

**MICROPALAEONTOLOGICAL REPORT  
for LAKE OIL P/L  
on THREE SAMPLES from Banjo-1A**

**REPORT 01/06**

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**Micropalaeontology report on 3 samples from Banjo-1A for Lakes Oil P/L**  
**INTRODUCTION**

The following is a report on three samples from Banjo-1A in Gippsland. The lithology is briefly described. A sample was processed by standard micropalaeontological techniques. The biozonation used in this work is shown on Figure 1 and the biostratigraphic data in Table 1.

**Sample 231.95m**

**Sample description**

*Lithology:* Fine grey/green silt/siltstone to fine sand/sandstone

*Microfauna:* A diverse microfauna occurs in this sample.

*Benthic:* Benthic foraminifera include common *G. subglobosa*, *Cibicides* spp. and the semi-endemic *Parrellina crespinae*, *Notorotalia howchini* and *N. spinosa*.

*Plankton:* Plankton are rare and include one species *Globigerina praebulloides*.

*Palaeoenvironment:* The fauna and facies suggest a low-energy middle to outer shelf environment.

*Age:* Probably late Oligocene

*Correlatives:* The age, facies and nature of the fauna typifies the **Lake Entrance Formation** as described in Holdgate and Gallagher (1997).

**Sample 231.95m**

**Sample description**

*Lithology:* Fine grey/green siltstone to fine sandstone

*Microfauna:* Sparse fauna of *Cibicidoides perforatus*, *Elphidium* spp., *Cibicides vortex* and *Astrononion*.

*Plankton:* Plankton are absent

*Palaeoenvironment:* The fauna and facies suggest a low-energy middle to outer shelf environment.

*Age:* Probably late Oligocene (see note below).

*Correlatives:* The age, facies and nature of the fauna typifies the **Lake Entrance Formation** as described in Holdgate and Gallagher (1997).

**Sample 254.95m**

**Sample description**

*Lithology:* Coarse-grained shelly green sand/sandstone. Common glauconized gastropods. Bioclasts include echinoid spines and bryozoans

*Microfauna:* A diverse microfauna occurs in this sample.

### **Micropalaeontology report on 3 samples from Banjo-1A for Lakes Oil P/L**

*Benthic:* Benthic foraminifera include common *Pararotalia mackayi*, *Notorotalia howchini*, *Parrellina crespinae*, *Elphidium crispum* with lesser *G. subglobosa* and *G. zealandica*.

*Planktonic:* Plankton are absent.

*Palaeoenvironment:* The fauna and facies suggest a high-energy inner shelf environment.

*Age:* Probably Late Oligocene (see comment below).

*Correlatives:* This sample is likely to be a shallow water equivalent to the **Lake Entrance Formation** as described in Holdgate and Gallagher (1997).

*Comment:* In the absence of diagnostic plankton, the occurrence of the benthic rotaliids: *P. crespinae*, *Pararotalia mackayi*, *N. spinosa* and *N. howchini* suggests an Oligo-Early Miocene age (these taxa are common in strata of this age, however they may be rare in later Miocene or younger strata). The sandy silty facies, and lack of plankton with the presence of *G. subglobosa* and *Parrellina* peaks are typical of the **Late Oligocene Lakes Entrance Formation**. *Pararotalia mackayi* is typically abundant in the Late Oligocene (P22) shallow water Point Addis in Torquay, however this taxon also last appears in the Middle Miocene in Batesford Quarry. The biofacies and relative lack of carbonate in the facies precludes assignment to the Miocene Gippsland Limestone, Wuk Wuk Marl or Bairnsdale limestone. The presence of this *Pararotalia mackayi* suggests the lowest sample is not equivalent to the Early Oligocene Colhoun Gravel.

***Conclusion:* Based of the bio- and lithofacies considerations the samples are from the Lakes Entrance Formation and have a probable Late Oligocene age.**

### **References:**

- HOLDGATE, G. & GALLAGHER, S. 1997. Microfossil paleoenvironments and sequence stratigraphy of Tertiary cool-water carbonates, onshore Gippsland Basin, southeastern Australia. Spec. Publication SEPM, 56, 205-220.
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- MCGOWRAN, B., LI, Q. & MOSS, G. 1997. The Cenozoic neritic record in southern Australia: the biogeohistorical framework. In: N. James and C. J. ed. Cool and Temperate Water Carbonates, Vol. 56, pp. 185-203. Society of Economic Palaeontologists and Mineralogist, Tulsa. Special Publication.

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TABLE 1						Banjo-1A	LAKES OIL				
							Taylor zonules	Zonule			
							Epoch	Late Oligocene			
							Palaeoenvironment				
							Stratigraphic Unit		Lakes Entrance		
							Holdgate & Gallagher 1997		Fm		
		I	M	O	ub	mb	ROTALIIIDS	Depth	264	254.95	231.95
											Palaeodepth
i		3	2	1			<i>Elphidium crispum</i>		x		
i		3	2	1			<i>Elphidium</i> spp.			x	x
e		3	2	1			<i>Pararotalia mackayi</i>		xxx		
e		3	2	1			<i>Rosalina</i> spp.				x
		3	2	1			<i>Notorotalia howchini</i>		x		x
		3	2	1			<i>Notorotalia spinosa</i>				x
e		3	2				<i>Discorbis</i> spp.				x
i		1	1				<i>Sigmoidella</i> spp.		x		x
i		2					<i>Pseudononion</i> spp.				x
i		1	1				<i>Pullenia quinqueloba</i>				x
e		3	3	3	3		<i>Cibicidoides perforatus</i>			x	x
e	1	3	3	2	1		<i>Cibicides vortex</i>		x	x	x
e	1	3	3	2	1		<i>Cibicides pseudoconvexus</i>				x
i	1	3	2	1			<i>Parrellina crespinae</i>		x		x
i	1	2	3	2	1		<i>Astrononion tasmanensis</i>			x	x
e		2	3	2	1		<i>Anomalinoides macraglabra</i>		x		x
e	1	2	2	1			<i>Discorbinella bertheloti</i>				x
e	1	2	2	1			<i>Discorbinella</i> spp.				x
i	1	1	3	3	3		<i>Cassidulina laevigata</i>				x
i	1	1	3	3	3		<i>Cassidulinoides</i> spp.			x	
i		1	3	3	1		<i>Globocassidulina subglobosa</i>		x		xxx
e	1	1	2	3	2		<i>Lenticulina</i> spp.				x
e	1	1	2	2			<i>Eponides repandus</i>				x
e	1	1	2	2			<i>Eponides lornensis</i>		x		
e		1	2	2	1		<i>Heterolepa brevoralis</i>				x
i		1	1	1	1		<i>Guttulina</i> spp.		x		
e			2	2	1		<i>Gyroidinoides zealandica</i>		x		
i							<i>Astacolus</i> spp.		x		
i							<i>Oolina</i> spp.				x
i							<i>Fissurina</i> spp.				x
							<i>Siphonina australis</i>				x
i							<i>Vaginulinopsis gippslandica</i>		x		
i							<i>Trifarina</i> spp.				x
							<b>MILIOLINIDS</b>				
e							<i>Triloculina</i> spp.		x		
							<i>Spiroloculina</i> spp.				x
							<b>TEXTULARIDS</b>				
e							<i>Gaudryina crespinae</i>		x		
e							<i>Dorothia minima</i>		x		
							<b>PLANKTONICS</b>				
							<i>Globigerina praebulloides</i>				rare

# Micropalaeontology report on 3 samples from Banjo-1A for Lakes Oil P/L

MAG NETO Ma STRAT	CHRONO-STRATIGRAPHY	PLANKTONIC standards	FORAMINIFERA southern mid-latitudes	TAYLOR zonules	PLANKTONIC FORAMINIFERA events: southern Australia	PALYNOMORPHS pollen	dinoflagellates	southeastern Australian regional stages
1	C1	N23	PT1	a	A1		<i>Protoperidinium leonis</i>	Werrikooian
2	C1r	N22			A2			Yatalan
3	C2r	N21	PL6		A3			
4	C2A	N19-20	PL5		A4			Kalimnan
5	C3	N18	PL4				<i>Myrtaceidites lipsis</i>	
6	C3A	N17	M14	b	B1		<i>Cingulatisporites bifurcatus</i>	Cheltenhamian
7	C4	N17	A					
8	C4A	N16	M13	a	B2			Mitchellian
9	C5	N15	M12					
10	C5r	N14	M11		C			
11	C5A	N13	M10		D1			Bairnsdalian
12		N12	M9					
13		N11	M8					
14		N10	M7		D2			Balcombian
15	C5B	N9	M6		E1			
16	C5C	N8	M5		E2			Batesfordian
17	C5D	N7	M4	a	F			
18	C5E	N6	M3		G			
19	C6	N5	M2		H1			Longfordian
20	C6A	N4	M1	b	H2			
21	C6AA							
22	C6B							
23	C6C							
24	C6D							
25	C6E							
26	C7A	P22	P22		I1			Janjukian
27	C7B							
28	C7C							
29	C7D							
30	C7E							
31	C7F							
32	C7G							
33	C7H							
34	C7I							
35	C7J							
36	C7K							
37	C7L							
38	C7M							
39	C7N							
40	C7O							
41	C7P							
42	C7Q							
43	C7R							
44	C7S							
45	C7T							
46	C7U							
47	C7V							
48	C7W							
49	C7X							
50	C7Y							
51	C7Z							
52	C8A							
53	C8B							
54	C8C							
55	C8D							
56	C8E							
57	C8F							
58	C8G							
59	C8H							
60	C8I							
61	C8J							
62	C8K							
63	C8L							
64	C8M							
65	C8N							

Figure 1: Biozonal scheme for Southeastern Australia (adapted from McGowran et al. 1997)