


PE990551

PIKE-1

PALYNOLOGIC REPORT

L. Stover

PALYNOLOGICAL DETERMINATIONS FOR
PIKE-1, GIPPSLAND BASIN, AUSTRALIA

Lewis E. Stover

SUMMARY

Paleogene spore-pollen zone assignments for assemblages recovered from sidewall cores from Pike-1 are tabulated below.

<u>SWC & DEPTH</u>	<u>ZONE</u>	<u>AGE</u>
12 - 5994'	<i>Proteacidites tuberculatus</i>	Oligocene
9 - 6456'	Indeterminate (practically barren)	- - - - -
7 - 6507'	Indeterminate (barren)	- - - - -
6 - 6623'	Upper <i>M. diversus</i>	Early Eocene
5 - 6647'	Upper <i>M. diversus</i>	Early Eocene
4 - 6751'	<i>Lygistepollenites balmei</i>	Paleocene
3 - 6773'	<i>Lygistepollenites balmei</i>	Paleocene
1 - 6936'	<i>Lygistepollenites balmei</i>	Paleocene

DISCUSSION

Assemblage from sidewall core 12 at 5994 feet

Contents; sparsely fossiliferous consisting of spore-pollen and microplankton

Preservation: generally fair, with some well preserved and some poorly preserved forms.

Diversity: low for both spore-pollen and microplankton.

Assignment to the *Proteacidites tuberculatus* zone is based on the occurrence of *Cyatheacidites annulatus*. Other species in the assemblage are relatively long ranging forms with the possible exception of the acritarchs which are

represented by undescribed species. Examples of Upper Carboniferous spores (two specimens of *Triquitrites* and one of *Lycospora*) were identified in the assemblage. The presence of these forms might represent recycling, provided a reasonable provenance can be ascertained, or alternatively, they might have been introduced through a drilling mud additive. The latter appears more likely inasmuch as the identified genera are most prevalent in North American and western European Carboniferous assemblages.

Assemblage from sidewall core 6 at 6623 feet

Contents: commonly fossiliferous, mixed assemblage with about equally abundant spore-pollen and microplankton.

Preservation: good to poor with most specimens fairly well preserved.

Diversity: low for spore-pollen, moderate for microplankton.

The microplankton were relied upon more heavily than the spore-pollen in interpreting the age and zone assignment. Dinoflagellate association from 6623 feet is very similar to that described by Cookson and Eisenback (1967) from Strahan, Tasmania, which also contains spore-pollen indicative of the Upper *M. diversus* zone. Important dinoflagellate species in the Pike-1 sample that also occur in the Strahan assemblage include *Kenleyia lophophora*, *Spinidinium essoii*, *Wetzeliella homomorpha* and *Homotryblium tasmaniense*, with the latter being the dominant species in both assemblages. Although spore-pollen fail to provide much additional zone-confirming data, the species identified are collectively compatible with the age determination based on the microplankton.

Assemblage from sidewall core 5 at 6647 feet

Contents: abundantly fossiliferous, almost exclusively spore-pollen with rare microplankton.

Preservation: good to poor, condition of large (>50 μ) and relatively thick walled forms is good whereas small, thin walled, or delicately structured species is rather poor.

Diversity: seemingly low, probably due at least in part to the poor preservation that precludes more precise identification of many specimens.

Assignment to the Upper *M. diversus* zone is based on the co-occurrence of *Proteacidites grandis*, *P. leightonii* and *P. ornatus* with the first species being far more common than the other two. Specimens of the dinoflagellate *Deflandrea flounderensis* (known from the Upper *M. diversus* - *P. asperopolus* interval in the Flounder-Tuna area) and *Kenleyia lophophora* are present in the assemblages.

Assemblages from sidewall cores at 6751 feet (SWC 4), 6773 feet (SWC 3) and 6936 feet (SWC 1).

- Contents: sparsely to commonly fossiliferous with spore-pollen and sparse to rare microplankton.
- Preservation: fair to poor, with the spores and gymnosperm pollen being better preserved than the angiosperm pollen.
- Diversity: low, which is due at least in part to the poor preservation.

Common specimens of *Lygistepollenites balmei* occur in all assemblages, and in the shallowest sample this species is the most conspicuous form (26 specimens observed on one slide in a sparse assemblage). Other forms occurring in the interval from 6751 to 6936 feet and indicative of the *L. balmei* zone are *Gambierina rudata*, *Gephyrapollenites wahoensis*, *Lygistepollenites ellipticus*, *Phyllocladidites reticulosaccatus* and *Polycolpites langstonii*.

CONCLUSIONS

The occurrence of *Cyatheacidites annulata* is considered to indicate the presence of the *Proteacidites tuberculatus* zone (Oligocene) at 5994 feet.

Dinoflagellates comprise a major component of the Early Eocene Upper *Malvacipollis diversus* assemblage at 6623 feet. The dinoflagellate association is most similar to that described from Strahan, Tasmania (Cookson and Eisenack, 1967). Sparse to rare dinoflagellates are also present at 5994, 6647, 6751 and 6773 feet and are lacking at 6936 feet.

Assemblages with numerous specimens of *Lygistepollenites balmei*, together with other but less commonly occurring species also indicative of the *L. balmei* zone (Paleocene) were recovered from samples at 6751, 6773 and 6936 feet.

REFERENCE

- Cookson, I. C. & Eisenack, A., 1967, Some early Tertiary microplankton and pollen grains from a deposit near Strahan, western Tasmania: Royal Soc. Victoria Proc., v. 80, pp. 131-140.

BASIN Gippsland DATE August, 1973
 WELL NAME Pike-1 ELEVATION _____

AGE	PALYNOLOGIC ZONES	HIGHEST DATA					LOWEST DATA				
		Preferred Depth	Rtg	Alternate Depth	Rtg	2 way time	Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time
OLIGO-MIOC.	<u>T. bellus</u>										
	<u>P. tuberculatus</u>	5994	2				5994	2			
EOCENE	<u>U. N. asperus</u>										
	<u>L. N. asperus</u>										
	<u>P. asperopolus</u>										
	<u>U. M. diversus</u>	6623	1				6647	1			
	<u>L. M. diversus</u>										
PALEO-CENE	<u>L. balmei</u>	6751	1				6936	1			
	<u>T. longus</u>										
LATE CRETACEOUS	<u>T. lilliei</u>										
	<u>N. senectus</u>										
	<u>C. trip./T.pach.</u>										
	<u>C. distocarin.</u>										
	<u>T. pannosus</u>										
EARLY CRETACEOUS	<u>C. paradoxa</u>										
	<u>C. striatus</u>										
	<u>U. C. hughesii</u>										
	<u>L. C. hughesii</u>										
	<u>C. stylosus</u>										
Pre-Cretaceous											

COMMENTS: _____

- RATINGS: 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 a sample cannot be assigned to one particular zone, then no entry should be made. Also, if an entry is given a 3 or 4 confidence rating, an alternate depth with a better confidence rating should be entered, if possible.

DATE RECORDED BY: L. E. Stover DATE August, 1973

DATE _____