REDFIRE RESOURCES NL
ACN 009 423 858

EXPLORATION LICENCE 8969
(Bauhinia Downs SE 53-3)

SLAB TOP HILL
NORTHERN TERRITORY

SECOND ANNUAL REPORT
To 20 February 1997

Prepared by R E Besley
February 1997
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PLANS

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February 1997
PLANS (Contd.)

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SUMMARY

The Slab Top Hill diamond project comprised Exploration Licences 8374, 8375 and 8969 (100% owned by Redfire Resources NL) located within the Batten graben in the Northern Territory of Australia.

The Batten Graben is a known diamondiferous province and has been intensively explored for diamonds since the early 1980's by CRAE and the Australian Diamond Exploration Joint Venture, leading to the discovery of the Emu, Coanjula, Abner Range, Merlin, Ivanhoe, Dog Leg Creek and Lancelot Prospects. Diamondiferous Kimberlites have been found by follow-up of anomalous number of diamonds (including micro diamonds) and chromites from stream, loam and drill samples and by loaming and drill testing geophysical and geomorphological anomalies.

The Slab Top Hill Project Exploration Licences cover the north westerly trending Emu Fault Zone and associated west-north westerly trending extensional faults. The intersection of similar structural elements to the south-east of the project area is interpreted to have controlled the emplacement of the Merlin and Emu Kimberlite Fields.

Previous exploration within the project area has consisted of base-metal and oil exploration. Following acquisition by Redfire Resources NL of ELs 8374 and 8375 in 1994, work on the project was funded by Diamond Fields of Australia NL until March 1995, when Redfire Resources NL resumed management. The Diamond Fields of Australia exploration programme consisted of an open-file data review, a helicopter supported reconnaissance survey, geological (structural and stratigraphic) and geomorphological mapping by Dr. R. Russell that identified 26 photo anomalies considered prospective kimberlite targets (EL8374, 8375 only), and an airborne magnetic survey by World Geoscience Corporation (line spacing 200m, sensor height 60m).

Following grant of EL 8969 in February 1995, Redfire Resources N.L. resumed management of the Project and continued exploration with a helicopter assisted regional reconnaissance stream and loam sampling programme. Ground sampling and inspection of photo anomalies and air magnetic anomalies was undertaken during this programme.

Results of this work were reported in the previous Slab Top Hill Project Report (R.E. Besley, February 1996).

A detailed airborne magnetic survey was flown over the area in April 1996 with a variety of detailed data outputs generated. A series of magnetic features that were interpreted as characteristic of pipe shaped intrusives are present in the data.

The overall results of the programmes completed by Redfire Resources N.L. over the Slab Top Hill area were encouraging for the presence of kimberlites although no high quality individual targets were generated at that stage.

A farm-in agreement was negotiated with Ashton Mining Limited on behalf of the partners in the Australian Diamond Exploration Joint venture to undertake additional exploration for diamonds on the Slab Top Hill Project. A sampling programme was undertaken by Ashton Mining Limited across the project area and completed towards the end of 1996. The full results of this programme will be available in the next period.
1. LOCATION AND ACCESS

The Slab Top Hill Project area is located in the SE quadrant of the Bauhinia Downs (SE 53-3) 1:250,000 map sheet between latitudes 16° 25'S to 16° 40'S and longitudes 135° 55'E to 136° 12'E. The project area straddles the boundary between the Batten (6065), Borrooloola (6165), Glyde (6164) and Mallapunyah (6065) 1:100,000 map sheets. The project area is located 750km southeast of Darwin and 70km south southwest of Borrooloola (Figure 1). The Carpentaria Highway traverses the northwest corner of EL8375. Access to the remainder of the project area is via 4WD station tracks.

2. TENURE

EL8969 was granted to Redfire Resources on 20.2.95 over 52 sub-blocks covering approximately 167 square kilometres. A joint venture agreement was signed with Ashton Mining Limited on 12.9.96 giving Ashton the right to earn a 60% interest in diamond deposits within the licence. Ashton withdraw from EL8969 on 23.12.96.

3. TOPOGRAPHY

The project area is located within a physiographic unit known as the Gulf Fall. Elevation varies from about 40m in the NW corner of EL8375 (the McArthur River floodplain) to 150m along the southern and eastern part of EL8969 and EL8375. The McArthur River flows through the NW part of the Project Area and the Glyde River flows north along the eastern boundary of EL8969. To the south and east outside the project area lies the Bukalara Plateau with an elevation of 150 - 200m, composed of Early Cambrian Bukalara Sandstone. In the east and south east of the project area are outcrops forming low hills and scarps of clastic sediments belonging to the Umbolooga and Batten Subgroups.

The northern and western part of the project area is drained by the McArthur River which flows north easterly towards the Gulf of Carpentaria. The major northerly flowing tributaries entering the McArthur River on its east bank are Eight Mile Waterhole Creek and Bull Creek. Hot Spring Creek and Barney Creek flow east to join the McArthur River floodplain on its west bank, and within the project area, in EL8375, are represented by low energy meandering channels and strings of water holes. The southern and eastern parts of the project area are drained by NE flowing tributaries (Amelia Creek and Cattle Creek) of the northerly flowing Glyde River.

4. REGIONAL GEOLOGY AND STRUCTURE

The Slab Top Hill project area is located within the Batten Graben, a north-trending syn-sedimentary graben about 70km wide which contains up to 10km of extensively faulted and folded lower-mid Proterozoic McArthur Group rocks.
The Exploration Licence lies along and to the west of the Emu Fault zone, a major WNW trending structure. To the east of the Emu Fault and 35km SE of the project area are the Emu and Merlin Kimberlite Fields. A further diamond bearing prospect occurs in the Abner Range on the west side of the Emu Fault, about 23km south of the project area. The main axis of down faulting (down to the west) in the project area occurs along the Emu Fault zone. The fault zone is the main hinge of the Batten Graben. Within the Slab Top Hill project area, Cowdreys Fault parallels the Emu fault. The Emu Fault Zone is complex with some suggestion of lateral movement and WNW supply faults (extensional faults) which parallel the direction of the Calvert fault. The intersection of the Calvert Fault with the Emu Fault to the south east of the project area is interpreted to have controlled the emplacement of the Merlin and Emu Kimberlite Fields.

5. LOCAL GEOLOGY

The exploration licence is underlain by sediments of the Umbolooga and Batten Subgroups of the McArthur Group. These outcropping sediments include variably silicified dolomitic stromatolitic mudstone, sandstones and shales formed after evaporitic sediments (commonly sulphate evaporites).

Within the project area the sediments of the McArthur Group are folded into a broad antiform between the Emu Fault to the east and the Hot Springs Fault to the west.

6. REGIONAL PROSPECTIVITY

The Batten Graben has been intensively explored for diamonds since the discovery of the Emu Pipes by CRAE in the early 1980s. Known diamondiferous prospects occurring within the province are the Agner Range, Emu, Merlin, Coanjula, Dog Leg Creek, Ivanhoe and Lancelot Prospects. Bulk sampling at the Merlin kimberlites by Ashton Mining Limited has established potential viable diamond grades in several pipes. Feasibility studies for production are in progress.

The majority of the pipes found to date are small and it is likely that any new discoveries at Slab Top Hill will require to be integrated with the Merlin project to achieve economic viability.

7. PREVIOUS EXPLORATION

No recorded diamond exploration has been undertaken on this tenement however the area has been subjected to extensive base metal exploration when the HYCC Pb-Zn-Ag deposit was discovered 12km NE of the project area.
8. CURRENT EXPLORATION

Exploration undertaken on the tenement from March 1996 to February 1997 consisted of the following programmes:

1) An airborne magnetic survey was flown across the licence area by contractor, World Geoscience Corporation. The survey was flown on east-west lines 200 metres apart with a mean terrain clearance of 60 metres. The survey totalled 1300 line kilometres of acquired data.

A set of plans at 1:50,000 and 1:25,000 scales are enclosed giving stacked profiles of magnetic intensity and first magnetic derivative.

2) A helicopter supported programme of loam and stream sediment sampling was undertaken by Ashton Mining Limited across the tenement to test for indicator minerals. In addition, surface samples were taken over individual magnetic anomalies. Full results for the samples have not yet been received and these will be reported in the next Annual Report.
REFERENCES

Russell, R. 1994  Air and Space photograph Interpretation of EL8375 and EL8374 Batten Graben, Northern Territory.


BATTEN TROUGH - DIAMOND PROJECT

Believed location of diamondiferous kimberlites

Fault mapped / interpreted

Redfire Resources N.L. tenement

McArthur River Pb-Zn-Ag deposit

EL8456

EL5650

SLAB TOP HILL

LOCATION EL 8969

Figure 1
APPENDIX 1
APPENDIX 1

AIRBORNE MAGNETIC SURVEY SPECIFICATIONS

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