

# **CLOSED REPORT: CONFIDENTIAL**

# Altjawarra Craton Diamond Project Combined Annual Report for period ending April 30, 2006

Tenements: EL22531 Toko Range, EL22537 Dulcie, EL23202 Marqua, EL24693 Field River

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Map Sheets:	Huckitta (SF53-11), Tobermory (SF53-12), Hay River (SF53-16),				
	Illogwa Creek (SF53-15)				
<u>Copy To:</u>	1. NTDBIRD, Darwin, Northern Territory				
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# **Digital Data Files:**

<b>Data Description</b>	Digital Data File Name
Drillhole	Altjawarra_2006_A_DHColl.txt
Resampling	Altjawarra_2006_A_DHAssays.txt
	Altjawarra_2006_A_DHSamples.txt
Surface Sampling	Altjawarra_2006_A_SSLocations.txt
	Altjawarra_2006_A_SSAssays.txt
	Altjawarra_2006_A_SSGraincounts.txt
Library Codes	Altjawarra_2006_A_LibraryCodes.txt

#### SUMMARY

This report details diamond exploration work carried out by Elkedra Diamonds NL within it's Altjawarra Project Area in the Northern Territory for the 2005 field season.

A corporate decision was made to drastically rationalize Elkedra's tenement holdings within Australia to allow focusing of exploration funds on the most prospective ground for both diamond and other mineral commodities. To this end, ten tenements were relinquished and two SEL applications were made to cover partially relinquished tenement areas.

Compilation of historic data focusing on all mineral commodities with the project areas was initiated and continues. A review of the base metals potential of the remaining Altjawarra Project tenements was conducted in the light of assay results from old drill holes and surface samples collected in September 2005. Further interpretation of existing data is required prior to design of work programmes for the coming field season.

Surface sampling included collection and processing of three bulk samples of approx. 4 tonnes each. No macrodiamonds have been recovered to date but final results are pending. A review of the direction of further diamond exploration will be undertaken following evaluation of the completed bulk sample results.

# **1 TENEMENT STATUS**

Ten exploration licences were relinquished during the reporting period and one application was granted (Field River EL24693). The tenure details of the four exploration licences within the Altjawarra Project group report area are listed in Table 1.

Table 1. Tenement Summary				
Tenement No Tenement Name		Date Granted	No of Blocks	
EL22531	Toko Range	16/07/2001	16	
EL22537	Dulcie	16/07/2001	34	
EL23202	Marqua	29/22/2002	12	
EL24693	Field River	12/12/2005	488	

Table 1: Tenement Summary

Table 2: Reductions to retained tenements

Tenement No	<b>Reduction Date</b>	Blocks Reduced
EL22531	16/07/2005	484
EL22537	16/07/2005	34
EL23202	29/11/2005	302

### 2 LOCATION AND ACCESS

The Altjawarra Project Area is located approximately 400km east-northeast of Alice Springs in the Northern Territory. The project area falls within four 1:250,000 sheets:

- Huckitta (SF53-11)
- Tobermorey (SF53-12)
- Sandover (SF53-15)
- Hay River (SF53-16)

Physiography ranges from an elevated, dissected, plateau along the southern portion of the project area, giving way to relatively flat and expansive sand plains to the north and northeast. The vegetation ranges from sparse savanna woodland and annual grasslands to perennial spinifex dominated grassland. The vegetation is consistent with a continental desert regime.

Access to the northern tenement areas is via the Sandover Highway, and to the southern area via the Plenty Highway. The tenements are crossed by a number of station tracks.

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



The project area incorporates 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.

#### 3.2 Tenement Geology

The northern portions of the tenements comprise bedrock of the predominantly Cambro-Ordovician Arrinthrunga, Tomahawk and Ninmaroo Formations, which are composed of intercalated sandstone, limestone, dolostone and seams of glaucontic siltstone. The Tomahawk beds are overlain by younger Tertiary to Quaternary lateritic sands.

To the south, younger sedimentary rocks define the northwest-southeast trending Dulcie and Toko Synclines, which marks one of the main depocentres of the Georgina Basin. The synclines comprise a succession of largely Ordovician to Devonian age carbonate and clastic sedimentary rocks. Basement granitoids and Neoproterozoic tillites and arkosic sedimentary rocks are exposed in the southern Field River area.

# 4 EXPLORATION COMPLETED DURING REPORTING PERIOD

Exploration activities undertaken during the reporting year includes:

- 1) Database upgrade, data compilation and project review
- 2) Microdiamond recovery results from 2004 drill composite samples
- 3) Heavy mineral identification from stream sediment and rock samples
- 4) Drillhole re-sampling and surface sampling for geochemical assay
- 5) Bulk sampling for diamond recovery

# 4.1 Data Compilation and Project Review

Compilation of historic data focusing on all mineral commodities with the project areas was initiated and continues.

A review of the base metals potential of the remaining Altjawarra Project tenements was conducted. The results of this review are given in Appendix 1.

# 4.2 Drillhole Resampling

# 4.2.1 Red Heart Project RAB Re-sampling

Previous assays from three holes drilled at Red Heart in late 2003 using aqua regia partial extraction methods identified anomalous metal abundances in composite samples from 5 metre intervals. Resampling of drill spoils from 1 metre intervals was carried out in June, and samples submitted to Genalysis Laboratories, Perth, for analysis using analytical methods that ensure complete extraction of elements. The original purpose of the drilling program was to confirm the nature of the local stratigraphy and the holes were not designed to test a specific mineral anomaly or target. The holes were all shallow (40-50m depth) and the spacing between holes was 250m. The latest results show encouraging assays, in particular for phosphate, lead-silver, zinc-nickel-cobalt and uranium-vanadium (Table 3). The peak phosphate, lead, silver and uranium

assays are amongst the highest values recorded from the Red Heart prospect or from the geologically similar Boat Hill prospect located some 18km to the east.

Element	Hole Number	Depth Interval	Peak Assay Values	Other Anomalies	
Phosphorus	ERB220	5-6m	19.9 wt% P <sub>2</sub> O <sub>5</sub>	5 additional metres of $>7$ wt% P <sub>2</sub> O <sub>5</sub>	
	ERB218	21-22m	11.9 wt% P <sub>2</sub> O <sub>5</sub>	1 additional metre of $>7$ wt% P <sub>2</sub> O <sub>5</sub>	
	ERB219	37-38m	9.0 wt% P <sub>2</sub> O <sub>5</sub>	1 additional metre of $>7$ wt% P <sub>2</sub> O <sub>5</sub>	
Lead	ERB218	6-7m	2.5 wt% Pb	4 additional metres having anomalous values >1000 ppm Pb	
Zinc	ERB220	11-12m	0.7 wt% Zn	22 additional metres having anomalous values >1000 ppm Zn	
	ERB218			3 metres of anomalous values >1000ppm Zn	
	ERB219			2 metres of anomalous values >1000ppm Zn	
Silver	ERB218	18-19m	3.8 g/tonne Ag	3 additional metres of >2.0 g/tonne Ag	
Nickel	ERB220	11-12m	708 ppm Ni	8 additional metres having anomalous values of >100 ppm Ni	
Cobalt	ERB220	11-12m	248 ppm Co	3 additional metres having anomalous values >40ppm Co	
Uranium	ERB220	5-6m	49 ppm U	3 additional metres having anomalous values >20ppm U	
	ERB219	31-32m	36 ppm U	4 additional metres having anomalous values >20ppm U	
Vanadium	ERB219	33-34m	628 ppm V		
	ERB220	4-13m	151 - 363 ppm V		
Gold	ERB218	21-22m	17 ppb Au		
	ERB220	14-15m	13 ppb Au		
Copper	ERB220	4-7m	87 - 173 ppm Cu		
	ERB218	20-25m	91 - 120 ppm Cu		
Molybdenum	ERB219	34-35m	47 ppm Mo		

**Table 3**: Significant assays – Red Heart drillhole resampling programme

The metal anomalies occur within the Thorntonia Limestone and overlying carbonaceous shales of the lower Arthur Creek Formation which are stratigraphic units within the southern Georgina Basin. These units are of early to middle Cambrian age (about 520 million years old), a time recognised around the world for deposition of metal-rich, black shales and phosphorite. The results significantly expand the area of Cambrian units known to be anomalous in base metals on Elkedra's tenements and demonstrate that such anomalies occur at relatively shallow depth. In Elkedra's southern Altjawarra project area, the prospective units occur over a strike length in excess of 33km and have outcrop width of up to 1.5km (Figure 3). This zone is referred to as the Red Heart - Boat Hill Corridor and it is structurally repeated in the Desert Syncline to the south on the new Field River tenement. At the Boat Hill prospect two electromagnetic (Sirotem) anomalies identified by previous explorers remain untested.



**Figure 2.** Sketch map showing Elkedra 2003 drill hole locations and simplified geology of the Red Heart – Boat Hill Corridor.

### 4.2.2 Boat Hill Project - Saracen Percussion and MIM Drill Core Re-sampling

Drill chips from three Saracen percussion holes (MQ4, MQ11, MQ13) drilled in the Boat Hill area in the 1980's were obtained from the NTGS core library in Alice Springs. Since only a few elements were ever assayed they have been submitted to Genalysis Laboratory for re-assay for a range of elements including P, Ag, U. Peak assays were: Zn 3,800 ppm, V 498 ppm, U 66 ppm, Ni 212 ppm, Cu 193 ppm, Co 85 ppm, Ag 3.4 ppm, Ce 505 ppm.

A background sample of Black Stump arkose from MIM drill hole BHD2 assayed at 240 ppm Cu and a sample of shale from the Thorntonia Limestone (MIM hole BHD6) assayed at 1967 ppm Zn. Sulphidic units of the Red Heart Dolostone recorded assays of 62ppm Co, 162 ppm Cu, 2872 ppm Zn, 4.1 ppm Ag, 8 ppb Au and 133 ppm As.

#### 4.3 Surface Sampling

Limited reconnaissance surface sampling has been conducted during this reporting period, with the focus on collection and analysis of three bulk samples. Scintillometer readings were collected at the reconnaissance sample locations in uranium prospective areas.

Tenement No	Lag	Rockchip	Soil	Stream Sediment
EL22531		3		3
EL24693	2	8	6	
Totals	2	11	6	3

Table 4: Surface Sampling Summary

Sample details are appended in the text files and locations illustrated in Figure #.

The surface samples were submitted to Genalysis Laboratories for analysis and returned a number of encouraging results. A U anomaly of about 260 counts-per-second (scintillometer total counts measured in the field) at Boat Hill corresponds to 106 ppm U (equivalent to 0.12 kg/t  $U_3O_8$ ) associated with high-grade Thorntonia phosphorite (33 wt%  $P_2O_5$ ). Grab samples of weathered purple shale (a unit within the Black Stump Arkose) from the Aroota Bore area had anomalous Co (max. 351 ppm), Ce (max. 304 ppm), Ni (max. 132 ppm), V (max. 290 ppm). The highest Au assay was 10 ppb from regolith below Austral Downs in the Yardida (Field River) area. The oxidized Black Stump package is anomalous in many elements and can be considered a fertile source for potential ore deposits hosted in reduced rock units (e.g. Thorntonia limestone, Arthur Creek shale) at higher stratigraphic levels.

Significant assay results were obtained from the following areas:

- Xmas Granite Prospect (located about 2 km SW of Boat Hill on Marqua tenement)
  - Ferruginous veins and fluorite-bearing gossans are associated with a shear zone in basement granite over an outcrop distance of about 1 km.
  - Peak assays: 9.6% Pb, 0.92 % Cu and 7.5 g/t Ag from a ferruginous vein (highest Pb anomaly ever recorded from area)
  - Other significant assay results from this area: 6.9, 3.5 and 2.7% Pb; 0.25% Cu; 0.46% Zn; 0.89 kg/t Ce2O3; 4wt% P2O5
- Xmas Pegmatite Prospect (located 2 km NW of Xmas Granite Prospect)
  - A dense, ferruginous rock was sampled from an old exploration pit associated with quartz-K feldspar-muscovite pegmatite.
  - Assay: 0.3% Pb, 1.2% Cu, 35.3 g/t Ag and 23 ppb Au (highest Cu, Ag and Au anomalies ever recorded from the area)
- **Desert Syncline Prospect** (located on Field River tenement)
  - Ferruginous rocks of the Red Heart Dolomite are associated with a radiometric anomaly.
  - Peak assays: 0.20 kg/t U3O8 (about half the grade of Olympic Dam) and 0.16% Zn
  - Also of interest: 170 ppm Ni and 63 ppm Co
- Mt Dobbie Prospect (located 10km south of Desert Syncline on Field River tenement)
  - Sulphide-bearing ferruginous veins cut weathered granite
  - Peak assay: 1.3% Pb
  - Also of interest: 12 ppb Au, 470 ppm Cu, 0.79 kg/t Ce2O3, 0.10 kg/t U3O8
- **Boat Hill Prospect** (on Marqua tenement at least 6 km of exposed strike length)
  - Ferruginous breccia and phosphatic Thorntonia limestone sampled.
  - Ferruginous breccia at MQ5: 0.68% Zn, 218 ppm Ni and 155 ppm Co
  - Thorntonia phosphorite: 32% P2O5 (high-grade phosphate), 0.12 kg/t U3O8, 5.8 g/t Ag, 0.20% Zn
  - Other phosphate assays: 23, 19 and 16% P2O5
- Other interesting assays:



• 737 ppm Co in manganiferous lag developed on purple shale near Aroota Bore

# 4.3.1 Bulk Sampling

Bulk samples were collected from trap sites within current drainage channels at Bloodwood Creek, Poodyea Creek, and Craigie East. Samples of approx. 4 tonnes each were collected using a front-end loader and screened on site to -10mm. Bulka bags of the -10mm product were then shipped to Tristate Research Laboratories in Mildura for further screening.

The +0.3mm-1.2mm size fractions has been forwarded to Diatech Heavy Mineral Services in Perth for DMS concentration and the +1.2mm-4.0mm fraction has been shipped to Diamond Recovery Services (DRS) for X-ray diamond recovery. No macrodiamonds were recovered by DRS and further results of the test work at Diatech are expected early in the next reporting period.

The oversize material (+4mm-10mm) has been stored in Mildura and may be further processed in the event of positive results from the other fractions.

# 4.4 Heavy Mineral Analysis of Previously Reported Sampling

Six samples collected in April 2005 (previous reporting period) were submitted to Bill Houwen at DRS for processing. Observation was conducted in-house by Wayne Taylor of Elkedra Diamonds NL. A stream sediment sample from the Poodyea area on the Qld side of border was found to contain many hundreds of chromites and picro-ilmenites together with abundant crustal garnets. A representative suite was mounted for SEM analysis. The heavy minerals in the Poodyea Formation conglomerate were found to be distinct from those in the Devonian Cravens Peak sandstone from the Northern Territory tenements.

The Poodyea Formation has a significant content of iron titanium oxides: ilmenite, cationdeficient ilmenite, magnesian ilmenite, picroilmenite, pseudobrookite, niobian rutile and niobian ilmenorutile. However, no chromite and only rare crustal garnet was recovered from the Poodyea Formation suggesting that these minerals in drainages in the Toko area are derived from another source or sources. The picroilmenite recovered from all samples is Cr-poor.

# 4.5 Microdiamond Recovery Results from Palaeochannel Composite Drill Spoils

Composite drill spoil samples from the Imboridju palaeochannel drilling program (Bishop, 2004) were submitted to Striker Laboratories, Wangara, for peroxide fusion and microdiamond recovery in 2005. Indicator mineral results have been previously reported from these samples (Annual Report, 2005). No microdiamonds or diamond fragments were recovered. Previous recovery of diamond fragments from the Imboridju palaeochannel in 2003 could not be repeated even though the present samples were much larger, ~500kg in size, and the trap sites were of better quality. The 2003 result is possibly a result of laboratory contamination.

# **5** CONCLUSIONS AND RECOMMENDATIONS

A corporate decision was made to drastically rationalize Elkedra's tenement holdings within Australia to allow focusing of exploration funds on the most prospective ground for both diamond and other mineral commodities. To this end, ten tenements were relinquished and two SEL applications were made to cover partially relinquished tenement areas.

Compilation of historic data focusing on all mineral commodities with the project areas was initiated and continues. A review of the base metals potential of the remaining Altjawarra Project tenements was conducted. Further interpretation of existing data is required prior to design of work programmes for the coming field season.

Surface sampling included collection and processing of three bulk samples of approx. 4 tonnes each. No macrodiamonds were recovered to date from the coarser fractions but further results for the bulk samples are still outstanding. A review of the direction of further diamond exploration will be undertaken following evaluation of the final bulk sample results.

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