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PR9122

18 December 1991

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

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.