

G.S.C. O.P. 1870 PALYNOLOGICAL ANALYSIS OF THE INTERVAL 1600-
5145M: BACCALIEU I-78, GRAND BANKS

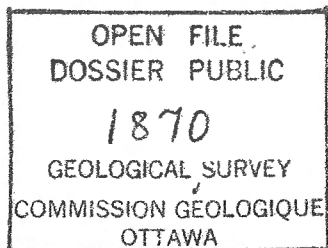
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PALYNOLOGICAL ANALYSIS OF THE
INTERVAL 1600-5145M:
BACCALIEU I-78

REPORT #87-0066
DECEMBER, 1987

CALGARY, ALBERTA



BIOSTRATIGRAPHIC SUMMARY

- 1600-1640m Probable Eocene (undifferentiated)
- 1660-1755m Possible Middle to Late Cretaceous (undifferentiated)
- 1775-1825m Possibly Barremian or older (undifferentiated)
- 1845-2171m Cerebropollenites macroverrucosus Zone (late Berriasian
to early Valanginian)
- 2171-2415m Ctenidodinium panneum Zone: Subzone 5B (early
Berriasian)
- 2435-2805m Possibly Ctenidodinium panneum Zone: Subzone 5A (early
Berriasian)
- 2825-2865m Subtilisphaera paeminosa Zone: Subzone 3C (late
Kimmeridgian)
- 2885-2955m Subtilisphaera paeminosa Zone: Subzone 3B (late
Kimmeridgian)
- 2975-3288m Subtilisphaera paeminosa Zone: Subzone 3A (middle
Kimmeridgian)
- 3288-3390m Pilosisorites sp. A Zone: Subzone 2C (middle
Kimmeridgian)
- 3410-3775m Possible Pilosisorites sp. A Zone: Subzone 2B (early to
middle Kimmeridgian)

3795-4345m Pilosporites sp. A Zone: Subzone 2A (early
Kimmeridgian)

4365-5145m Undifferentiated Jurassic

Remarks: The combined effect of low palynomorph recovery, poor preservation, high frequency of cavings, high abundances of lignitic mud additives and intense red staining have reduced considerably the reliability of the identification of palynological species and the age determinations.

PALYNOLOGICAL ZONATION1600-1640m: Probable Eocene (undifferentiated)

1600-1610m: Wetzeliiella articulata

1630-1640m: Nematosphaeropsis lemniscata
Systematophora ancyrea

1660-1755m: Possible Middle to Late Cretaceous (undifferentiated)

1660-1670m: Cribroperidinium giuseppei
Isabelidinium sp. indet.
Palaeohystrichophora infusorioides

1690-1700m: Chatangiella tripartita
Cicatricosisporites potomacensis
Cyclonephelium distinctum
Oligosphaeridium complex
Spiniferites pseudofurcatus

1720-1730m: Exochosphaeridium striolatum
Ovoidinium verrucosum
Parvisaccites rugosus

1745-1755m: Kraeuselisporites linearis
Nodosisporites babsae
Podocarpidites potomacensis

Remarks: This interval is masked by a mixture of Campanian to Maastrichtian forms such as Chatangella tripartita with Tertiary

cavings such as Spiniferites furcatus and middle Cretaceous forms such as Cicatricosisporites potomacensis, Ovoidinium verrucosum and Nodosisporites babsae.

1775-1825m: Possibly Barremian or older

1775-1785m: Interlobites triangularis
Muderongia simplex (questionable identification)

1805-1815m: Cerebropollenites mesozoicus
Parvisaccites radiatus

1845-2171m: Cerebropollenites macroverrucosus Zone (late Berriasian to early Valanginian)

1845m: (core) Cerebropollenites macroverrucosus
Pseudoceratium pelliferum

1849m: (core) Achomosphaera neptunii
Cedripites canadensis
Corollina torosa
Parvisaccites amplus
Striatella #EF
Surculosphaeridium sp. III, Davey 1983

1855-1865m: Cicatricosisporites #EL

1859m: (core) Callialasporites dampieri
Callialasporites monoalaspurus
Kleithriasphaeridium #EA
Oligosphaeridium asterigerum
Rotverrusporites obscurilaesuratus

1890-1900m: Cassiculosphaeridia magna
Cribrasperidium #EX (questionable identification)

- 1920-1940m: Occisucysta #EX
- 1950-1970m: Oligosphaeridium diluculum
- 1980-2000m: Corollina itunensis
- 2010-2030m: Cymososphaeridium validum
- 2135-2155m: Oligosphaeridium dividuum
- 2165-2175m: Trilobosporites tuberculiformis (questionable
identification)

2171-2415m: Ctenidodinium panneum: Subzone 5B (early Berriasian)

- 2171m: (core) Corollina echinata
Plicatella #EP
Podocarpidites herbtsii
- 2173m: (core) Sentusidinium filiatum
- 2183m: (core) Cicatricosisporites angicanalis
- 2195-2205m: Cerebropollenites macroverrucosus cf.
Phoberocysta neocomica pteridia (questionable
identification)
- 2255-2265m: Pityosporites #EA
- 2315-2325m: Dingodinium cerviculum

2435-2805m: Possibly Ctenidodinium panneum: Subzone 5A (early
Berriasian)

- 2435-2445m: Achomosphaera neptunii
Corollina vignollensis

Lanterna bulgarica (questionable identification)

Systematophora areolata

2465-2475m: Occisucysta evittii

2495-2505m: Corollina torosa (common)

Densoisporites microrugulatus

Klukisporites areolatus

Trilobosporites aornatus

2555-2565m: Callialasporites infrapunctatus (questionable
identification)

Cicatricosisporites abacus

2585-2595m: Cicatricosisporites brevilaeuratus

2615-2625m: Pityosporites dividius

Triangulopsis discoidalis

2645-2655m: Cicatricosisporites #EAP

Pilosporites crassangularis

Pseudoceratium pelliiferum

Trilobosporites granulatus

2705-2715m: Corrundinium #EA

Densoisporites triradiatus

Gonyaulacysta exsanguia

Phoberocysta neocomica pteridia

2735-2745m: Kleithriasphaeridium corrugatum

2765-2775m: Endoscrinium pharos

Ischyosporites amplireticosus (questionable
identification)

2825-2865m: Subtilisphaera paeminosa Zone: Subzone 3C (late
Kimmeridgian)

2825-2835m: Cribroperidinium globatum
Heslertonella pellucida

2855-2865m: Callialasporites infrapunctatus
Phoberocysta neocomica neocomica
Stephanelytron redcliffense (questionable
identification)

Remarks: The top of this subzone may be as high as 2615m if the occurrences of the Pityosporites dividius are in place and not reworked or misidentified Pinus grains from the lignitic mud additive.

2885-2955m: Subtilisphaera paeminosa Zone: Subzone 3B (late
Kimmeridgian)

2885-2895m: Cleistosphaeridium ehrenbergii
Coronatispora valdensis
Gonyaulacysta fastigiata
Leptodinium aceras

2945-2955m: Systematophora fasciculigera

2975-3288m: Subtilisphaera paeminosa Zone: Subzone 3A (middle
Kimmeridgian)

2975-2985m: Amphorula #EA
Amphorula #EE
Hystrichodinium lanceatum
Muderongia sp. A (questionable identification)
Perisseiasphaeridium #EA

- 3005-3015m: Alisporites #EG
Dingodinium jurassicum
Systematophora #EA
- 3035-3045m: Exesipollenites scabratus
Fromea irregulare (questionable identification)
Hystrichosphaerina orbifera
Muderongia sp. A (common)
Sentusidinium cuculliformis
- 3065-3075m: Alisporites thomasii
Hystrichogonyaulax cladophora
Wanaea fimbriata
- 3095-3105m: Escharisphaeridia rudis
- 3155-3165m: Endoscrinium galeritum
- 3185-3195m: Cometodinium spp.
Inaperaturopollenites #EVL
- 3210-3220m: Sentusidinium erythrocomum
- 3240-3210m: Ctenidodinium chondrum (questionable identification)
- 3255-3265m: Apteodinium nuciforme
- 3285-3295m: Occisucysta aculeata
- 3288-3400m: Pilosisporites sp. A Zone: Subzone 2C (middle
Kimmeridgian)**
- 3288m: (core) Breodoxiella #EB
Endoscrinium pharos (common)
Epiplosphaera retispinosum

Imbatodinium attenuatum
Millioudodinium jubaris
Muderongia #EA (abundant)
Sentusidinium cuculliformis (dominant)

3295m: (core) Systematophora ovata

3350-3360m: Corollina chateauvovii
Meiourogoniaulax deflandrei

3410-3775m: Possible Pilosporites sp. A Zone: Subzone 2B (early to middle Kimmeridgian)

3410-3420m: Saxosporites #EB

3440-3450m: Inaperaturopollenites granulatus

3485-3495m: Pareodinia sp. C

3540-3550m: Lanterna sportula

3575-3585m: Ctenidodinium chondrum (questionable presence)

3605-3615m: Cribroperidinium systremmatum

3695-3705m: Meiourogoniaulax callomonii

3795-4345m: Pilosporites sp. A Zone: Subzone 2A (early Kimmeridgian)

3795-3805m: Ctenidodinium chondrum
Ctenidodinium pachydermum

3825-3835m: Meiourogoniaulax dicrypta

- 3855-3865m: Subtilisphaera inaffecta
- 3885-3895m: Amphorula metaelliptica
- 3915-3925m: Saxosporites spp.
- 3975-3785m: Meiourongonyaulax valensia
- 4035-4045m: Cicatricosisporites purbeckensis (questionable
identification, base in cuttings)
Senoniasphaera jurassica
- 4065-4075m: Epiplosphaera reticulospinosa
- 4095-4105m: Muderongia #EG (present)
Sentusidinium rioultii
- 4135.7m: (core) Lowest reliable core data.
Corollina vignollensis (common)
Ctenidodinium chondrum (rare)
Hystiocysta ornata
Tuberositriletes minutus
- 4142.29m: (core) Ctenidodinium chondrum

4365-5145m: undifferentiated Jurassic

Remarks: Only extremely barren or impoverished assemblages occur below this level.

APPENDIX AAlphabetical Listing of Species Shown on Occurrence Chart:Marine Dinoflagellates

Index number	Taxon names		
26	Achomosphaera neptunii	64	Impletosphaeridium spp.
73	Amphorula #EA	8	Isabelidinium sp. indet.
74	Amphorula #EE	32	Kleithriasphaeridium #EA
110	Amphorula metaelliptica	61	Kleithriasphaeridium corrugatum
1	Apectodinium homomorphum	52	Lanterna bulgarica
92	Apteodinium nuciforme	106	Lanterna sportula
34	Areoligera senonensis	71	Leptodinium aceras
88	Breodoxiella #EB	108	Leptodinium spp.
35	Cassiculosphaeridia magna	57	Luxadinium spp.
10	Chatangiella tripartita	109	Meiourugonyaulax callemonii
27	Chlamydothorella spp.	103	Meiourugonyaulax deflandrei
68	Cleistosphaeridium ehrenbergii	112	Meiourugonyaulax dicypta
81	Cometodinium spp.	89	Meiourugonyaulax spp.
58	Corrundinium #EA	114	Meiourugonyaulax valensia
36	Cribroperidinium #EX	98	Millicoudodinium jubaris
82	Cribroperidinium ehrenbergii	99	Muderongia #EA
7	Cribroperidinium giuseppi	116	Muderongia #EG
62	Cribroperidinium globatum	22	Muderongia simplex
104	Cribroperidinium granulatum	76	Muderongia sp. A
115	Cribroperidinium granuligera	5	Nematosphaeropsis lemniscata
51	Cribroperidinium sepimentum	38	Occisucysta #EX
47	Cribroperidinium spp.	74	Occisucysta aculeata
107	Cribroperidinium systemmum	56	Occisucysta evittii
91	Ctenidodinium chondrum	41	Occisucysta spp.
111	Ctenidodinium pachydermum	33	Oligosphaeridium asterigerum
49	Cyclonephelium attadalicum	13	Oligosphaeridium complex
11	Cyclonephelium brevispinum	39	Oligosphaeridium diluculum
20	Cyclonephelium distinctum	42	Oligosphaeridium divinum
40	Cymosphaeridium validum	9	Operculodinium centrocarpum
50	Dingodinium cerviculum	14	Operculodinium wallii
69	Dingodinium jurassicum	65	Osmundacidites major
87	Endoscrinium galeritum	19	Ovoidinium verrucosum
59	Endoscrinium pharos	100	Pareodinia ceratophora
96	Epiplosphaera retipinosum	105	Pareodinia sp. C
33	Escharisphaeridia rudis	77	Perisaeisphaeridium #EA
43	Exochosphaeridium spp.	66	Phoberocysta neocomica neocomica
17	Exochosphaeridium striolatum	45	Phoberocysta neocomica pteridia
78	Fromea irregularis	29	Phthanoperidinium #LG
48	Gardodinium tabulatum cf.	30	Phthanoperidinium alectrolophum
60	Gonyaulacysta exsanguia	31	Phthanoperidinium comatum
70	Gonyaulacysta fastigiata	2	Phthanoperidinium sp. indet.
93	Gonyaulacysta helicoidea	46	Polysphaeridium subtile
84	Gonyaulacysta spp.	23	Pseudoceratium pelliferum
63	Heislertonella pellucida	101	Senoniasphaera jurassica
118	Hystriocysta ornata	21	Senoniasphaera protrusa
75	Hystriochodinium lanceatum	90	Sentusidinium cuculliformis
85	Hystriochogonyaulax cladophora	90	Sentusidinium erythrocomum
79	Hystriochosphaerina orbifera	44	Sentusidinium filiatum
97	Imbatodinium attenuatum	117	Sentusidinium rioultii
12	Impagidinium patulum	95	Sentusidinium spp.
18	Impagidinium sp. indet.	15	Spinidinium spp.
		24	Spiniferites dentatus
		16	Spiniferites pseudofurcatus

APPENDIX A (cont'd)Alphabetical Listing of Species Shown on Occurrence Chart:Marine Dinoflagellates

3	<i>Spiniferites ramosus ramosus</i>
67	<i>Stepheneletyron redcliffense</i>
113	<i>Subtilisphaera inaffecta</i>
26	<i>Gurculosphaeridium</i> sp. III, Davey 1983
6	<i>Systematophora ancyrea</i>
53	<i>Systematophora areolata</i>
72	<i>Systematophora fasciculigera</i>
102	<i>Systematophora ovata</i>
25	<i>Systematophora placacantha</i>
54	<i>Systematophora</i> spp.
55	<i>Tanyosphaeridium isocalamum</i>
37	<i>Trichodinium castaneum</i>
86	<i>Wanaea fimbriata</i>
4	<i>Wetzeliella articulata</i>

APPENDIX A (cont'd)Alphabetical Listing of Species Shown on Occurrence Chart:Pollen and Spores

Index number	Taxon names		
34	Alisporites #EG	24	Gleicheneidites senonicus
47	Alisporites bilateralis	92	Impardecispora spp.
36	Alisporites thomasi	88	Inaperturopollenites #EVL
10	Alnipollenites verus	90	Inaperturopollenites granulatus
42	Araucariacites australis	21	Interlobites triangularis
73	Araucariacites punctatus	81	Ischyosporites amplireticus
48	Baculatisporites comaumensis	64	Klukisporites areolatus
33	Callialasporites dampieri	18	Kraeuselisporites linearis
68	Callialasporites infrapunctatus	76	Laevigatosporites mesozoicus
34	Callialasporites monoalaspurus	3	Laevigatosporites ovatus
58	Callialasporites segmentatus	30	Leiotriletes mecklenburgensis
49	Callialasporites trilobatus	4	Lycopodiumsporites annotinioides
82	Callialasporites turbatus	98	Lycopodiumsporites austroclavitudites
29	Cedripites canadensis	103	megaspore indet.
27	Cerebropollenites macroverrucosus	19	Nodosisporites babsae
57	Cerebropollenites macroverrucosus cf.	5	Osmundacidites claytonites
22	Cerebropollenites mesozoicus	65	Osmundacidites wellmannii
87	Chasmatosporites major	15	Parvisaccites amplius
75	Cicatricosisporites #EAP	25	Parvisaccites rufus
32	Cicatricosisporites #EL	16	Parvisaccites rugosus
69	Cicatricosisporites abacus	17	Perinopollenites elatoides
54	Cicatricosisporites angicanalis	6	Piceapollenites spp.
70	Cicatricosisporites brevilaeuratus	77	Pilosporites crassangularis
55	Cicatricosisporites delicatus	7	Pinuspollenites spp.
40	Cicatricosisporites ludbrookii	60	Pityosporites #EA
62	Cicatricosisporites mohrioides	72	Pityosporites dividius
14	Cicatricosisporites potomacensis	96	Platysaccus megasaccus
99	Cicatricosisporites purbeckensis	52	Plicatella #EP
23	Cicatricosisporites spp.	39	Plicatella tricornitata
26	Clavatipollenites rotundus	44	Podocarpidites epistriatus
101	Concavissimisporites punctatus	93	Podocarpidites granulatus
89	Corollina chateauvillii	53	Podocarpidites herbtsii
50	Corollina echinata	20	Podocarpidites potomacensis
43	Corollina itunensis	8	Quercoidites #LA
28	Corollina torosa	41	Quercoidites #LG
61	Corollina vignollensis	36	Rotverrusporites obsurilaesuratus
83	Coronatispora valdensis	97	Saxosporites spp.
1	Corylus #LA	91	Saxosporites #EB
45	Cyathidites australis	11	Selaginellaites selaginoides
59	Cyathidites minor	104	spore indet.
2	Cyathidites spp.	9	Stereisporites antiquasporites
95	Cycadopites nitidus	31	Striatella #EF
35	Deltoidospora hallii	85	Systematophora #EA
63	Densoisporites microrugulatus	56	Taurocusporites spackmanii
79	Densoisporites triradiatus	12	Taxodiaceapollenites hiatus
38	Distaltriangulisporites maximus	74	Triangulopsis discoidalis
94	Distaltriangulisporites perplexus	66	Trilobosporites aornatus
67	Exesipollenites scabratus	78	Trilobosporites granulatus
51	Exesipollenites tumulus	46	Trilobosporites tuberculiformis
71	Foraminisporia dailyi	102	Triretilobata marylandensis
80	Gleicheneidites minor	13	Tsugaepollenites igniculus
		100	Tuberositritiletes minutus
		37	Vitreisporites pallidus

APPENDIX A (cont'd)Alphabetical Listing of Species Shown on Occurrence Chart:Funal, Algae and Miscellaneous

Index number	Taxon names
2	Cantulodinium #LA
3	foraminiferal liners
4	Michrystidium fragile
5	Pterospermella helios

Reworked Palynomorphs

Index number	Taxon names
3	*Densosporites spp.
1	*Qvoidinium verrucosum
2	*Spinidinium spp.

APPENDIX BExamined Samples: Baccalieu I-78

1600.00 : cuttings	3065.00 : cuttings	4635.00 : cuttings
1630.00 : cuttings	3095.00 : cuttings	4665.00 : cuttings
1660.00 : cuttings	3125.00 : cuttings	4695.00 : cuttings
1690.00 : cuttings	3155.00 : cuttings	4725.00 : cuttings
1720.00 : cuttings	3185.00 : cuttings	4755.00 : cuttings
1745.00 : cuttings	3210.00 : cuttings	4785.00 : cuttings
1775.00 : cuttings	3240.00 : cuttings	4815.00 : cuttings
1805.00 : cuttings	3255.00 : cuttings	4845.00 : cuttings
1835.00 : cuttings	3285.00 : cuttings	4875.00 : cuttings
1845.40 : core	3288.87 : core	4905.00 : cuttings
1849.00 : core	3295.50 : core	4935.00 : cuttings
1855.00 : cuttings	3304.87 : core	4965.00 : cuttings
1859.90 : core	3320.00 : cuttings	4995.00 : cuttings
1890.00 : cuttings	3350.00 : cuttings	5025.00 : cuttings
1920.00 : cuttings	3380.00 : cuttings	5055.00 : cuttings
1950.00 : cuttings	3410.00 : cuttings	5085.00 : cuttings
1980.00 : cuttings	3440.00 : cuttings	5105.00 : cuttings
2010.00 : cuttings	3465.00 : cuttings	5125.00 : cuttings
2040.00 : cuttings	3485.00 : cuttings	
2070.00 : cuttings	3515.00 : cuttings	
2135.00 : cuttings	3540.00 : cuttings	
2165.00 : cuttings	3575.00 : cuttings	
2171.10 : core	3605.00 : cuttings	
2173.87 : core	3635.00 : cuttings	
2183.60 : core	3665.00 : cuttings	
2195.00 : cuttings	3695.00 : cuttings	
2225.00 : cuttings	3725.00 : cuttings	
2255.00 : cuttings	3765.00 : cuttings	
2285.00 : cuttings	3795.00 : cuttings	
2315.00 : cuttings	3825.00 : cuttings	
2345.00 : cuttings	3855.00 : cuttings	
2375.00 : cuttings	3885.00 : cuttings	
2405.00 : cuttings	3915.00 : cuttings	
2435.00 : cuttings	3945.00 : cuttings	
2465.00 : cuttings	3975.00 : cuttings	
2495.00 : cuttings	4005.00 : cuttings	
2525.00 : cuttings	4035.00 : cuttings	
2555.00 : cuttings	4065.00 : cuttings	
2585.00 : cuttings	4095.00 : cuttings	
2615.00 : cuttings	4125.00 : cuttings	
2645.00 : cuttings	4135.70 : core	
2685.00 : cuttings	4142.29 : core	
2705.00 : cuttings	4149.60 : core	
2735.00 : cuttings	4185.00 : cuttings	
2765.00 : cuttings	4275.00 : cuttings	
2795.00 : cuttings	4305.00 : cuttings	
2825.00 : cuttings	4335.00 : cuttings	
2855.00 : cuttings	4365.00 : cuttings	
2885.00 : cuttings	4425.00 : cuttings	
2915.00 : cuttings	4455.00 : cuttings	
2945.00 : cuttings	4485.00 : cuttings	
2975.00 : cuttings	4515.00 : cuttings	
3005.00 : cuttings	4545.00 : cuttings	
3035.00 : cuttings	4575.00 : cuttings	