ANNUAL REPORT FOR YEAR ONE
EXPLORATION LICENCE 6973
FOG BAY AREA, N.T.

11 October, 1990 TO 10 October, 1991

BY
Ian K. Butler B.App.Sc.

OF
Eupene Exploration Enterprises Pty Ltd

FOR
K. F. Eupene & J. J. Sullivan
TABLE OF CONTENTS

SUMMARY

1. INTRODUCTION ........................................ 4
2. TENURE .............................................. 5
3. CONCLUSIONS .......................................... 6
4. PREVIOUS EXPLORATION ................................. 7
5. GEOLOGY ............................................... 8
6. WORK CARRIED OUT AND RESULTS ...................... 9
   6.1 Laterite Sampling .................................. 9
   6.2 Peat Evaluation ................................... 9
7. EXPENDITURE DURING YEAR ONE ...................... 10
8. PROPOSED PROGRAMME AND EXPENDITURE FOR YEAR TWO .......................... 11
9. REFERENCES .......................................... 12

LIST OF FIGURES

Figure 1. EL 6973 Location Plan ........................ 1:1 000 000
Figure 2. EL 6973 Geology and Sample Location Plan ........................ 1:25 000

LIST OF APPENDICES

Appendix I - Analytical Results - Laterite Samples
SUMMARY

EL 6973 is located within the Litchfield Province which marks the western margin of the Early Proterozoic Pine Creek Geosyncline. Surficial Cainozoic sediments including a Tertiary lateritic weathered profile form a complex regolith which obscures the bedrock throughout most of the area. Within EL 6973 the regolith is developed on Early Cretaceous sediments of the Bathurst Island Formation. Part of the regolith are black soil plains developed in swampy environments and which flank the slightly elevated lateritic terrain. Significant reserves of peat of varying quality are located within these black soils.

Work conducted by Messrs. K. Eupene & J.J. Sullivan during the first year of tenure included an orientation lateritic geochemistry survey and reconnaissance prospecting in the vicinity of the black soil plains. In addition, markets were sought for peat located in Coal Leases adjoining EL 6973.

Results of this work has shown the laterite geochemistry levels are background only with little or no character. There are areas of higher quality peat located within EL 6973 but further work is required to evaluate the extent of these reserves. Negotiations with an interested group in Indonesia for the purchase of peat have commenced and are continuing.
1. INTRODUCTION

Exploration Licence 6973 is located 70 kilometres south-west of Darwin (Figure 1) on the Fog Bay (4972-11) 1:50 000 sheet. It is accessed via the Stuart Highway, Mandorah Road and Finnis River Road. It is situated immediately to the east of Coal Leases 3 and 4 held by Messrs. K. Eupene & J. Sullivan.

The licence was taken out in order to evaluate extensions of high quality peat within peaty soils located in swampy country on the western boundary and to protect access into Coal Leases 3 and 4.

The aim of this report is to discuss the work conducted in the first year of tenure, present results and propose a work programme and estimated budget for Year Two.
2. TENURE

Exploration Licence 6973 is comprised of 6 blocks (19 square kilometres) and was granted to Messrs. K. F. Eupene (50%) and J. J. Sullivan (50%) on the 11th of October, 1990 for a period of four years.
3. CONCLUSIONS

1) An orientation laterite geochemistry survey yielded background levels only for all elements which supported the interpretation that laterite regolith is developed on sediments younger than the Early Proterozoic basement.

2) The background geochemical levels for some elements in the lateritic duricrust are comparatively higher than for other mediums because of enrichment processes.

3) Areas of high quality peat are located within peaty soils associated with swampy black soil flats.
4. PREVIOUS EXPLORATION

There has been very little systematic exploration conducted within the vicinity of EL 6973, mainly because the prospective Proterozoic bedrock is obscured by a well developed lateritic regolith and younger sediments.

S.H. Hickey (1985) reported that numerous geophysical surveys (magnetics, radiometric, I P, gravity) and reconnaissance geological mapping were undertaken by the BMR during the period from 1963 to 1982. Some of these surveys included the area covered by EL 6973. The Fog Bay 1:100 000 geology plan and Explanatory Notes (Hickey, 1985) were published in 1985 for the Northern Territory Geological Survey who carried out additional mapping to the BMR and stratigraphic drilling.

Esso Exploration Australia Pty Ltd (1974) carried out grid based auger drilling and geochemical sampling over the northern half of the Fog Bay 1:100 000 sheet in an attempt to locate uranium in Early Proterozoic subcrop.

Idemitsu Uranium Exploration Australia Pty Ltd carried out an intensive exploration programme east of EL 6973 searching primarily for uranium of the Alligator Rivers type (Eupene, 1980) during the period 1980 to 1984. Some stratigraphic drilling was conducted as part of this programme close to the northern boundary of EL 6973.

Messrs. K. F. Eupene, J. J. Sullivan and R. J. Stone carried out exploration for gold, base metals, shell grit and peat on EL 4733 immediately to the east of EL 6973 from 1985 to 1991. No significant base metal or gold geochemical anomalies were defined and no deposits of shell grit were located. Areas of suitable high grade peat were recognised and these areas are now covered by coal leases (CL3 and CL4).
5. GEOLOGY

The Fog Bay 1:100 000 sheet covers the north western edge of the Litchfield Province which in turn marks the western margin of the Pine Creek Geosyncline. The oldest rocks are of Early Proterozoic age. Following deposition, the rocks were folded, metamorphosed and intruded by late tectonic and post tectonic Early Proterozoic granitoids. Subsequent erosion was followed by deposition of Middle Proterozoic arenites. Shallow marine sediments of Permian and Cretaceous ages cover much of the area. Surficial Cainozoic sediments and a lateritic duricrust form a complex regolith which obscures virtually all of the area.

The surface geology of EL 6973 is dominantly comprised of a Tertiary lateritic regolith which includes a cemented pisolithic/nodular duricrust with associated ferruginous clayey sand and soils. There are small areas of black soil plain on the western and southern boundaries of the licence. The regolith is developed on Early Cretaceous sediments comprising poorly sorted gritty sandy claystone, clayey sandstone and basal conglomerate of the Bathurst Island Formation.
6. **WORK CARRIED OUT AND RESULTS**

6.1 **LATERITE SAMPLING**

A total of 8 laterite samples were taken from the surface at 200 metre intervals on an east-west line (see Figure 2 for location). Approximately 300 - 500 grams of lateritic material generally comprising ferruginous pisoliths/nodules, mottled gritty duricrust and strongly ferruginised lithic fragments were collected at each site and were analysed for Ag, As, Bi, Cd, Co, Cr, Cu, Fe, Mn, Mo, Ni, Pb, P, Sb, V and Zn by ICP, and Au by AAS. The analytical results (Appendix 1) for all of these elements showed little geochemical character and are interpreted to be background values only.

It is important to note that the levels for some elements, e.g. As and Pb, are higher than would be expected in other mediums, however previous experience and research has shown that it is common to observe a slight enrichment and higher backgrounds for some elements in a ferruginous lateritic duricrust.

6.2 **PEAT EVALUATION**

A number of field inspections of the peat rich areas on the western boundary were conducted during the first year of tenure as part of an overall assessment of the peat deposits located within CL3 and CL4 (see Figure 2).

Potential buyers for the peat have been actively sought throughout the year and to this end negotiations with an interested group in Indonesia have been instigated by Mr. G. Eupene and are currently being conducted to develop this potential market.
7. EXPENDITURE DURING YEAR ONE

Overall expenditure on the licence for Year One is as follows:

Geological Consultants $1,850
Wages (K. Eupene, J. Sullivan - fieldwork) $950
Analysis $310
Drafting $200
Vehicle $290
Travel and Accommodation $550
Administration (includes tenure costs, 15%) $630

$4,780

The Expenditure Covenant for Year One of tenure was $4,000.
8. PROPOSED PROGRAMME AND EXPENDITURE FOR YEAR TWO

The proposed work programme for Year Two of EL 6973 is as follows:-

1) Mapping and surveying to outline the area of higher grade peat within EL 6973.

2) Continue to develop markets for peat sales.

The estimated expenditure for this programme of work is $4,000.
9. REFERENCES


APPENDIX I

ANALYTICAL RESULTS

LATERITE SAMPLES
EUPENE EXPLORATION ENTERPRISES
4/98 WOODS STREET
DARWIN
NT 0801

ANALYSIS REPORT :

Your Reference : D/S 11717  Our Reference : IDN1288
Samples Received : 26/09/91  Results Reported : 30/09/91
Number of Samples : 8  Report Pages : 1 to 3

This report relates specifically to the samples tested in so far as the samples supplied are truly representative of the sample source.

If you have any enquiries please contact the undersigned quoting our reference as above.

Report Codes:
N.A. -Not Analysed
L.N.R. -Listed But Not Received
I.S. -Insufficient Sample

Approved Signature:

for
ALAN CIPLYS
Manager - Darwin
CLASSIC LABORATORIES LTD

*** RELIABLE ANALYSES AND SERVICE ***
Please note our new Phone Number is (08) 416 5300

Mr Alan Ciplys  
Classic Laboratories Limited  
Marjorie Street  
BERRIMAH  
NT 0828

FINAL ANALYSIS REPORT

Your Order No: 1DN1288  
Our Job Number : 1AD2836

Samples received : 17-SEP-1991  
Results reported : 24-SEP-1991

No. of samples : 8
Report comprises a cover sheet and pages 1 to 3

This report relates specifically to the samples tested in so far as that the samples as supplied are truly representative of the sample source.

Note:
If you have any enquiries please contact Miss Anne Reed quoting the above job number.

Approved Signatory:

John Waters  
Laboratory Manager - Adelaide

CC  Mr Alan Ciplys  NT

Report Codes:  
N.A.  - Not Analysed.  
L.N.R.  - Listed But Not Received.  
I.S.  - Insufficient Sample.

Distribution Codes:  
CC  - Carbon Copy  
EM  - Electronic Media  
MM  - Magnetic Media

"RELIABLE ANALYSES AT COMPETITIVE COST"
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