are listed in the digital data attached to this report.

### 3.9 Geochemistry

#### 3.9.1 Drilling Samples

Sixty eight samples from the RC drilling were submitted to Genalysis Laboratories for multi-element analysis by four acid digest (HNO₃-HClO₄-HF-HCl) in teflon tube, with an ICP-OES finish.

Seventeen RAB samples were submitted to Genalysis for gold and base metal analysis using aqua regia digest and ICP-MS and ETA finish.

#### 3.9.2 Surface Samples

Rock and stream sediment samples were submitted for multi-element analysis by four acid digest (HNO₃-HClO₄-HF-HCl) or Aqua Regia digest followed by ICP-OES/ICP-MS finish. Au assays were undertaken by standard cyanide leach and ICP-MS finish.

### 4 CONCLUSIONS

The higher priority diamond-targeted anomalies within the relinquished area are considered to have been suitably tested. Although some encouraging results were received, these are of a low tenor with regards other target areas within the Altjawarra project and have downgraded the perceived exploration potential of this area in comparison with other areas.
Results from the manganese exploration indicated that the volume of ore material was unlikely to be economic and no further exploration for manganese is warranted. Some base metal anomalism was identified in Neoproterozoic/Cambrian strata north of Red Heart Bore but no significant intersections were encountered in drill holes.

No further work is proposed by Elkedra Diamonds NL and the entire remaining tenement is relinquished.

5 REFERENCES

