



# InfoCentre

---

## NT Minerals and Energy

### ***Petroleum Exploration Reports***

This file contains scanned images of hardcopy reports/data submitted to the Northern Territory Government under Petroleum Legislation.

### ***Bringing Forward Discovery***

This information is made available to assist future petroleum explorers and may be distributed freely.

### ***InfoCentre***

Call: +61 8 8999 6443  
Click: [geoscience.info@nt.gov.au](mailto:geoscience.info@nt.gov.au)  
[www.minerals.nt.gov.au](http://www.minerals.nt.gov.au)  
Visit: 3<sup>rd</sup> floor  
Centrepoint Building  
Smith Street Mall  
Darwin  
Northern Territory 0800





**Amdel Limited** A.C.N. 008 127 802  
(Incorporated in S.A.)  
31 Flemington Street,  
Frewville, S.A. 5063

PR93/22

P.O. Box 114,  
Eastwood, S.A. 5063

Telex: AA82520  
Facsimile: (08) 79 6623

18 December 1991

Telephone: (08) 372 2700

Magellan Petroleum Australia Limited  
GPO Box 2766  
BRISBANE QLD 4001

Attention: Mr J Deckelman

**REPORT G 6437/92**

YOUR REFERENCE: Letter JAD:11g dated 2 December 1991  
IDENTIFICATION: P2.5, P3, P9  
MATERIAL: Sandstone  
LOCATION: Ngalia Basin  
DATE RECEIVED: 4 December 1991  
WORK REQUIRED: Evaluation of suitability for geochronology

Investigation and Report by: Dr Alan W Webb

*Keith Henley*

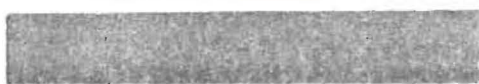
Dr Keith J Henley  
Manager, Geological Services

hk

**OPEN FILE**

**ONCHORE**

DEPT OF MINES & ENERGY  
DO NOT REMOVE  
  
P00121



## EVALUATION OF SUITABILITY FOR GEOCHRONOLOGY

### 1. INTRODUCTION

Three samples of sandstone were received from Mr J Deckelman, Magellan Petroleum Australia Limited, with a request to evaluate the suitability of the samples for geochronology.

### 2. PETROGRAPHIC EVALUATION

Thin sections of the samples were prepared and examined with a polarising microscope. To determine the time of deposition of a sediment, the sample must contain an authigenic mineral that formed during the deposition process or immediately after, during diagenesis. The authigenic mineral must also contain K or Rb in sufficient abundance to produce detectable amounts of the radiogenic isotope (Ar or Sr) and the mineral must have remained a closed chemical system since its time of formation. Minerals in this category, that are usually suitable for dating, are glauconite and illite.

#### **P2.5 : TSC56513**

This sample is a poorly sorted quartzose sediment with subangular, generally elongated quartz grains that range in size from 1.0 mm down to a few tens of microns. The matrix is relatively abundant and is iron stained and very weakly anisotropic. Tiny flakes of muscovite, probably of detrital origin, are present but the matrix is probably mainly of chloritic composition.

#### **P3 : TSC56514**

This sample is similar to P2.5 although the quartz grains are more equigranular in shape. The fine muscovite flakes are far less abundant and the chloritic matrix is better developed.

#### **P9 : TSC56515**

This sample is better sorted, with a more even grain size and subrounded, mainly equigranular grains of quartz. The matrix has a well developed micaceous appearance but is very weakly anisotropic and appear to be mainly chlorite.

### 3. CONCLUSIONS

These samples do not contain any authigenic minerals that could be used for geochronology. The chlorite matrix would not contain K or Rb and has a poor retentivity for the radiogenic isotopes. The samples are therefore unsuitable for dating.

The samples and thin sections will be returned under separate cover. Note that the thin sections have been stained with alizarin red-S as a routine procedure to distinguish carbonate minerals.