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**FIRST AND FINAL REPORT ON  
EXPLORATION LICENCES 9035 AND 9036  
VELKERRI PROJECT**

**17/04/95 to 16/04/96**

**BAUHINIA DOWNS 1:250,000 SHEET SE53-02<sup>3</sup>  
HODGSON DOWNS 1:250,000 SHEET SD53-14<sup>5</sup>  
TANUMBIRINI 1:250,000 SHEET SD53-02**

**VOLUME 1 OF 1**

**Commodities: Zinc, Lead, Copper, Silver**

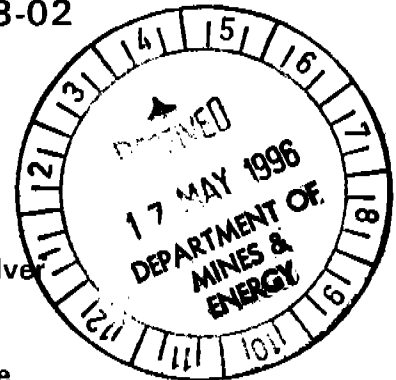
**Author: L A Price and A T Price**

**Date: May 1996**

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- NT Department of Mines and Energy (1)
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*CRAB/435  
Vol. 1 of 1.*

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**Report No. 20503**

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Report Number: 20503

Title: FIRST AND FINAL REPORT ON EXPLORATION LICENCES  
9035 AND 9036, VELKERRI PROJECT  
FOR THE PERIOD 17/04/95 to 16/04/96

Author: L A PRICE AND A T PRICE

Date: MAY 1996



## ABSTRACT

The Velkerri Project targets shale-hosted Zn-Pb mineralisation along a major NW structure, the Mallapunyah Fault.

The Velkerri Project Area includes Exploration Licences 8449, 8451, 8462, 8463, 8464, 8465 and 8871 in addition to Exploration Licences 9035 and 9036.

The nine tenements are being explored as a single project entity, however, joint reporting status was granted in the form of two reports:

- ELs 9035 and 9036 with a reporting date of 17 May; and
- ELs 8449, 8451, 8462, 8463, 8464, 8465 and 8871 with a reporting date of 30 November.

To date, on ground exploration has concentrated on the north-western tenements with an emphasis of understanding the structures and basement geology for extrapolation to the more southern tenements.

Work carried out in the reporting period on EL 9035 (Uzi ) and 9036 (Dingo Creek) has included a compilation of previous work data. This has involved the acquisition and assessment of open file data. Previous work has included detailed geochemical and geophysical coverage. Based on the results of this exploration no further work is planned and the licences are recommended for relinquishment.

## 1. INTRODUCTION

Exploration Licences (ELs) 9035 (Uzi) and 9036 (Dingo Creek) form part of the Velkerri Project which includes Exploration Licences 8449, 8451, 8462, 8463, 8464, 8465 and 8871.

The licences were acquired to target shale-hosted Pb-Zn-Ag mineralisation along the Mallapunyah Fault.

Joint reporting status was granted on 29 November 1995 in the form of two reports. Combined reporting for Exploration Licences 8449, 8451, 8462, 8463, 8464, 8465 and 8871 with a reporting data of 30 November each year and for Exploration Licences 9035 and 9036 with a reporting data of 17 May each year.

This report details exploration on ELs 9035 and 9036 for the period 17 April 1995 - 16 April 1996.

## 2. LOCATION, ACCESS AND PHYSIOGRAPHY

The licences are located on portions of the Bauhinia Downs, Hodgson Downs and Tanumbirini 1:250,000 map sheets (Figure 1).

The Stuart and Carpentaria Highways provide sealed access to parts of the licences. Unsealed station tracks and roads provide additional limited access.

Much of the area is drained by the upper tributaries of the east flowing Roper River system which include the Arnold, Hodgson, Strangways and Waterhouse Rivers and Maryfield, Cattle and Elsey Creeks.

Watercourses flow at intervals after rain during the wet season, but are dry for most of the year. Large water-holes survive the dry season.

Two physiographic divisions occur within the project area. These are Mature Gulf Fall and Younger Gulf Fall.

The Gulf Fall comprises the area from which the Tertiary laterite surface has been eroded. The Gulf Fall is subdivided into several units, two of which Mature Gulf Fall and Younger Gulf Fall occur within the project area.

The Younger Gulf Fall is the recently stripped country bordering the laterite escarpment. Drainage is developed on homogenous Lower Cretaceous sediments and is not structurally controlled (Paine, 1963).

The Mature Gulf Fall is developed on Upper Proterozoic Rocks which abut Lower Cretaceous Lithologies. The drainage system is inherited from the Tertiary laterite surface and most of the prominent hills are formed along strike ridges or are developed adjacent to faults.

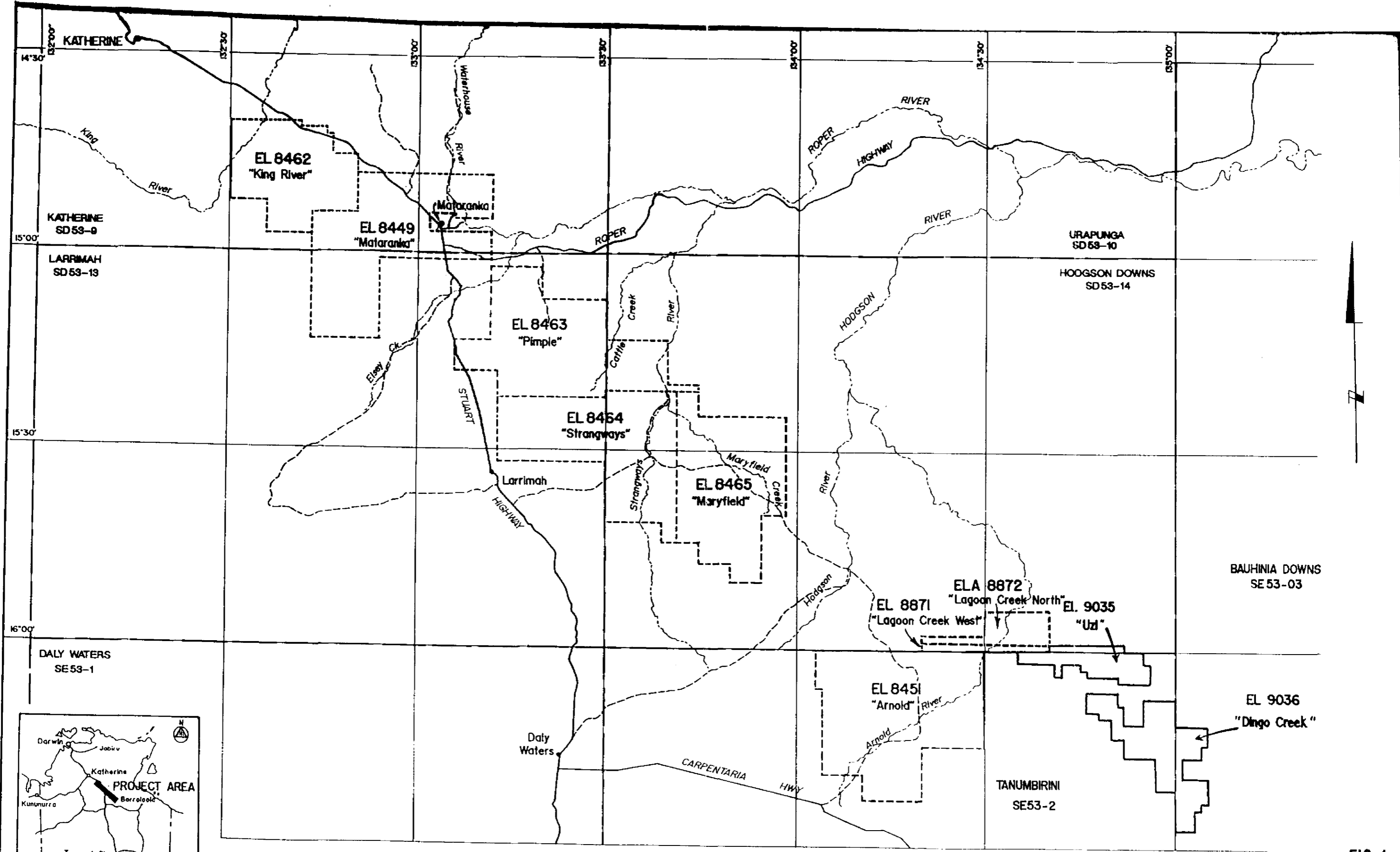
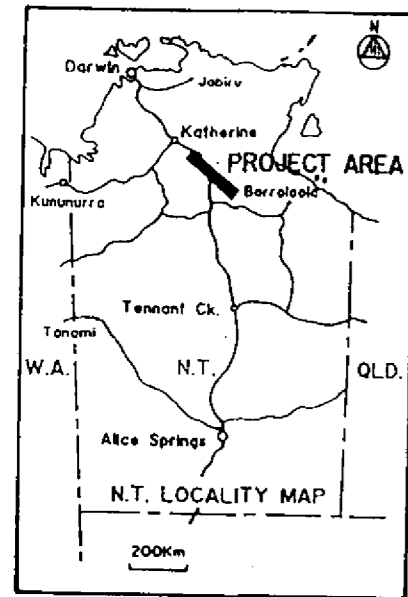
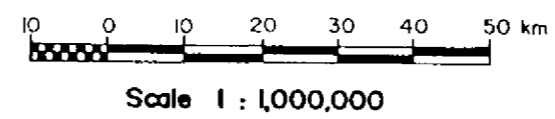


FIG 1



--- TRACKS  
 ——— MAIN ROADS

TENEMENTS WITH SOLID  
 OUTLINES ARE REFERRED  
 TO IN THIS REPORT



NORMANDY EXPLORATION LIMITED			
<b>VELKERRI PROJECT</b> <b>EL 9035 &amp; 9036</b> <b>LOCATION OF TENEMENTS</b> <b>VEHICLE ACCESS</b>			
Compiled L.A.P./A.L.H.	Date MAY 1996	Scale 1: 1,000,000	Plan No. <b>NTDI006</b>

### 3. TENURE

Tenement data is detailed below:

EL Name	EL No	1:250,000 Sheet	Area (km <sup>2</sup> )	Blocks	Date of Application	Date Granted	Covenant
Uzi	9035	Tanumbirini	258	80	03/01/95	18/04/95	\$36,000
Dingo Creek	9036	Tanumbirini	515	160	03/01/95	18/04/95	\$59,000
<b>TOTAL</b>			<b>773</b>	<b>240</b>			<b>\$95,000</b>

These two licences were acquired as a result of a plan to acquire a strategically significant tenement position along the interpreted extension of the Mallapunyah Fault Zone.

A tenement watch was placed along this "corridor" and these two licences were applied for after a partial relinquishment was carried out on EL 7829 held by Kintaro Gold Mines.

### 4. REGIONAL AND TENEMENT GEOLOGY

#### 4.1 REGIONAL GEOLOGY

The licences are located in the north-western McArthur Basin.

The McArthur Basin comprises the principal element of the North Australian Platform Cover, a group of mid-Proterozoic basins which unconformably overlie the Palaeoproterozoic North Australian Orogenic Province.

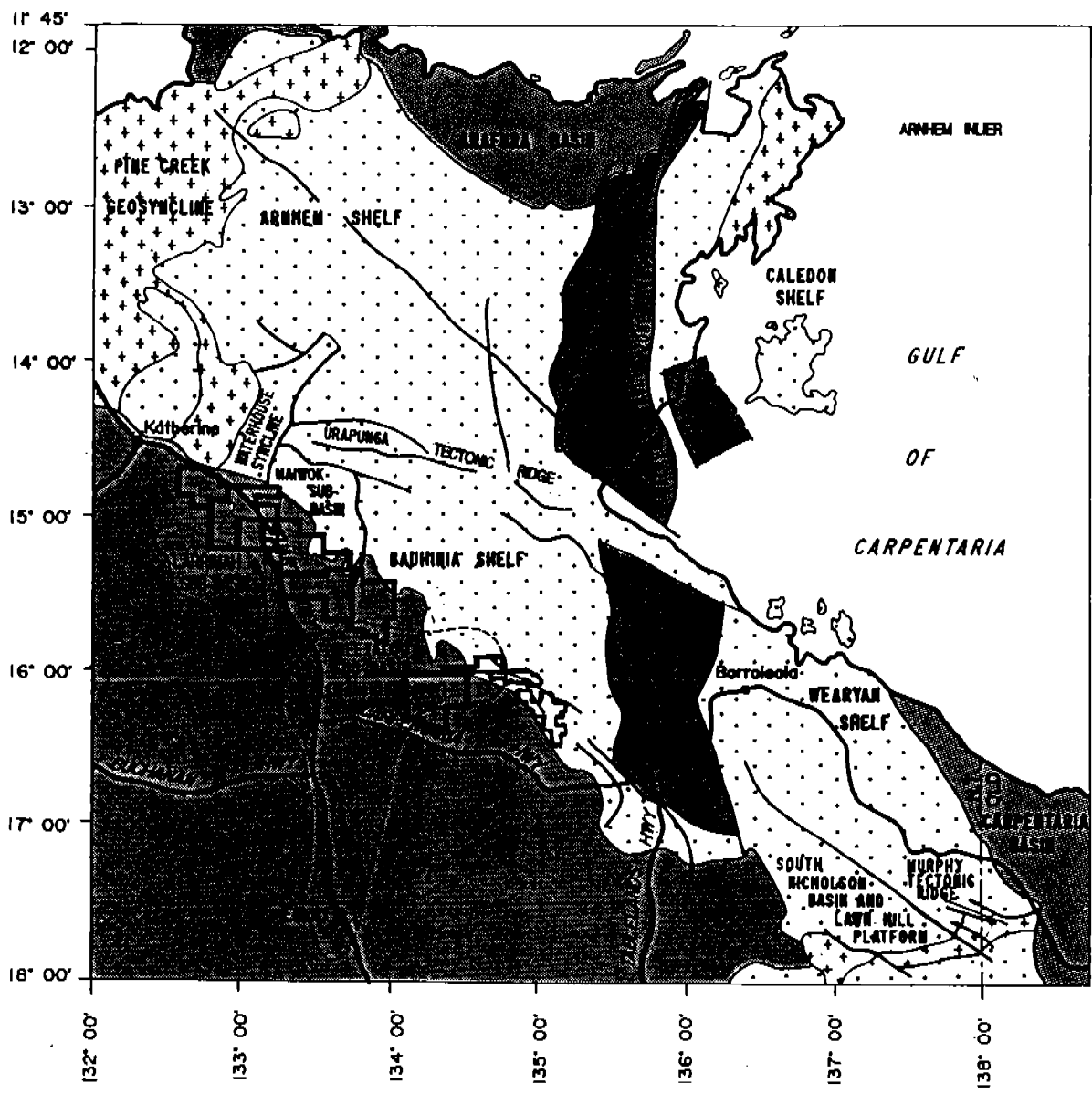
The basin outcrops over an area of about 200,000 km<sup>2</sup> and contains up to 12,000m of relatively undeformed and unmetamorphosed sedimentary rocks which are subdivided into four groups or Mega sequences, separated by regional unconformities.

Lower most is the Tawallah Group, which mainly consists of sandstones with subordinate volcanics, fine-grained clastics and rare carbonates, up to 4,500m thick and about 1700-1800 Ma old.





Overlying this are the McArthur and Nathan Groups which both largely comprise evaporitic and stromatolitic cherty dolostones interbedded with dolomitic sandstone and shale, totalling up to 5,500m. The McArthur Group hosts the giant McArthur River (HYC) shale-hosted Zn-Pb-Ag deposit. The McArthur Group is estimated to be between 1600-1700 Ma old.

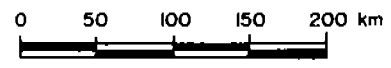
Uppermost is the significantly younger Roper Group which consists of up to 5,000m of alternating quartz-rich sandstones, siltstones and mudstones, estimated to be at least 1430 Ma old.

The McArthur Basin overlies and is bounded to the north-west, north-east and south-east by basement, but it is concealed by younger basins to the east, north, and south-west. The Beetaloo Sub-Basin is shown in Figure 2 juxtaposed with the major structural and tectonic elements identified in the Tawallah and McArthur Groups, which are attributed to a rift model in



**LEGEND**

-  POST McARTHUR BASIN
-  McARTHUR BASIN
-  TROUGH SEQUENCES
-  BASEMENT



Scale 1 : 5,000,000

<b>POSEIDON EXPLORATION LIMITED</b>			
<b>VELKERRI PROJECT</b>			
<b>MAJOR TECTONIC ELEMENTS</b>			
<b>Figure 2</b>			
Compiled	Date	Scale	Plan no.
A.T.P / A.E.F	Dec. 1996	1 : 5,000,000	NTD494



which a north-south trough and adjacent shelves are dissected by north-west trending faults and a west-north-west trending basement rise, the Urapunga Tectonic Ridge (UTR). A cratonic sag basin or platform setting is preferred for the Roper Group.

#### 4.2 TENEMENT GEOLOGY/STRATIGRAPHY

The oldest rocks within the tenements belong to the Tawallah Group (Megasequence I) which includes:

Rosie Creek Sandstone	felspathic medium and fine quartz sandstone, glauconitic near top
Settlement Creek Volcanics	altered, fine to medium grained dolerite/basalt, minor occurrences.
Wununmantlyala Sandstone	felspathic sandstone, shale
Wollogorang Formation	dolomitic siltstone and sandstone, magnesium dolomite, siltstone, local halite and pyrite pseudomorphs
Warramana Sandstone	lithic and felspathic sandstone, minor shale
Tanumbirini Rhyolite	porphyritic rhyolite lava, volcanic breccia, agglomerate, polymictic volcanic and pebble conglomerate, quartz sandstone

There are minor occurrences of Nathan Group (Megasequence III) which include:

Smythe Sandstone	polymictic conglomerate, pebbly lithic sandstone
Balbirini Dolomite	includes various dolomitic lithologies including siltstones, sandstones, shales plus stromatolitic and evaporitic varieties.

Roper Group (Megasequence IV) units include:

Limmen Sandstone	quartz sandstone, micaceous siltstone
Mainoru Formation	micaceous siltstone, fine grained sandstone minor dolomitic siltstone
Crawford Formation	fine grained micaceous sandstone and siltstone, glauconitic and felspathic sandstone.
Abner Sandstone Units	medium grained quartz sandstones, red mudstone, ferruginous sandstone, conglomerate
Corcoran Formation	purple and green mudstone, fine grained sandstone
Bessie Creek Formation	quartz sandstone, felspathic and ferruginous locally
Velkerri Formation	red-purple-grey shales, mudstone, fine grained sandstone

Overlying lithologies include minor Cambrian sandstone and plateaux remnants of Cretaceous sediments. Quaternary alluvium and Cainozoic sand is widespread.

#### 4.3 STRUCTURE

The licences cover parts of the Tanumbirini Dome which plunges to the northwest in the north and to the southeast in the south.

Tawallah Group sediments are exposed in the core of this anticline and are unconformably overlain by Roper Group lithologies. The northwest trending Mallapunyah and Lagoon Creek Faults displace the Tanambirini Dome.

#### 5. PREVIOUS EXPLORATION

Several companies have held parts of the licences as detailed below:

Company	Year	Work/Target
CRAE	1971	• Radiometric survey and drainage sampling for uranium. 210 stream and rock samples returning low geochemical responses.
WMC	1977-79	• 4 airborne EM traverses for stratiform Cu in the Wollgorang Formation (Tawallah Group).
WMC	1981-82	• IP, TEM and ironstone sampling along grid lines with 15 percussion holes testing geochemical and geophysical anomalies. Low results from pyritic sediments of the Wollgorang Formation. 1987 ironstone samples collected.
CRAE	1983-85	• Diamond sampling, low level airborne magnetic and radiometric survey with follow up ground magnetics and loam sampling.
MIM	1992	• Reconnaissance sampling and follow up of WMC geochemical anomalies. 29 stream, 40 lag and 4 rock samples collected. Results not considered anomalous.

## 6. CURRENT EXPLORATION (17/04/95 - 16/04/96)

Work carried out on the two licences to date has been limited to open file data compilation and assessment. Plan 1 shows the geochemical coverage of the area by CRAE, WMC and MIM using a variety of sample types.

The planned programme of helicopter assisted detailed gravity surveying and limited stratigraphic drilling to be undertaken in the two licences was postponed due to the granting of several of the northwestern project licences in August 1995. These northwestern licences were given a higher priority resulting in the rescheduling and postponement of exploration activities in ELs 9035 and 9036.

## 7. CONCLUSIONS & RECOMMENDATIONS

Previous exploration within these two licences has been regionally extensive. Structures and lithologies of interest from a base metal viewpoint (Wollogorang Formation Shales) have been covered with a range of detailed geochemical and geophysical surveys and some percussion drill holes.

Based on the results of this work no further work is planned and the licences are recommended for relinquishment.

## 8. EXPENDITURE

Total expenditure for ELs 9035 and 9036 for the period 17 April 1995 to 16 April 1996 is detailed below.

<b>Employee Costs</b>	<b>EL 9035</b>	<b>EL 9036</b>
• Salaries and Wages	\$5,019.48	\$5,123.74
<b>Operating Costs</b>		
• Office Supplies/Printing	\$227.43	\$227.27
• Courier/Freight/Postage	\$80.15	\$93.14
• Publications/Maps/Subscriptions	\$11.11	\$11.16
• Travel/Accommodation/Meals	\$439.20	\$439.33
• Vehicle Operating Costs	\$827.23	\$840.07
• Drafting Services and Supplies	\$22.20	\$22.36
• Other Contractors/Casuals	\$422.83	\$422.85
• Computing Services and Supplies	\$673.89	\$673.88
<b>Overheads and Related Costs</b>		
• Regional Office Allocation	\$3,256.42	\$3,259.71
• Depreciation	\$810.93	\$813.96
<b>TOTAL</b>	<b><u>\$11,790.87</u></b>	<b><u>\$11,927.47</u></b>

The covenants for ELs 9035 and 9036 of \$36,000 and \$59,000 respectively were not met due to the rescheduling of exploration activities as previously mentioned.

## REFERENCES

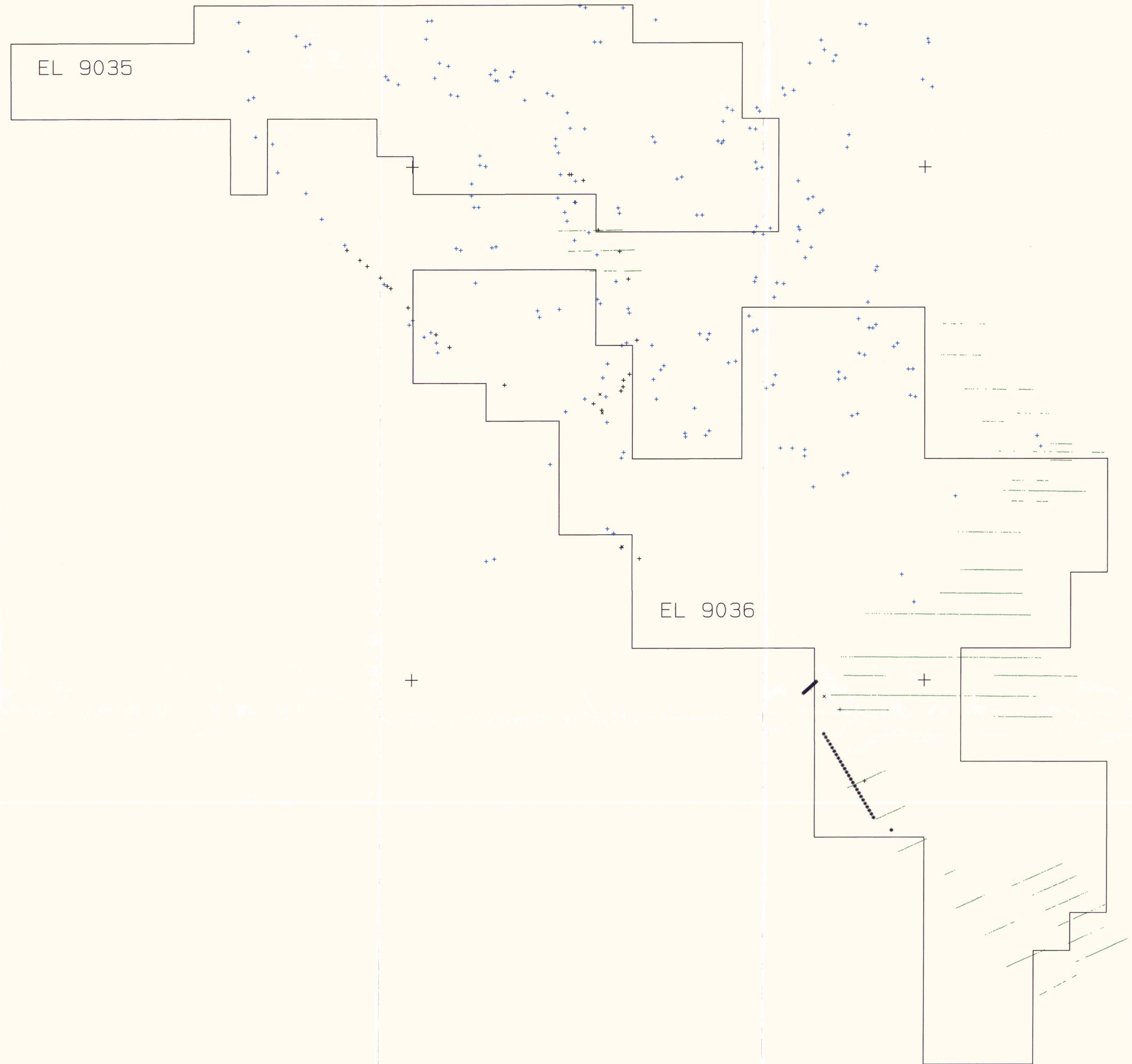
**COLLIVER, J.C., 1985:** EL 4212 Tanumbirini, NT, Rinal Report Period to 8 May 1985. *NTGS Report 85/196A, August, 1985.*

**HANCOCK, S.L., 1982:** Terminal Report for Adjoining Exploration Licences 2715 - Lansen Creek, 3123 - Crooked Creek, 3243 - Tanumbirini Creek, Western McArthur Basin. *NTGS Report, 82/232A, Western Mining Corporation Limited, June 1982*

**JOHNSTON, W.H., 1972:** Final Report on PA3325 - Eight Mile Creek, NT, *NTGS Report, 72/74, CRA Exploration Pty. Ltd., September 1972*

**PAYNE, AGL 1963** Tanumbirini, NT 1:250,000 Geological Series Explanatory Notes, Bureau of Mineral Resources, Canberra.

**SIMPSON, P.G., 1992:** Exploration Licence No. 7208 "Broadmere" NT, First and Final Report. *NTGS Report, 92/252, March, 1992.*



LEGEND

SAMPLE TYPE	COMPANY
+ STREAM	MIM
X ROCK	CRAE
* LAG	WMC
. IRONSTONE	

PLAN 1

NORMANDY EXPLORATION		
OPEN FILE DATA		
EL 9035 + 9036		
PREVIOUS WORK\GEOCHEM		
Scale 1: 100000	DATE 11/05/96	SHEET 1 of 1
	REF No. 1	
Plotted with MICROMINE		