NT EXPLORATION LICENCE 6899

REPORT OF EXPLORATION ACTIVITIES
(21 June 1990 to 20 June 1991)
(YEAR ONE)

LICENCEES: DR BURTON MURRELL
SATURN RESOURCES PTY LTD

MAP SHEETS: 1:250,000 ALICE SPRINGS SF 53-14
1:100,000 LAUGHLIN 5751

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1. SUMMARY

The whole of the exploration Licence area has been covered by stream sediment sampling of the overbank silts for geochemistry of the clay fraction. Unfortunately the sample processing contractor has been unavailable to complete this work prior to mid September 1991 so no results are expected to be known before the end of October. 150 stream sediment samples were collected in this program covering about 70% of the Licence area, the remainder being major areas covered by alluvium and catchments below minimum target size.

Field studies have covered the majority of mapped mineral occurrences and examination has been made of major quartz-filled breccias. Work continues on field checking anomalous photofeatures which could represent diatremes carrying mantle material. Soil samples for geochemistry have been collected from two enigmatic areas of no outcrop which occur nearby to each other in hilly terrain.
INTRODUCTION

The Woolanga Lineament and related Pinnacles Fault appear as major crustal fractures juxtaposing blocks of vastly different metamorphic grade and truncating such major features as the Redbank (Harry Creek) Deformed Zone. In 1974 Stockdale Prospecting Ltd recovered a small diamond from the Pinnacles Bore area. The proximity to the Woolanga Lineament of the Mordor Alkali-basic Complex in the southeast and the Mud Tank Carbonatite in the northeast, the magnesian alteration associated with many types of minor mineral occurrences in the region and the persistent association of elevated chromium with mineralized areas combined with the occurrence of a single diamond suggests that the area associated with and marginal to these fracture systems may well host diamond source rocks.

Traditional diamond search has involved the collection of heavy mineral concentrates for the purpose of identifying minerals associated with some of the known diamond source rocks such as kimberlites. In high-grade metamorphic terrains such as this area, metamorphic heavy minerals such as almandine garnet are so abundant that the costs of sorting concentrates in search of a few significant indicator mineral grains becomes prohibitive. In addition, the discovery of abundant diamonds not associated with the traditional indicator minerals in the lamproitic Argyle Pipe in the Kimberley Region in 1979 caused a major revision of the body of knowledge on diamond occurrence which had built up during (and been skewed by) more than one hundred years of successful search for diamonds via the Kimberlite indicator minerals.

The geochemical exploration technique which is in use in this program, in addition to identifying those catchments which contain metal anomalies can also indicate rocks of mantle origin by their distinctive metal abundance signatures. The program is thus designed to locate if possible all base and disseminated precious metal targets and any mantle derived rocks which could contain entrained diamond host rocks.

WORK UNDERTAKEN

3.1. Stream sediment sampling

One hundred and fifty samples of overbank silt each representing unique catchments the order between 0.5km² and 5.0km² were collected which will give a coverage of about 70% of the total area of the Licence leaving only the main drainage lines untested. Positions of the sample sites and the catchments represented are shown on the accompanying plans which have been prepared as overlays to the BMR 1:25,000 scale geological compilation sheets. In addition to the overbank material from which the clay fraction is sent for analysis following separation, natural heavy mineral
concentrates were collected and added to the sample for preparation of pan concentrates. These are examined for free gold in the pan and splits are examined microscopically. A contract has been let to a part-time sample processor but unfortunately processing is not expected to be complete until some time in September, 1991 and therefore analytical results are not expected to be available until the end of October. Arrangements have been made for assays for gold plus 31 trace and major elements.

3.2. Field examination

Visits have been made to all except three (so far) of marked occurrences of old workings in and near to the Licence area. The late quartz vein associated occurrences of copper minerals in the Pinnacles Copper District are not themselves considered viable targets but are of interest as indicating sources of mineralizing fluids as all are reputed to have carried some gold in addition to copper.

Of major significance are the extensive quartz-filled breccia zones which occur within the Woolanga Lineament and form the "Pinnacles" in the Pinnacles Fault Zone. Wide spread colluvial quartz along the Lineament suggests that the upstanding quartz-filled breccias are not the only potential host dilutionary breccia zones along these structures. It is hoped that the exploration geochemistry will locate areas of gold and base-metal potential.

About half of the photofeatures marked up during the program planning phase of photointerpretation as possible pipes in excess of 100m in diameter have been visited; the remainder will be checked in Year Two. Major features north of Ten Mile Dam which could be a large and a small pipe nearby to each other are quite enigmatic having no outcropping rock within them. The smaller of the two features has a number of types of trees growing on it which are not growing on the adjacent rock types suggesting a different chemistry. Soil samples (615 & 616) were collected for chemistry. The nearby "Queen of Sheba" prospect has minor copper mineralization in an ultrabasic intrusive of small size.

4.

YEAR TWO PROGRAM

4.1. ACTIVITIES

Follow-up of the anomalies expected from the regional stream sediment geochemistry will be in two phases:

1. Prospecting of the catchment to see if the source of the anomalous signal can be located directly by inspection thus circumventing the slow and costly sub-sampling to closer locate the source of the anomalous signal. Any potential bodies found will be gridded and sampled to locate drilling targets. Promising prospects generated will be put forward for drilling in Year Two.
2. Where no apparent source for the geochemical anomaly is found by prospecting, the catchment will be resampled and up to six subsamples collected representing major segments of the original catchment. These will represent subcatchments up to but rarely exceeding 1 km² in area which will closer identify the source of the anomaly but not add too greatly to costs should the original anomalous value not be able to be repeated by the laboratory (eg. due to laboratory error or contamination of the original sample).

The Year Two Program is designed to fully test the whole area under licence prior to reductions having to be made. The adjacent area which could host the source of the diamond recovered by Stockdale has also been applied for now that it has become available so that it may also be tested by extending this program.

4.2 EXPENDITURE

The minimum cost of the Year Two program, should no actual prospects be located during follow-up is estimated to cost $12,500 which figure is proposed for consideration as the Year Two covenant.

5.

EXPENDITURE

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<th>Item</th>
<th>Cost</th>
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<tr>
<td>Manning</td>
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<tr>
<td>Vehicle 35 days @ $75</td>
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<td>Fuel &amp; supplies for field work</td>
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<td>Consumables</td>
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<td>Sample preparation 150 @ $8</td>
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<td>Provision for analysis 150 @ $22</td>
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<td>Office apportioned</td>
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<td><strong>TOTAL</strong></td>
<td><strong>$26,318</strong></td>
</tr>
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6.

LIST OF PLANS

LAUGHERN 1:25,000, Stream sediment sample sites and catchments represented (plotted as overlays to the BMR Geol. compilation sheets).
Maps 5/16, 6/15, 7/16, 9/16, 10/16, 11/16 & 12/16 (7 maps, no map area completely covered).

7.

KEY WORDS

Strangways Range, Pinnacles Copper District, copper, gold, diamond, geochemistry (stream sediment) (overbank silts, clay fraction).
SECOND SCHEDULE
(Plan of Area)

ATRALAMA

RANGE

ANGKARLA HILL

Bald Hill

EL 6899
110 BLOCKS
354 sq kms

23'08'

23'19'
LAUGHLLEN
1:25,000 APPROX

MURRELL & SATURH

EL 6899

SAMPLE LOCATIONS

dated: Burton Murrell 19.08.91

21°30'