

PETROLEUM DIVISION

20 DEC 1989

REVIEW OF PALYNOLOGICAL AGE DATING FROM
THE KINGFISH-1 EXPLORATION WELL,
GIPPSLAND BASIN.

by

A.D. PARTRIDGE

INTRODUCTION

The field discovery well Kingfish-1 (originally called Kingfish A-1) was drilled in 1967. As this was before the establishment of the Esso Palynological Laboratory in late 1968 the initial palynological age dating was performed by consultant Dr M.E. Dettmann who prepared three short reports (Dettmann 1967a,b; 1968). Subsequent work has been restricted to the examination of a few conventional core samples and cuttings. This data was used to modify palynological data sheets, but was never written-up as a report nor has a palynological range chart previously been constructed for the well.

In an attempt to age data and correlate the distinctive shales near the bottom of Kingfish-1, between 8275-8360 feet and 8385-8410 feet additional cuttings samples have been processed and analysed.

The opportunity of preparing a report on this work has been used to summaries all palynological analyses in Kingfish-1 and prepare a range chart.

PALYNOLOGICAL SUMMARY OF KINGFISH-1

AGE	FORMATION	SPORE-POLLEN ZONES (DINOFLAGELLATE ASSOC.)	DEPTH RANGE (ftKB)
Oligocene	Lakes Entrance — 7477 ft —		
Late Eocene	Latrobe Group (coarse clastics)	Lower <i>M. diversus</i>	7595-7900
Paleocene		<i>L. balmei</i>	7934-8350
Paleocene		Lower <i>L. balmei</i> (<i>G. retiintexta</i>)	8430-8450
	T.D. 8451ft		

COMMENTS

- 1) In at least two instances erroneous samples have been assigned to Kingfish-1 causing confusion about the age datings in the well. These errors are:-
 - a) The three barren core samples reported from Kingfish A-1 at 7402ft, 7422ft and 7433ft in Dettmann (1968) cannot come from Kingfish-1 as there are no conventional cores or sidewall cores taken at these depths. The samples most likely come from Kingfish-2 (originally called Kingfish B-1) as conventional cores were cut over this interval.
 - b) The three sidewall cores reported as containing both the Upper *L. balmei* and *A. homomorphum* Zones in a memorandum by Partridge (March 3, 1989) actually come from the Kingfish-A1 Platform well. This error was caused by the name change of the original wildcat well from Kingfish A-1 to Kingfish-1. The samples were from 8049ft, 8058ft and 8076ft.
- 2) Four conventional cores were cut in Kingfish-1 between 7509 to 7622ft. Palynological samples have only been processed from Core-4 between 7592-7622ft to provide a Lower *M. diversus* Zone age for the reservoir section.
- 3) Only three sidewall cores were recovered from the Latrobe Group and these were reported on by Dettmann (1967a). The limited spore-pollen assemblages recorded allow only SWC-5 at 7934ft to be dated as no younger than the Upper *L. balmei* Zone based on the presence of the eponymous species *Lygistepollenites balmei*. The remaining rock sample and palynological slides from these samples could not be located for re-analysis and are probably lost.
- 4) The Upper *L. balmei* Zone cannot be delimited in Kingfish-1 due to the lack of index species among the limited assemblages recorded.
- 5) All cutting samples examined are contaminated by abundant spores, pollen and dinoflagellates caved from the Lakes Entrance Formation.

- 6) The common presence of the dinoflagellate *Glaphrocysta retiintexta* in cutting sample from 8430-40ft and its rare presence in underlying sample from 8440-50ft is the basis for assigning a Lower *L. balmei* Zone age to these samples. This dinoflagellate is consistent and often common in the *E. crassitabulate* Zone and a correlation of low confidence is possible to this zone.

REFERENCES

- DETTMANN, M.E., 1967a. Palynological report on Esso Kingfish A-1 well, 7884 feet - 8113 feet. *Unpublished report submitted to Esso Standard Oil (Australia) Ltd.*, 6/9/67, 2p.
- DETTMANN, M.E., 1967b. Palynological report on Esso Kingfish A-1 well, 7595 feet - 7601 feet. *Unpublished report submitted to Esso Standard Oil (Australia) Ltd.*, 3/10/67, 2p.
- DETTMANN, M.E., 1967b. Palynological report on Esso Kingfish A-1, B-1 and C-1 wells. *Unpublished report submitted to Esso Standard Oil (Australia) Ltd.*, 30/8/68, 10p.
- PARTRIDGE, A.D., 1989. Palynology revision Kingfish-1 Wildcat. *Memorandum 3rd March 1989.*

TABLE-1: PALYNOLOGICAL ANALYSES IN KINGFISH-1

SAMPLE* TYPE	DEPTH (FEET)	PALYNOLOGIST	SPORE-POLLEN ZONES	CONFIDENCE RATING
Core-4	7595-98'	MED	Lower <i>M. diversus</i>	1
Core-4	7598'	LES, PRE	Lower <i>M. diversus</i>	1
Core-4	7598-601'	MED	Lower <i>M. diversus</i>	1
Core-4	7600'11"	ADP	Lower <i>M. diversus</i>	1
Cuttings	7740-50'	PRE	Indeterminate	
SWC-6	7884'	MED	Indeterminate	
Cuttings	7890-900'	LES, PRE	Lower <i>M. diversus</i>	3
Cuttings	7900-10'	PRE	Indeterminate	
SWC-5	7934'	MED	<i>L. balmei</i>	2
Cuttings	8010-20'	LES	Indeterminate	
SWC-4	8113'	MED	Indeterminate	
Cuttings	8200-10'	LES	<i>L. balmei</i>	3
Cuttings	8280-90'	ADP	Indeterminate	
Cuttings	8290-300'	ADP	Indeterminate	
Cuttings (1)	8320-30'		Not Processed	
Cuttings (2)	8330-40'	ADP	<i>L. balmei</i>	
Cuttings (3A)	8340-50'	ADP	<i>L. balmei</i>	3
Cuttings (3B)	8340-50'	ADP	Indeterminate	
Cuttings (4)	8400-10'	ADP	Indeterminate	
Cuttings (5)	8430-40'	ADP	Lower <i>L. balmei</i>	3
Cuttings (6)	8440-50'	ADP	Lower <i>L. balmei</i>	3

* Numbers in brackets refer to samples collected from DITR Core Store.

MED - M.E. Dettmann
 LES - L.E. Stover
 PRE - P.R. Evans
 ADP - A.D. Partridge

(ADP210)

P A L Y N O L O G Y D A T A S H E E T

B A S I N : GIPPSLAND
 WELL NAME : KINGFISH-1

ELEVATION: KB: +31 ft GL: -253 ft
 TOTAL DEPTH: 8451 ft

A G E	PALYNOLOGICAL ZONES	H I G H E S T D A T A					L O W E S T D A T A				
		Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time	Preferred Depth	Rtg	Alternate Depth	Rtg	Two Way Time
NEOGENE	<i>T. pleistocenicus</i>										
	<i>M. lipsis</i>										
	<i>C. bifurcatus</i>										
	<i>T. bellus</i>										
PALEOGENE	<i>P. tuberculatus</i>										
	Upper <i>N. asperus</i>										
	Mid <i>N. asperus</i>										
	Lower <i>N. asperus</i>										
	<i>P. asperopolus</i>										
	Upper <i>M. diversus</i>										
	Mid <i>M. diversus</i>										
	Lower <i>M. diversus</i>	7595	1				7900	3	7601	1	
	Upper <i>L. balmei</i>	7934	2								
	Lower <i>L. balmei</i>	8430	3				8450	3			
LATE CRETACEOUS	Upper <i>R. longus</i>										
	Lower <i>R. longus</i>										
	<i>T. lilliei</i>										
	<i>N. senectus</i>										
	<i>T. apoxyexinus</i>										
	<i>P. mawsonii</i>										
	<i>A. distocarinatus</i>										
EARLY CRET.	<i>P. pannosus</i>										
	<i>C. paradoxa</i>										
	<i>C. striatus</i>										
	<i>C. hughesi</i>										
	<i>F. wonthaggiensis</i>										
	<i>C. australiensis</i>										

COMMENTS: All depths in feet.
Sample at 7934 ft is no younger than Upper *L. balmei* Zone.
A dinoflagellate association dominated by *Glaphrocysta retintexta* occurs in cuttings between 8430-50 ft.

- CONFIDENCE RATING:
- 0: SWC or Core, Excellent Confidence, assemblage with zone species of spores, pollen and microplankton.
 - 1: SWC or Core, Good Confidence, assemblage with zone species of spores and pollen or microplankton.
 - 2: SWC or Core, Poor Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.
 - 3: Cuttings, Fair Confidence, assemblage with zone species of either spores and pollen or microplankton, or both.
 - 4: Cuttings, No Confidence, assemblage with non-diagnostic spores, pollen and/or microplankton.

NOTE: If an entry is given a 3 or 4 confidence rating, an alternative depth with a better confidence rating should be entered, if possible. If a sample cannot be assigned to one particular zone, then no entry should be made, unless a range of zones is given where the highest possible limit will appear in one zone and the lowest possible limit in another.

DATA RECORDED BY: L.E. Stover/A.D. Partridge DATE: 1971, 1975
 DATA REVISED BY: A.D. Partridge DATE: October, 1989.