



**SANTOS PALYNOLOGY SECTION  
EXPLORATION SERVICES DEPARTMENT**

Palynology Report No. 2003/31

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PALYNOLOGICAL REPORT NO. 2003/31  
PALYNOSTRATIGRAPHICAL ANALYSIS

WHELK -1 WELL

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## Introduction

Twelve sidewall core samples and two conventional core samples from Esso Whelk-1, drilled off north-western Tasmania, were examined palynologically.

The palynostratigraphic results are presented in on Table 1.

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Study: Whelk-1

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## PALYNOSTRATIGRAPHICAL DATA

Table 2

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SAMPLE	DEPTH (M)	PALYNOSTRATIGRAPHICAL UNIT (Age)	INFERRED STRATIGRAPHICAL UNIT	REWORKED ELEMENTS		PRESER VATION	YIELD	DIVER SITY	REMARKS
				%	AGE				
SWC30	627.9m	<i>Lygistepollenites balmei</i> (Paleocene)	Pember Mudstone equiv.	2	Perm.	P-G	High	V.high	Very high spore-pollen diversity. Zone pick based on occurrence of eponymous species with <i>Banksiaeidites arcuatus</i> , <i>Malvacipollis subtilis</i> , <i>Polycolpites langstonii</i> and <i>P. eobalteus</i> . The restricted microplankton suite includes <i>Deflandrea</i> sp. cf. <i>medcalfii</i> . Near-shore marine.
SWC25	729.1m	<i>Manumiella druggii</i> (Maastrichtian)	Massacre Shale equiv.	X	Perm.	P-G	Mod.	V.high	Restricted (6%), low diversity microplankton suite with <i>M. druggii</i> . Very high diversity spore-pollen suite with <i>Granelispora evansii</i> , <i>Quadrplanus brossus</i> (?) and <i>Tripunctisporis maastrichtiensis</i> . Near-shore marine.
SWC24	753.8m	<i>Manumiella druggii</i> (Maastrichtian)	Massacre Shale to upper Timboon Sandstone equiv.	-	-	P-G	Mod.	High	Moderate diversity microplankton suite (14% of total palynomorphs) with prominent <i>M. druggii</i> (7%). High diversity spore-pollen suite, but lacking zone indicators at this level of examination. Near-shore marine.
SWC23	769.9m	<i>Tricolporites lilliei</i> to basal <i>Forcipites longus</i> (Late Campanian to Maastrichtian)	Paaratte Formation to Timboon Sandstone equiv.	X X	Perm. Trias.	P-G	Mod.	High	High diversity spore-pollen suite with <i>Forcipites longus</i> (?), <i>Tricolporites lilliei</i> and relatively prominent <i>Nothofagidites</i> spp. Restricted (9% of total palynomorphs), moderate diversity microplankton suite with <i>Isabelidium</i> spp. including <i>I. pellucidum</i> , <i>Odontochitina porifera</i> , <i>Spinidium ornatum</i> and an undescribed <i>Xenikoon</i> (?) species ( <i>X. benchleyi</i> ). Near-shore marine.

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				%	AGE				
SWC22	832.7m	<i>Tricolporites lilliei</i> (Late Campanian)	Paaratte Formation equiv.	2	Perm.	P-G	High	V.high	Very high diversity spore-pollen suite with <i>Tricolporites lilliei</i> . Restricted (3% of total palynomorphs), moderately diverse microplankton suite lacks index species. Near-shore marine.
SWC20	919.0m	<i>Nothofagidites senectus</i> (mid to late Campanian)	Paaratte Formation equiv.	X X	Perm. Trias.	P-G	High	V.high	Very high diversity spore-pollen suite with prominent <i>Nothofagidites</i> spp. (including <i>N. senectus</i> ), <i>Gambierina rudata</i> , <i>Lactoropollenites</i> sp. and particularly prominent <i>Proteacidites</i> spp (22%, including <i>P. cf. confragosus</i> ). Restricted (3%), moderately diverse microplankton suite includes <i>Chatangiella</i> spp., <i>Isabelidinium</i> spp, but lacking index species. Near-shore marine.
SWC 5	970.2m	Lower <i>Xenikoon australis</i> (early to mid Campanian)	Paaratte Formation equiv.	1 X	Perm. Trias.	P-G	Low	High	Restricted, low diversity microplankton suite (6% of total palynomorphs), with very rare <i>Xenikoon australis</i> and dominated by acritarchs. High diversity spore-pollen suite with prominent <i>Nothofagidites</i> spp. (4%, including <i>N. senectus</i> ), <i>Gambierina rudata</i> and relatively prominent <i>Proteacidites</i> spp (14%). Near-shore marine.
SWC19	1004.9	Lower <i>Xenikoon australis</i> (early to mid Campanian)	Paaratte Formation equiv.	2	Perm.	P-G	High	High	Moderate diversity microplankton suite (13% of total palynomorphs), dominated by <i>Xenikoon australis</i> (9%), with <i>Nelsoniella aceras</i> and <i>N. semireticulata</i> . High diversity spore-pollen suite with prominent <i>Nothofagidites</i> spp. (8%, including <i>N. senectus</i> ) and prominent <i>Proteacidites</i> spp (17%). Near-shore marine.
SWC15	1046.7	<i>Nothofagidites senectus</i> (mid to late Campanian)	Paaratte Formation equiv.	2	Perm.	P-G	Mod	High	High diversity spore-pollen suite with prominent <i>Nothofagidites</i> spp. (4%, including <i>N. senectus</i> ), <i>Gambierina rudata</i> and relatively prominent <i>Proteacidites</i> spp (13%). Restricted microplankton suite (1% of total palynomorphs).

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SAMPLE	DEPTH (M)	PALYNOSTRATIGRAPHICAL UNIT (Age)	INFERRED STRATIGRAPHICAL UNIT	REWORKED ELEMENTS		PRESER- VATION	YIELD	DIVER- SITY	REMARKS
				%	AGE				
SWC14	1096.4	<i>Nothofagidites senectus</i> (mid to late Campanian)	Paaratte Formation equiv.	X	Perm.	P-G	High	High	High diversity spore-pollen suite with rare <i>Nothofagidites senectus</i> and relatively prominent <i>Proteacidites</i> spp (12%). Restricted (<3%), low diversity microplankton suite includes <i>Nelsoniella aceras</i> , suggesting that it is no younger than lower <i>Xenikoon australis</i> Zone (Morgan group). Near-shore marine.
SWC11	1208.2	<i>Nothofagidites senectus</i> (mid to late Campanian)	Paaratte Formation equiv.	-	-	P-G	Low	Mod.	Moderate diversity spore-pollen suite with rare <i>Nothofagidites senectus</i> . Microplankton suite (10% of total palynomorphs), includes tentative <i>Nelsoniella aceras</i> . Near-shore marine.
FHC1	1295.4	<i>Odontochitina porifera</i> to <i>Isabelidinium cretaceum</i>	Belfast Mudstone equiv.	-	-	P-G	Low	Mod.	Low diversity microplankton suite (9% of total palynomorphs), dominated by <i>Amosopollis cruciformis</i> (5%) with <i>Isabelidinium</i> spp. (including forms tentatively identified as <i>I. rectangulare</i> ). Moderately diverse spore-pollen suite apparently lacking diagnostic taxa including <i>Appendicisporites</i> spp. and <i>Tricolporites apoxyxinus</i> . Near-shore marine.
SWC7	1307.6	<i>Conosphaeridium striatoconus</i> to <i>Odontochitina porifera</i> (Coniacian to Santonian)	Belfast Mudstone equiv.	2	Perm.	P-G	Mod.	V.high	Restricted (5%), moderately diverse microplankton suite including <i>Fromea chytra</i> , <i>Isabelidinium</i> spp., <i>Odontochitina porifera</i> (tentative), <i>Trithyrodinium marshalli</i> and <i>Valensiella griphus</i> . Very high diversity spore-pollen suite with <i>Tricolporites apoxyxinus</i> . Near-shore marine.

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				%	AGE				
FHC2	1369.2	<i>Phyllocladidites mawsonii</i> (?) (Turonian)	Indet.	-	-	P-G	Low	Mod.	Low yield of a moderately diverse spore-pollen suite lacking diagnostic species apart from one specimen of <i>Phyllocladidites</i> sp. (not <i>P. mawsonii</i> ). No dinocysts recorded, although there is a very limited suite of acritarchs (no acanthomorphs recorded). Possibly non-marine.

