

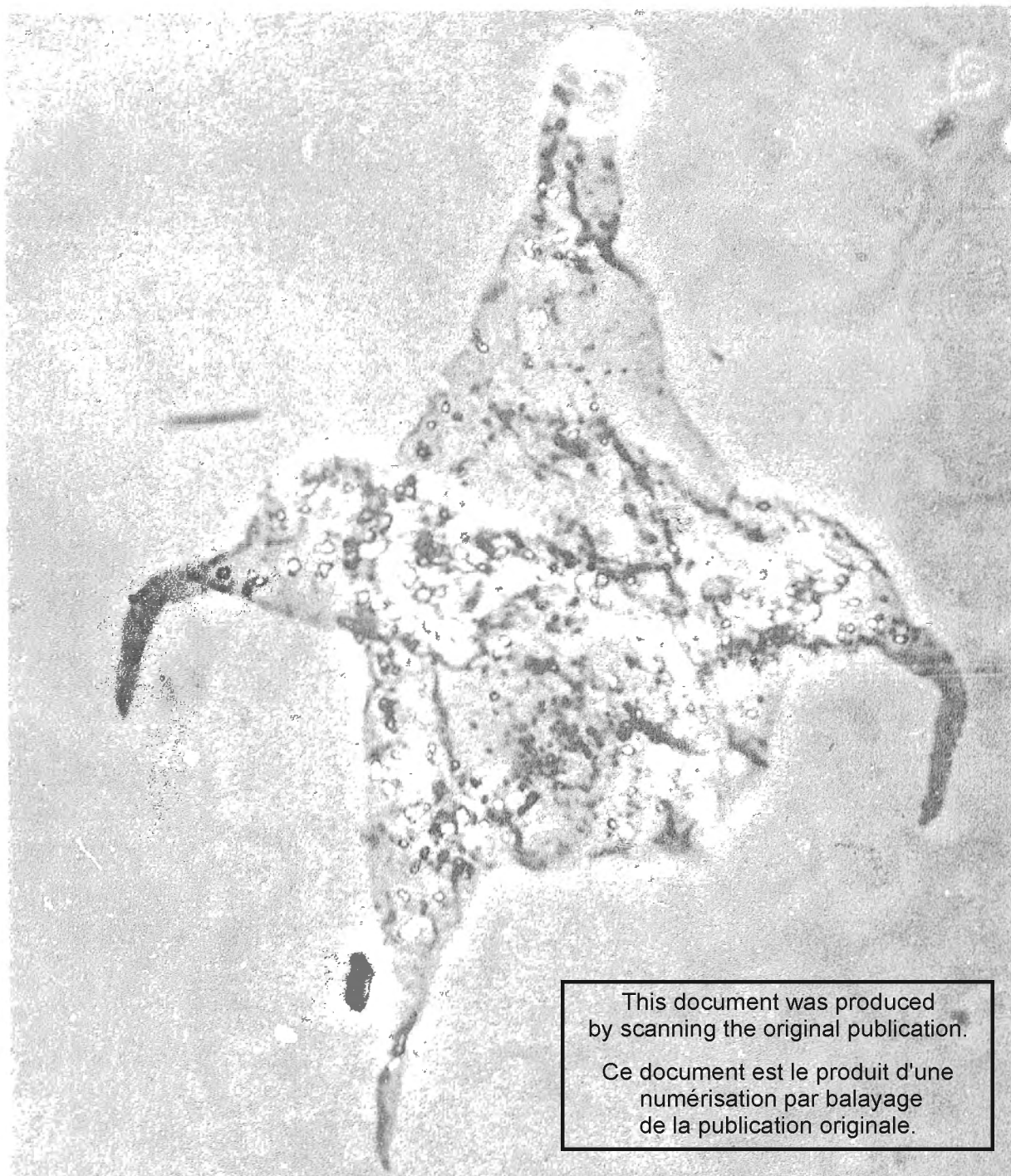
# BIOSTRATIGRAPHIC AND MATURATION

## STUDIES OF THE

## SCOTIAN SHELF

### PART 5

### FINAL REPORT --



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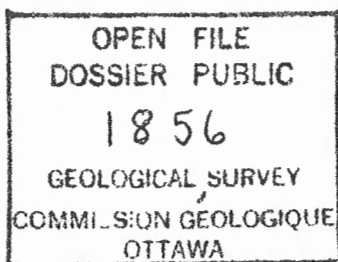
- PART 5 -

- FINAL REPORT -

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# BIOSTRATIGRAPHY AND MATURATION STUDIES OF THE SCOTIAN SHELF

## - PART 5 -

## - FINAL REPORT -

### INTRODUCTION

This is the last in a series of five reports detailing the palynology, micropaleontology, kerogen and fluorescence analysis from four wells on the Scotian shelf. The first chapter will deal with the general stratigraphy of the studied area and where the wells studied fit within the general stratigraphic framework. Chapter two discusses the palynological and micropaleontological results in the four wells. An attempt has been made to apply the GSC micropaleontological zonation to this study, the results of which are presented in this final report.

Appendix A of this report (under separate cover) contains a complete list of samples examined for palynology and the fossils found therein. Species cards, with at least one photograph of each palynomorph used in this study are presented in a large file box labelled Appendix B. A complete list of all photographs taken during this study is supplied as Appendix C. Appendix D contains the completed micropaleontological worksheets (under separate cover), and Appendix E is a list of all micropaleontological taxa which have been stained and mounted for curation. Appendix F is a composite rangechart of palynomorphs used during this study.



## CHAPTER 1

### STRATIGRAPHY

#### INTRODUCTION:

This report presents the results of palynological and micropaleontological analysis of the following four wells: Evangeline H-98, Alma F-67, Chebucto K-90 and Sambro I-29. The locations of the four wells are presented as Figure 1.

The formation boundaries used in the following discussion are those provided by the GSC and were taken directly from either the original well history report or the COGLA schedule of wells. The logs and lithological information were not provided and no attempt has been made emend the formation boundaries.

The palynological zonal names used in this report are those used Williams 1975, Bujak and Williams 1977, Williams and Bujak 1977 and Barss et al. 1979. The zonation is summarized in Figure 2, taken from Barss et al. 1979. The micropaleontological zonation is adapted from Ascoli 1986, with each zone given a numerical designation to facilitate drafting (Table 1). Ascoli's zonation is reproduced here as Figure 3.

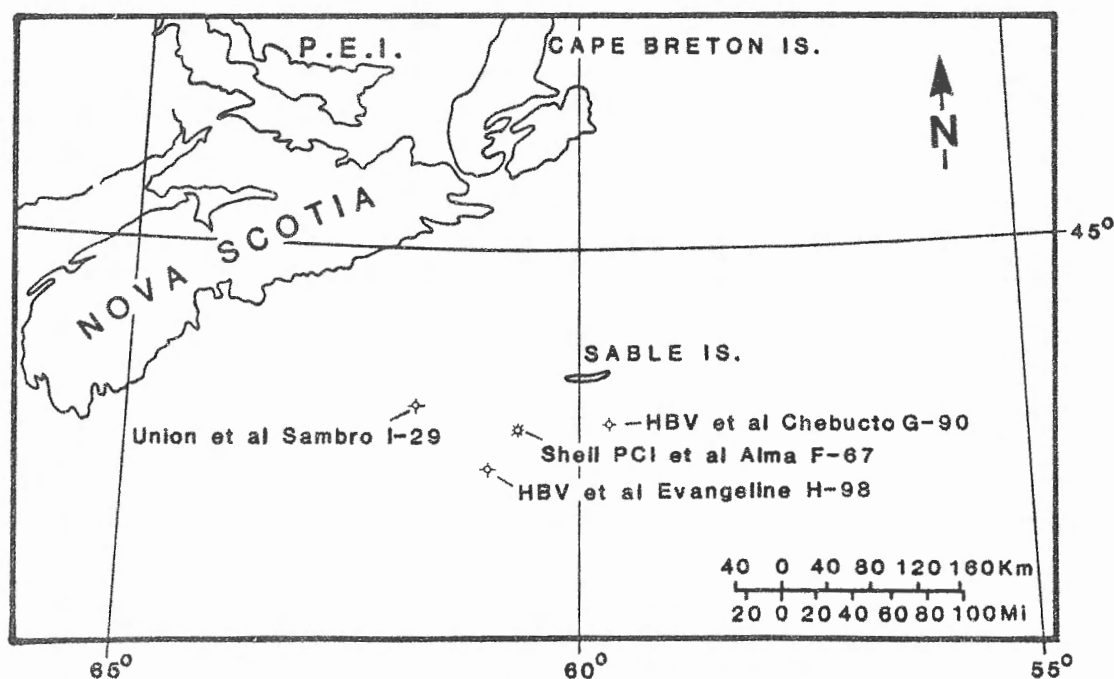


Figure 1. Well locations.

			"AGE"	ZONE OR SUBZONE	
QUAT.	PLEISTOCENE				
	PLIOCENE		Artemisia-Taraxacum Zone	Spiniferites subretus Subzone Heterosphaeridium longanophorum Subzone	
TERTIARY	NEOGENE	MIOCENE	LATE	Cannosphaeropsis sp. A Zone	
			MIDDLE	Pontadinium latirostratum Zone	
			EARLY	Aptedinium sp. B Zone	
		OLIGOCENE	LATE	Chiropteridium dispersum Zone	
			MIDDLE	Deflandrea heterophylla Zone	
			EARLY	Diphyes colligerum Zone	
	PALEOGENE	EOCENE	MIDDLE	Adnatosphaeridium reticulense Zone	
			EARLY	Arealigera senonensis Zone	
			LATE	Ceratiopsis speciosa Zone	
		PALEOCENE	LATE	Palaeoperidinium pyrophorum-Ceratiopsis diebelii Zone	
			CRETACEOUS	LATE	MAASTRICHTIAN
CAMPANIAN	Odontochitina operculata Zone				
SANTONIAN	Cordosphaeridium truncigerum Zone				
CONIACIAN	Oligosphaeridium pulcherrimum Zone				
TURONIAN	Sarcosphaeridium longifurcatum Zone				
CENOMANIAN	Cladospira polypes Zone				
EARLY	ALBIAN	Spinidium cf. S. vestitum-Eucommidites minor Zone			
	APTIAN	Subtilisphaera perlucida-Systematophora schindewolfii Zone			
	BARREMIAN	Dordyx anaphrissa Zone			
	HAUTERIVIAN	Ctenidodinium elegantulum Zone			
	VALANGINIAN	Phnberocysta neocomica Zone			
	BERRIAN	Phnberocysta neocomica Zone			
JURASSIC	LATE	PORTLANDIAN		Ctenidodinium pannum Zone	
		KIMMERIDGIAN		Gonyaulaxysta cladophora Zone	
		OXFORDIAN		Gonyaulaxysta jurassica Zone	
		CALLOVIAN		Valentiniella vermiculata Zone	
		BATHONIAN		Gonyaulaxysta filipirata Zone	
		BAJOCIAN		Mancodinium semitubulatum Zone	
	EARLY	AALENTIAN	Mancodinium semitubulatum Zone		
		TOARCIC	Nannoceratopsis gracilis Zone		
		PLIENSCHACHIAN	Echiniscosporites cf. E. iliacoides Zone		
		SINEMURIAN	Cycadospites subgranulosus Zone		
		HETTANGIAN	Classopollis myeriana Zone		
		PHAETIAN	Classopollis myeriana Zone		
TRIASSIC	LATE	NORIAN			
		CARNIAN			
		LADINIAN			
	MIDDLE	ANISIAN			
		EARLY	SCYTHIAN		
PERMIAN	LATE		TATARIAN		
		KAZANIAN			
		KUNGURIAN			
	EARLY	ARTINSKIAN			
		SAKHARJAN	Vittatina Zone		
		STEPHANIAN	Patonisporites Zone		
CARBONIFEROUS	LATE	WESTPHALIAN	D	Thymospora Zone	
			C	Artisporites Zone	
			B	Vestispora Zone	
			A	Vestispora Zone	
			NAMURIAN	Potonisporites, elongatus, P. radiatus, P. semiradiatus Zone	
			VISEAN		
	EARLY	TOURNAISIAN	Valatisporites, valatus, P. subvalatus, P. protosus Zone		
DEVONIAN	LATE	FAMENNIAN			
		FRASNIAN			
		GIVETIAN			
		EIFELIAN			
	EARLY	EMSIAN			
		STEGHANIAN			
		GEDINIAN			
SILURIAN					
ORDOVICIAN					
CAMBRIAN					

\* informal subzone

\* informal subzone

Barss et al. 1979

FIGURE 2. PALYNOLOGICAL ZONATION

Since cuttings samples predominate, the highest occurrence of species (excluding reworking) in the well is the primary basis for delineation of ages or zones. Each age is generally defined at the highest sample in which the marker species of that age or zone occur. Because of the method of sampling, i.e., a 10m composite sample approximately every 30m, there are 20m gaps between the base of one interval and the top of the next. All ages or zones are taken from the highest occurrence of the marker species for that zone or age to the highest occurrence of the marker species for the next zone or age, down hole.

#### THE EURYDICE FORMATION:

The type section of the Eurydice formation is found between 7850'-9748' (TD) in the Shell Eurydice P-36 well. Palynological dating by Barss et al., 1979 indicates that this section is Rhaetian to Lower Liassic (probably Hettangian). Of the four wells examined in the current study, only Union et al. Sambro I-29 is believed to have penetrated the Eurydice Formation. According to the COGLA schedule of wells the Eurydice Formation was penetrated at 4886' and the well TD within the Eurydice at 10,071'. The upper portion of the formation, between 4886' and 5280' is within the Hauterivian to Aptian undifferentiated interval dated by micropaleontology. Palynological samples were undiagnostic Early Cretaceous between 4040' and 5780'. No samples were provided between 5780' and 9860'. A single sample, composited from the 9860-10070' interval, at the bottom of the well contains two Late Jurassic palynomorphs. These data suggest that the interval referred to as "Eurydice Formation" in the COGLA schedule of wells does not correlate with the type section and another name should be applied to these strata.

#### VERRILL CANYON FORMATION:

The Verrill Canyon Formation is a facies equivalent, not only of the Abenaki and MicMac Formations but also of the Lower Cretaceous Missisauga Formation. Since the shaley facies of all of these formations are lithologically similar, they were grouped together by McIver into one formation. The type section of the Verrill Canyon Formation is in the Shell Oneida O-25 well between 8,281' and 9,461'. According to Barss et al. 1979, the age of the interval includes the very top of the Berriasian-Valanginian undifferentiated, the *C. elegantulum* Zone (Hauterivian, 9430-8890'), the *A. anaphrissa* Zone (Barremian, 8890-8410') and the lower part of the *S. perlucida*-*S. schindewolfii* Zone (Aptian, 8353-7000').

The well history report indicates that the Verrill Canyon Formation was penetrated in Husky-Bow Valley et al. Evangeline H-98 (3890m) and Shell PCI et al Alma F-67 (3157m). In Evangeline the base of the Verrill Canyon, from TD to 4780m is barren of microfossils and the barren interval is overlain by a thick interval (4760-3940m) containing Early Cretaceous fossils which are too long ranging for zonation. The top fifty meters of the formation is within the section dated Early Barremian.

In Alma F-67 the bottom sample at 4935m is within the Verrill Canyon Formation and is Kimmeridgian/Tithonian undifferentiated to 4180m where it is overlain by Tithonian to 4020m. The Jurassic is conformably overlain by a sequence of Valanginian - Berriasian from 4000 to 3510m (*P. neocomica* Zone, 3670-3510m), Hauterivian from 3490-3270m (*C. elegantulum* Zone) and by the earliest part of the Barremian from 3250-2940m (formation top at 3157m).

#### THE MISSISSAUGA FORMATION:

By definition, the Lower Cretaceous Mississauga Formation is dominantly a sandstone sequence occurring as thick, massive sand units in the Central Scotian Shelf Basin region. The type section of the Mississauga Formation updip facies is in the Shell Mississauga H-54 well between 11,606' and 7921'. The *P. neocomica* Zone (Berriasian-Valanginian, 11,533-10,179'), *C. elegantulum* Zone (Hauterivian, 9885-8780') and the *A. anaphrissa* Zone (Barremian, 8720-8048') were defined within the type section by Barss et al. 1979.

The type section of the Mississauga Formation downdip facies is in Shell Cree E-35 between 12,303' and 8473'. Barss et al. 1979, report an almost identical zonation from this facies with the *P. neocomica* Zone (Berriasian-Valanginian) from 12,380' to 10,050', the *C. elegantulum* Zone (Hauterivian) from 9980' to 9480' and the *A. anaphrissa* Zone (Barremian) from 9435' to 8550'. The uppermost seven feet of this facies are within the *S. perlucida* - *S. schindewolfii* Zone which occurs between 8480' and 7530'.

In Chebucto K-90 the Mississauga Fm. is seen from TD to 3424m and contains the Hauterivian *C. elegantulum* Zone between 5234m and 5180m. The remainder of the formation is within the Barremian *A. anaphrissa* Zone.

The Mississauga Formation is present in Alma F-67 between 3157m and 2847m. The Barremian *A. anaphrissa* Zone is present from the base of the formation to 2940m where the Barremian is unconformably overlain by the Aptian *S. schindewolfii* Zone. The formation top is within this zone.

The Mississauga Formation is present between 4886' and 3620' in Sambro I-29. Palynomorphs are not diagnostic within most of

this sequence but the foraminifera date the formation as Hauterivian to Aptian. The top three hundred meters of the formation are dated as Barremian by palynology, but no zonation is given due to the paucity of fossils.

In Evangeline H-98 the Missisauga equivalent Verrill Canyon is present, as discussed above.

#### THE NASKAPI SHALE:

According to McIver, 1972, the Naskapi Shale is a unit approximately 500-600 feet thick, separating the very sandy Missisauga Formation below, from the moderately sandy, silty Logan Canyon Formation above. Depending on its position on the shelf, the Naskapi interval contains variable amounts of sand. The Naskapi shale is thought to be present and well developed in the Naskapi N-30 well, but due to the uncertainty of the correlations and the relationship with the adjacent formations, the type section was chosen in the Shell Cree E-35 well between 8456' and 7886'. The entire type section is within the Aptian *S. perlucida* - *S. schindewolfii* Zone. Jansa and Wade, 1975, reduced the status of the Naskapi Formation to the level of Member, within the Logan Canyon Formation.

The Naskapi Shale is present within the Aptian interval in Alma F-67 (2847-2544m). However, it is within the Barremian in Chebucto K-90 (3424-3318m) and Evangeline H-98 (3890-3388m). In Sambro I-29 all but the upper 121' of the shale are within the Barremian, the top is Aptian.

#### THE LOGAN CANYON FORMATION:

The Logan Canyon Formation is a very thick sequence of alternating sandstones and shales overlying the Naskapi Shale, or, where the Naskapi interval is too sandy to be recognized, the Logan Canyon overlies the massive sands of the Missisauga Formation. The type section of the Logan Canyon Formation is in the Shell Cree E-35 well between 7903' and 4883'. According to Barss et al. 1979, the lower 373' of the formation are within the Aptian *S. perlucida* - *S. schindewolfii* Zone. This is conformably overlain by the Albian *C. cf. C. vestitum* - *E. minor* Zone from 7470' to 5360'. The formation tops within the Cenomanian *K. williamsii* (= *C. polypes*) Zone.

The Logan Canyon Formation is present in Alma F-67 between 2544m and 1509m and has the same age relationships as seen in the type section. Its base is in the Aptian *S. schindewolfii* Zone to 2230m, followed by the Albian *C. cf. vestitum* Zone which occurs between 2210m and 1750m. The formation tops within the Cenomanian *K. williamsii* Zone which ends at 1480m.

In Chebucto G-90 the lowest 18m of the Logan Canyon Formation are in an interval dated as Barremian by foraminifera (undiagnostic by palynology). It is in Aptian sediments to 2670m. The formation tops within the Albian *C. cf. vestitum* Zone at 2026m.

The Logan Canyon is present between 3395m and 2640m in Evangeline H-98, where it begins within the Early Barremian. The Early Barremian is unconformably overlain by the Albian at 3125m within the Logan Canyon, which tops within the Cenomanian interval which extends between 2795m and 1945m.

In Sambro I-29 a short section of Logan Canyon Formation is present between 3361m and 2382m, entirely within the Aptian *S. perlucida* Zone. As the Aptian is unconformably overlain by the Cenomanian in this well, presumably the upper part of the Logan Canyon was eroded or not deposited.

#### THE DAWSON CANYON FORMATION:

Overlying the Logan Canyon Formation are several hundred feet of shales and/or mudstones called the Dawson Canyon Formation. The type section of the Dawson Canyon is in the Shell Mississauga H-54 well between 4315' and 3425'. According to Barss et al. 1979, the formation begins within the Cenomanian *K. williamsii* (= *C. polypes*) Zone, contains all of the Turonian *S. longifurcatum* Zone, the Coniacian *O. pulcherrimum* Zone, and Santonian *P. truncigerum* Zone. The formation tops at 3425', presumably in the Campanian, just below what is defined as the *O. operculata* Zone (3331-3104') and above the *P. truncigerum* Zone (3600-3507').

In Alma F-67 the Dawson Canyon Formation begins at 1509m within the top of the Cenomanian *K. williamsii* (= *C. polypes*) Zone, contains all of the Turonian *S. longifurcatum* and Coniacian *O. pulcherrimum* Zones and tops at 3425 just above the base of the Santonian *P. truncigerum* Zone.

The Dawson Canyon Formation is very thin in Chebucto G-90 due to an unconformity (at approximately 1935m) which accounts for all of the Turonian and Coniacian. The base of the formation is within the top of the Albian *C. cf. vestitum* Zone at 2026m. It contains all of the Cenomanian *K. williamsii* (= *C. polypes*) Zone and tops just below the top of the Santonian *P. truncigerum* Zone at 1907m.

In Evangeline H-98 the Dawson Canyon Formation is missing due to an unconformity resulting from the loss of or nondeposition of Late Cenomanian through Early Campanian sediments.

The Dawson Canyon Formation is not defined in Sambro I-29.

## THE WYANDOT FORMATION:

Perhaps the most distinctive and widely recognized lithologic unit on the Scotian Shelf is the Wyandot Chalk. This formation consists of a chalky carbonate, white to light greenish gray in color and grading both laterally and vertically from pure chalk to marl. The type section was designated by McIver 1972, in the Shell MicMac H-86 well between 2730' and 2440'. According to Jansa and Wade 1975b, the occurrence of chalk or limestone strata interbedded with marls requires an expansion of the original definition of the Wyandot Formation from the uppermost chalk bed described by McIver to a dominately chalky formation with marl and calcareous shale interbeds represented by the interval from 6002' to 4700' in the Mobil Tetco Dauntless D-35 well.

The Shell MicMac H-86 well was not included in Barss et al. 1979, however the original type section was examined by Lentin, 1975 (consultants report). The base of the chalk coincides with the base of the Santonian *P. truncigerum* Zone and has its top near the top of the Campanian *O. operculata* Zone. It is interesting that the expanded definition of the formation, represented by the beds from 6002' to 4700' in Dauntless D-35, does not include any of the Santonian but instead contains both the Campanian *O. operculata* Zone and the Maastrichtian *D. euclaensis* Zone as defined by Barss et al. 1979.

Only twelve meters of Wyandot Formation is defined in Alma F-67 between 1325m and 1313m. The entire interval is within the lower part of the Santonian *P. truncigerum* Zone.

In Chebucto G-90 the Wyandot Formation begins within the lower part of the Campanian *O. operculata* Zone and is truncated by an unconformity at 1768 which accounts for the Maastrichtian.

The Wyandot Formation is indicated between 2014m and 1856m in Evangeline H-98. Based on the palynology, this would place the base of the formation in the Cenomanian with its top within the Campanian. An unconformity accounting for the Turonian, Coniacian and Santonian occurs at about 1935m, in the middle of the Wyandot Formation. This seems highly unlikely. It is reasonable to suggest that the base of the Wyandot rests unconformably on the Dawson Canyon at 2014 and a zone of mixed fossils that occur between 2014m and 1945m accounts for the unconformity being placed too high by palynology.

The Wyandot Formation is not present in Sambro I-29.

## THE BANQUEREAU FORMATION:

The post Wyandot, latest Cretaceous sequence and the entire Tertiary system were designated the Banquereau Formation by

McIver 1972. The type section was chosen from the Mobil Sable Island C-67 well between 4459' and 554'. According to Barss et al. 1979, this interval begins in the base of the Maastrichtian between the Campanian *O. operculata* Zone (4515-4468') and the Maastrichtian *D. euclaensis* Zone (4430-4104'). Above the Maastrichtian a complete sequence of Tertiary sediments is recorded within the formation.

In Alma F-67 the base of the Banquereau Formation is at 1313m within the lower part of the Santonian *P. truncigerum* Zone. The palynological evidence suggests a conformable sequence of Late Cretaceous from this point up to the first sample at 840m. However, the micropaleontological evidence suggests that the Maastrichtian is unconformably overlain by the Eocene at 880m.

The Chebucto G-90 well history report does not mention the Banquereau Formation. However, the Campanian Wyandot Formation is unconformably overlain by a relatively complete section of Tertiary (Paleocene into the Miocene) sediments.

In Evangeline H-90 the base of the Banquereau occurs within the Campanian at 1856m. The Campanian is overlain by the Maastrichtian and Paleocene, which is unconformably overlain by the Oligocene and Miocene.

The Banquereau Formation does not occur in Sambro I-29.





ASCOLI ZONATION					
ZONE NUMBER	PLANKTONIC	CALC. BENTH.	AREN. BENTH.	OSTRACODE	AGE
1		stellicosstata uhligi			Tith.
2		tenuicostata crepidularis			E.Barr.- Haut.
3		ornata-hechti caracolla	kummi-neoco- miensis		Barr./
4		barremiana nodosa	af.washltaensis trochoidea		B.-Haut. Apt.
5	delrioensis cushmani			vanveeni jonesiana	Cenom.
6			af.filiiformis comprimatus		Turon.
7	imbricata renzi	stelligera af.simplex			Coniac.
8	coronata concavata	stel.alveo. multiseptus	americana austinana		Sant.
9	elevata cretacea	exsculpta r.leptodisca		annulospin. crenulata	Camp.
10	arca contusa	pommerana micheliniana		multipora simplex	Maastr.
11	pseudome- nardi				M.Pal.
12	cerroazu- lensis				L.Eoc.
13	opima opima				M.Olig.

TABLE 1. NUMERICAL ASSIGNMENT FOR ASCOLI'S (1986) ZONATION

## Chapter 2

### PALEONTOLOGICAL SUMMARY

#### INTRODUCTION:

The four preceeding reports have segregated the palynological analysis from micropaleontological analysis in accordance with the format requested by the GSC. This summary discusses the differences between the two sets of results. Figure 4 graphically illustrates similarities and differences in age determinations in the wells examined. The micropaleontology was not completed for Evangeline H-98.

#### UNION et al. SAMBRO I-29

Sambro I-29 was analyzed between 1430' and 5980' for micropaleontology and 1430' and 5780' for palynology. In addition, one composite palynological sample was analyzed from the interval 9860-10070'. Palynological and micropaleontological zones were recognized in the well (figures 5 and 6, respectively).

The lower part of the interval analyzed was deposited under marginal marine conditions. This was followed by a period of marine inner neritic sedimentation and then by outer neritic sedimentation in the upper two hundred feet of the interval analyzed.

The sample from 9860'-10070' contained a very sparse Mid to Late Jurassic marine palynoflora. A section from 5780' to 4040' was virtually barren, containing very few palynomorphs which may have been caved. This was followed by a Barremian section, from 3980' to 3485' and by an Aptian section from 3380' to 2360'. An unconformity appears to be present between 2360' and 2300', with Aptian sediments overlain by Cenomanian sediments. Another unconformity, between 2180' and 2120' results in Cenomanian sediments overlain by Coniacian sediments. The top of the Coniacian was identified at 1700' and the interval between 1640' and 1430' could not be dated more closely than Late Cretaceous.

The micropaleontological analysis presents different results. The age of the section up to 5350' is uncertain. Above this level, an uninterrupted sequence of Early and Late Cretaceous age was identified, with sediments of undifferentiated Aptian to Hauterivian age from 5280' to 3640', of Aptian age from

" AGE "				Sambro I-29		Evangeline H-98		Alma F-67		Chebucto K-90	
				P	M	P	M	P	M	P	M
TERTIARY	NEOGENE	PLEISTOCENE									
		PLIOCENE									
		MIOCENE	LATE								
	MIDDLE										
	EARLY										
	PALEOGENE	OLIGOCENE	LATE								
			MIDDLE								
			EARLY								
	EOCENE	LATE									
		MIDDLE									
		EARLY									
	PALEOCENE	LATE									
		EARLY									
CRETACEOUS	LATE	MAASTRICHTIAN									
		CAMPANIAN									
		SANTONIAN									
		CONIACIAN									
		TURONIAN									
		CENOMANIAN									
	EARLY	ALBIAN									
		APTIAN									
		BARREMIAN									
		HAUTERIVIAN									
		VALANGINIAN									
		BERRIASIAN									
		PORTLANDIAN									
LATE	KIMMERIDGIAN										
	OXFORDIAN										
	CALLOVIAN										
MIDDLE	BATHONIAN										
	BAJOCIAN										
	ALENIAN										
EARLY	TOARCIAN										
	PLEINSBACHIAN										
	SINEMURIAN										
	HETTANGIAN										
TRIASSIC	LATE	RHAETIAN									
		NORIAN									
		CARNIAN									
	MIDDLE	LADINIAN									
		ANISIAN									
	EARLY	SCYTHIAN									

Figure 4 Palynological and Micropaleontological ages of sediments in Scotian Shelf wells.

3580' to 3350', Albian age from 3290' to 2630', Cenomanian from 2570' to 2540', Turonian from 2460' to 2360', Cenomanian or Turonian from 2300' to 2030', Coniacian from 2000' to 1700', Santonian from 1640' to 1520' and Campanian from 1460' to 1430'.

The discrepancies between palynological and micropaleontological results may be due at least in part to the extensive reworking of Lower Cretaceous fossils which was noticed in all the wells in this study and also to the presence of large amounts of Tertiary cavings which masked the picture in the upper part of the section studied.

#### **HUSKY BOW VALLEY et al. EVANGELINE H-98**

The Evangeline H-98 well was analyzed palynologically from 995m to 5045m (T.D.). Micropaleontological analysis was not carried out on this well. Figure 7 shows the palynological zonation.

The sediments in this well were deposited entirely under marine conditions. The lower portion of this well was found to be barren up to 4780m. The sediments between 4760m and 3940m could not be dated any more closely than Early Cretaceous undifferentiated due to a paucity of fossils. This was overlain by an Early Barremian section from 3920m to 3145m. An unconformity caused the erosion of most of the Barremian and the Aptian sediments and brought Albian sediments directly above Early Barremian sediments at 3125m. The top of the Albian was recognized at 2815m. The overlying Cenomanian extends from 2795m to 1945m. An unconformity is present between 1945m and 1925m, with the Cenomanian unconformably overlain by the Campanian. The exact level of this unconformity is probably masked by extensive reworking and placed too high by palynological means alone. It should more reasonably be placed at the lithological break at 2014m, as discussed in the Stratigraphy section of this report. The Campanian is represented by 130m of sediments in this well, with its top at 1795m. It is followed by the Maastrichtian, from 1775m to 1580m, and the Paleocene from 1560m to 1520m. The Paleocene is unconformably overlain by the Oligocene, which extends from 1500m to 1315m, and is followed by the Miocene from 1295m to the highest sample analyzed, 995m.

#### **SHELL PCI et al. ALMA F-67**

The Alma F-67 well was analyzed from 840m to 4935m (T.D.). Both palynological and micropaleontological analyses were com

PERIOD	EPOCH	"AGE"	PALYNOMORPH ZONE	DEPTH		FORMATION
				Meters	Feet	
CRETACEOUS	EARLY					
		L. CRET.				
		CONIACIAN	O. pulcherrimum			
		CENOMANIAN	K. williamsii			
		APTIAN	S. perlucida	1000		Logan Canyon
		BARREMIAN				Naskapi Mbr.
		(UNDIAGNOSTIC)				Missisauga
				2000		Eurydice
		NO SAMPLES				
		JURASSIC		3000		
				4000		
				5000		

Figure 5. Palynological Zonation of Sambro I-29.

PERIOD	EPOCH	"AGE"	MICROPALAEO ZONE	DEPTH		FORMATION
				Meters	Feet	
CRETACEOUS	LATE	CAMPANIAN	Zone 9			
		SANTONIAN				
		CONIACIAN	Zone 7			
		CENO. or TURO.				
		TURONIAN	Zone 6			
		CENOMANIAN				Logan Canyon
	EARLY	ALBIAN		1000		Naskapi Mbr.
		APTIAN	Zone 4			Missisauga
		APTIAN - HAUTERIVIAN				Eurydice
		(UNDIAGNOSTIC)				
				2000		
				3000		
				4000		
				5000		

Figure 6. Micropaleontological Zonation of Sambro I-29.

PERIOD	EPOCH	"AGE"	PALYNOMORPH ZONE	DEPTH		FORMATION
				Meters	Feet	
TERTIARY						
		MIocene		1000		
		OLIGOCENE				
CRETACEOUS	LATE	PALEOCENE	<i>P. pyrophorum</i>			
		MAASTRICHTIAN	<i>D. euclaensis</i>			
		CAMPANIAN	<i>O. operculata</i>			Wyandot
		CENOMANIAN	<i>K. williamsii</i>	2000		U. Dawson Canyon
						Petrel Mbr.
	EARLY	ALBIAN	<i>C. cf. vestitum</i>	3000		L. Dawson Canyon
		E. BARREMIAN	<i>A. anaphrissa</i>			U. Logan Canyon
						L. Logan Canyon
		E. CRETACEOUS		4000		Naskapi Mbr.
						"O" Marker
		(BARREN)		5000		Verrill Canyon

Figure 7. Palynological Zonation of Evangeline H-98.



pleted on this well. Figures 8 and 9 show the palynological and micropaleontological zonations for this well.

In the lower portion of the well, from TD up to 4200m, sedimentation took place along an oscillating shoreline, as indicated by alternating littoral and inner neritic environments. Above this level, sedimentation was marine, shifting between inner and outer neritic. A considerable shallowing began at 3250m, with marginal marine sedimentation up to 2880m. An abrupt change of environment, which may indicate an unconformity, occurs between 2880m and 2840m, with outer neritic sediments directly overlying marginal marine sediments. After this brief episode of outer neritic sedimentation, a shallowing took place and sedimentation oscillated between marginal marine and inner neritic up to 1410m. Above this level, a gradual deepening brought variable inner to outer neritic conditions up to the last sample analyzed at 840m.

Palynological analysis reports a barren section from 4935m to 4140m. This is followed by an undiagnostic section up to 3690m. The section between 3670m and 3510m was dated as Valanginian-Berriasian, overlain by the Hauterivian between 3490m and 3270m. The Early-Mid Barremian was represented between 3250m and 2940m. This was followed unconformably by the Aptian, from 2920m to 2230m, the Albian from 2210m to 1750m, the Cenomanian from 1730m to 1480m, the Turonian from 1450m to 1410m, the Coniacian from 1390m to 1350m, the Santonian from 1330m to 960m, the Campanian from 940m to 890m, and Late Cretaceous undifferentiated from 880m upwards.

The micropaleontological analysis revealed the presence of Late Jurassic sediments in the lower portion of the well, up to 4020m, corresponding mostly with the portion of the well which was barren of palynomorphs. There is good agreement between the two disciplines over the Valanginian-Berriasian and the Hauterivian tops. The Barremian age suggested by micropaleontology for the interval 2535m - 2840m does not agree with the palynological age of Aptian for this interval. Late Barremian palynological species were not present in the well, possibly due to environmental causes or an unconformity. There is agreement regarding the top of the Aptian. There is no agreement as to the thickness of the Albian, but it should be noted that the evidence for placing the top of the Albian at 1750m by palynology is very strong, whereas the micropaleontological top at 2230m is based on very few species. There is good agreement for the positions of the Cenomanian, Turonian and Coniacian tops, after which the two disciplines diverge considerably in the results. Micropaleontological evidence indicates Maastrichtian and Eocene sediments, which were not recognized by palynology.

PERIOD	EPOCH	"AGE"	PALYNOMORPH ZONE	DEPTH		FORMATION
				Meters	Feet	
CRETACEOUS	LATE					
		L. CRET. CAMPANIAN	<i>O. operculata</i>	1000-		
		SANTONIAN	<i>C. truncigerum</i>			Banquereau
		CONIACIAN TURONIAN	<i>O. pulcherrimum</i> <i>S. longifurcatum</i>			Wyandot Dawson Canyon
	EARLY	CENOMANIAN	<i>K. williamsii</i>	2000-		
		ALBIAN	<i>C. cf. vestitum</i>			Logan Canyon
		APTIAN	<i>S. schindewolfii</i>			Naskapi Mbr.
		E.-M. BARREMIAN	<i>A. anaphrissa</i>	3000-		Missisauga
		HAUTERIVIAN	<i>C. elegantulum</i>			Verrill Canyon
		VALANGINIAN - BERRAISIAN	<i>P. neocomica</i>			
		(Undiagnostic)		4000-		
				5000-		

Figure 8. Palynological Zonation of Alma F-67.

PERIOD	EPOCH	"AGE"	MICROPALAEO ZONE	DEPTH		FORMATION
				Meters	Feet	
TERTIARY		M. EOCENE				
CRETACEOUS	LATE	MAASTRICHTIAN	Zone 10	1000		Banquereau
		CAMPANIAN	Zone 9			
		SANTONIAN	Zone 8			Wyandot Dawson Canyon
		CONIACIAN	Zone 7			
		TURONIAN	Zone 6			
	EARLY	CENOMANIAN	Zone 5			Logan Canyon
		ALBIAN		2000		
		APTIAN	Zone 4			
		BARREMIAN	Zone 3			Naskapi Mbr.
		(UNDIAGNOSTIC)		3000		Missisauga
		HAUTERIVIAN	Zone 2			Verrill Canyon
		VALANGINIAN - BERRIASIAN				
JURASSIC		TITHONIAN	Zone 1	4000		
		KIMMERIDGIAN		5000		

Figure 9. Micropaleontological Zonation  
of Alma F-67.

The Chebucto G-90 well was analyzed from 415m to 5234m (T. D.) for micropaleontology and from 440m to 5234m for palynology. Figures 10 and 11 show the palynological and micropaleontological zonations for this well.

The environment of deposition was essentially non marine up to 3320m, except for an interval at 4300m to 4500m in which a slight marine influence was intermittently indicated. The marine influence was again obvious in an interval between 2500m and 3200m. Above this interval, and all the way to 2000m, the environment of deposition was considered non marine by micropaleontology, however, the interval does contain dinoflagellates. From 2000m to about 600m the depositional environment is marine, outer neritic between 1800m and 1200m. From 600m to 415m the environment is shallow inner neritic to marginal marine.

The lowermost portion of this well, below 5200m contains a single specimen of *Occisucysta* sp. A, Bujak & Williams '78 which suggests a tentative Hauterivian age. According to palynology this is overlain by a very thick Barremian sequence up to 3430m, however, micropaleontology locates the top of the Barremian at 3320m. This may be more reliable than palynology, as above the palynologic top is an interval, up to 2670m, which does not contain sufficient palynomorphs to be dated. This is followed by a palynologic Albian sequence which is 645m thick, up to 2005m. The lower part of the Albian interval corresponds to a non marine Aptian interval according to micropaleontology. It is possible that environmental causes prevented Aptian fossils from being deposited, and that Albian fossils caved into barren sediments, thus accounting for the absence of the palynological Aptian record. Micropaleontology does recognize a thick Aptian, from 2275m to 3300m; and an Albian section up to 2035m. Thus there is quite good agreement between the two disciplines as to the top of the Albian. The Albian is conformably overlain by a thin (40m) *Cenomanian* interval, from 1925m to 1945m based on palynology. The micropaleontological interpretation indicates that it is 1900m thick, up to 1915m. According to both disciplines, an unconformity separates the *Cenomanian* from the *Santonian*, resulting in the absence of Turonian and Coniacian record. The location of the unconformity is at approximately 1935m by palynology and 1910m by micropaleontology. The top of the Campanian is given at 1765m by micropaleontology and at 1795m by palynology. Both disciplines identify an unconformity, with the *Paleocene* resting on the Campanian.

The Tertiary sequence is considered to be continuous by both disciplines. However, the stage boundaries by the two disciplines do not always agree in detail. The top of the *Paleocene* is at 1650m by both disciplines. The subdivisions of the *Eocene* do not agree. Palynology usually recognizes an early *Oligocene*

PERIOD	EPOCH	"AGE"	PALYNOMORPH ZONE	DEPTH		FORMATION
				Meters	Feet	
TERTIARY						
		MIOCENE				
		OLIGOCENE				
		E. OLIGOCENE		1000		
		M. EOCENE	A. reticulense			
		E. EOCENE	A. senonensis S. Gocht			
		L. PALEOCENE				Eocene Chalk
		E. PALEOCENE	P. pyrophorum			
		CAMPANIAN	O. operculata			Wyandot
		SANTONIAN	P. truncigerum			
CRETACEOUS	EARLY	CENOMANIAN	K. williamsii	2000		Dawson Canyon
						U. Logan Canyon
		ALBIAN	C. cf. vestitum			Sable Mbr.
		(UNDIAGNOSTIC)		3000		L. Logan Canyon
						Naskapi Mbr.
		BARREMIAN	A. anaphrissa	4000		Missisauga
				5000		
		HAUTERIVIAN ?	C. elegantulum			

Figure 10. Palynological Zonation of Chebucto G-90.

PERIOD	EPOCH	"AGE"	MICROPALAEO ZONE	DEPTH		FORMATION
				Meters	Feet	
TERTIARY		OLIGOCENE	Zone 13			
		U. EOCENE	Zone 12	1000		
		M. EOCENE				
		L. EOCENE				Eocene Chalk
		PALEOCENE	Zone 11			
		CAMPANIAN	Zone 9			Wyandot
		SANTONIAN	Zone 8			
		CENOMANIAN	Zone 5	2000		Dawson Canyon
		ALBIAN				U. Logan Canyon
						Sable Mbr.
CRETACEOUS	LATE	APTIAN	Zone 4	3000		L. Logan Canyon
						Naskapi Mbr.
		BARREMIAN	Zone 3	4000		
						Missisauga
		BARREMIAN - HAUTERIVIAN	Zone 2	5000		
CRETACEOUS	EARLY					

Figure 11. Micropaleontological Zonation of Chebucto G-90.

interval which is dated as late Eocene by micropaleontology. This difference is probably semantic, in view of this fact, the two disciplines are in fairly good agreement as to the top of the Eocene. A thin Miocene section was recognized by palynology but not by micropaleontology.

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APPENDIX A

PALYNOLOGY WORKSHEETS

- Under separate cover -

APPENDIX B

PALYNOLOGY SPECIES CARDS

- Under separate cover -

APPENDIX C

PHOTOGRAPHIC RECORDS

Alma F-67

#	Name	Well #	Depth	Coordinate
J-1	Rugubivesiculites rugosus	D239	0870-0880m	196.2 x 16.5
J-2	Spiniferites ramosus	D239	0870-0880m	104.8 x 12.5
J-3	Aptea anaphresia	D239	0870-0880m	116.2 x 8.2
J-4	Alterbidinium sp. #TA	D239	0870-0880m	117.0 x 5.0
J-5	Cribroperidinium ventriosum	D239	0870-0880m	105.0 x 3.9
J-6	Kleithriasphaeridium loffrense	D239	0870-0880m	115.8 x 3.5
J-7	Rouseisporites cf. sp. 1 Bebout	D239	0900-0910m	99.0 x 20.9
J-8	Cicatricosisporites frucatus	D239	0900-0910m	115.8 x 19.0
J-9	Chatengiella victoriensis	D239	0900-0910m	108.0 x 13.5
J-10	Hystriosphæridium tubiferum	D239	0900-0910m	100.0 x 12.5
J-11	Osmundacidites comaumensis	D239	0900-0910m	104.5 x 11.8
J-12	Leptodinium cf. delicatum	D239	0900-0910m	108.0 x 3.1
J-13	Florentinia sp. TA	D239	0900-0910m	100.8 x 2.8
J-14	Isabelidinium bakeri	D239	0930-0940m	107.9 x 24.8
J-15	Tanyosphaeridium xanthiopyxides	D239	0930-0940m	108.0 x 14.6
J-16	Cribroperidinium edwardsii	D239	0930-0940m	103.9 x 11.4

J-17	<i>Areoligera senonensis</i>	D239	0960-0970m	109.0 x 18.0
J-18	<i>Inundatisporis vermiculisporites</i>	D239	0960-0970m	114.2 x 16.3
J-19	<i>Svalbardella</i> (?) #TA	D239	0960-0970m	111.0 x 15.5
J-20	<i>Oligosphaeridium pulcherrimum</i>	D239	0960-0970m	110.0 x 3.8
J-21	<i>Trithyrodinium suspectum</i>	D239	0990-1000m	113.0 x 10.6
J-22	<i>Deltoidospora australis</i>	D239	0990-1000m	102.2 x 4.0
J-23	<i>Aquilapollenites</i> sp.	D239	1020-1030m	109.9 x 10.5
J-24	<i>Stereisporites antiquasporites</i>	D239	1020-1030m	111.2 x 6.2
J-25	<i>Achomosphaera ramulifera</i>	D239	1080-1090m	101.8 x 17.0
J-26	<i>Hystrichosphaeridium stellatum</i>	D239	1080-1090m	108.0 x 4.6
J-27	<i>Hystrichosphaeridium bowerbankii</i>	D239	1080-1090m	112.5 x 13.0
J-28	<i>Ceratiopsis speciosa</i>	D239	1110-1120m	107.0 x 17.0
J-29	<i>Ceratiopsis diebelii</i>	D239	1110-1120m	110.0 x 13.0
J-30	<i>Glaphyrocysta semitectum</i>	D239	0840-0850m	107.2 x 5.0
J-31	<i>Spinidinium clavum</i>	D239	1140-1150m	104.0 x 20.5
J-32	<i>Glaphyrocysta exhuberans</i>	D239	1140-1150m	111.0 x 15.2
J-33	<i>Spiniferites septatus</i>	D239	1140-1150m	100.2 x 4.2
J-34	<i>Coronifera oceanica</i>	D239	1200-1210m	109.0 x 18.0
J-35	<i>Ceratiopsis</i> sp. #TA	D239	1200-1210m	107.2 x 11.0
J-36	<i>Cyclonephelium</i> cf <i>distinctum</i>	D239	1230-1240m	116.0 x 14.9
J-37	<i>Alterbidinium acutulum</i>	D239	1230-1240m	104.2 x 13.0
J-38	<i>Alberbidinium</i> sp. #TA	D239	1260-1270m	111.0 x 17.6

J-39	Isabelidinium cretaceum	D239	1260-1270m	113.1 x 14.8
J-40	Spongodinium delitiense	D239	1260-1270m	100.2 x 7.0
J-41	Spiniferites cingulatus	D239	1260-1270m	116.0 x 6.0
J-42	Radialisporis radiatus	D239	1290-1300m	99.5 x 17.5
J-43	Diconodinium arcticum	D239	1290-1300m	116.0 x 12.2
J-44	Dinogymnium lanceolatum	D239	1290-1300m	113.2 x 10.0
J-45	Dinogymnium sp. #TA	D239	1290-1300m	116.1 x 9.0
J-46	Palaeohystrichophora infusoriodes	D239	1320-1330m	109.2 x 20.5
J-47	Isabelidinium belfastense	D239	1350-1360m	103.2 x 17.5
J-48	Appendicisporites tricornitus	D239	1350-1360m	117.2 x 16.0
J-49	Cyclonephelium hexalobosum	D239	1350-1360m	99.3 x 11.3
J-50	Cyclonephelim vannophorm	D239	1350-1316m	116.2 x 7.5
J-51	Cicatricosisporites potomacensis	D239	1350-1360m	104.8 x 3.5
J-52	Xenascus ceratioides	D239	1380-1390m	115.8 x 13.9
J-53	Surculosphaeridium longifurcatum	D239	1410-1420m	99.9 x 19.0
J-54	Cicatricosisporites ornatus	D239	1410-1420m	100.0 x 16.6
J-55	Odontochitina costata	D239	1410-1420m	111.8 x 15.5
J-56	Cicatricosisporites hughesii	D239	1410-1420m	109.0 x 13.1
J-57	Erlansonisporites cf. sparassis	D239	1410-1420m	111.6 x 8.0
J-58	Kiokansium polypes	D239	1440-1450m	101.0 x 17.2

J-59	<i>Cicatricosisporites hallei</i>	D239	1440-1450m	104.0 x 16.5
J-60	<i>Cleistosphaeridium multispinosum</i>	D239	1440-1450m	114.8 x 16.2
J-61	<i>Callaiosphaeridium asymmetricum</i>	D239	1440-1450m	105.2 x 12.0
J-62	<i>Surculosphaeridium longifurcatum</i>	D239	1410-1420m	99.9 x 19.0
J-63	<i>Microdinium cf setosum</i>	D239	1440-1450m	105.0 x 6.2
J-64	<i>Liliacidites dividuus</i>	D239	1440-1450m	85.8 x 6.0
J-65	<i>Hystrichodinium voigtii</i>	D239	1480-1490m	101.0 x 19.5
J-66	<i>Oligosphaeridium pulcherrimum</i>	D239	1480-1490m	108.5 x 18.8
J-69	<i>Cyclonephelim distinctum</i>	D239	1480-1490m	109.5 x 14.8
J-70	<i>Florentinia cooksonii</i>	D239	1480-1490m	99.6 x 13.1
J-71	<i>Xenascus plotei</i>	D239	1480-1490m	101.2 x 12.9
J-72	<i>Kiokansium williamsii</i>	D239	1480-1419m	108.2 x 15.2
J-73	<i>Oligosphaeridium complex</i>	D239	1480-1490m	109.0 x 12.0
J-74	<i>Subtilisphaera rotundata</i>	D239	1480-1490m	105.2 x 12.0
J-75	<i>Rugubivesiculites reugosus</i>	D239	1480-1490m	110.5 x 9.5
J-76	<i>Ischyosporites disjunctus</i>	D239	1510-1520m	101.0 x 18.1
J-77	<i>Xenascus sp. #TA</i>	D239	1510-1520m	102.0 x 16.5
J-78	<i>Sestrosporites pseudoalveolatus</i>	D239	1510-1520m	102.5 x 10.0
J-79	<i>Cleistrosphaeridium sp. #TA</i>	D239	1510-1520m	98.5 x 9.8
J-80	<i>Palaeohystrichophora infusoriodes</i>	D239	1510-1520m	113.0 x 3.2

J-81	<i>Psilatricolpites</i> <i>parvulus</i>	D239	1510-1520m	77.2 x 6.0
J-82	<i>Oligosphaeridium totum</i>	D239	1540-1550m	100.0 x 15.5
J-83	<i>Cleistosphaeridium</i> <i>polypes s.s.</i>	D239	1540-1550m	98.0 x 11.6
J-84	<i>Carringia</i> sp. #TA	D239	1540-1550m	113.4 x 9.8
J-85	<i>Palaeoperidinium</i> sp. #TA	D239	1540-1550m	103.1 x 7.9
J-86	<i>Chlamydonophorella</i> <i>nyei</i>	D239	1540-1550m	109.0 x 7.0
J-87	<i>Concavisporites</i> <i>jurienensis</i>	D239	1540-1550m	78.9 x 10.9
J-88	<i>Florentinia verdieri</i>	D239	1570-1580m	107.5 x 16.0
J-89	<i>Spiniferites</i> <i>tripus</i>	D239	1570-1580m	107.0 x 12.0
J-90	<i>Taxodiaceapollenites</i> <i>hiatus</i>	D239	1570-1580m	87.0 x 10.5
J-91	<i>Lycopodiacidites</i> <i>canaliculatus</i>	D239	1570-1580m	90.0 x 10.0
J-92	<i>Pterodinium</i> #TA	D239	1630-1640m	109.0 x 15.0
J-93	<i>Aptea</i> #TA	D239	1630-1640m	103.0 x 15.0
J-94	<i>Balmeisporites</i> <i>glenelgensis</i>	D239	1630-1640m	112.9 x 12.0
J-95	<i>Appendicisporites</i> <i>matesovae</i>	D239	1630-1640m	104.2 x 11.0
J-96	<i>Gleicheniidites</i> <i>senonicus</i>	D239	1630-1640m	97.8 x 10.0
J-97	<i>Caligodinium aceras</i>	D239	1660-1670m	102.9 x 11.8
J-98	<i>Tenua hystrix</i>	D239	1690-1700m	111.3 x 18.5
J-100	<i>Nyktericysta</i> sp. #TA	D239	1690-1700m	99.2 x 15.0
J-101	<i>Nyktericysta pentagona</i>	D239	1690-1700m	113.0 x 15.0
J-102	<i>Stellatopollis</i> <i>largissimus</i>	D239	1690-1700m	103.0 x 13.0
J-103	<i>Florentinia ferox</i>	D239	1690-1700m	100.0 x 12.8

J-104	<i>Aequitriradites spinulosus</i>	D239	1690-1700m	107.5 x 11.5
J-105	<i>Florentinia</i> sp. #TA	D239	1690-1700m	103.6 x 10.0
J-106	<i>Odontochitina rhakodes</i>	D239	1690-1700m	113.0 x 9.8
J-107	<i>Oligosphaeridium</i> sp. #TA	D239	1690-1700m	113.8 x 9.2
J-108	<i>C. polypes</i>	D239	1690-1700m	18.8 x 8.0
J-109	<i>Oligosphaeridium irregulare</i>	D239	1690-1700m	108.2 x 5.0
J-110	<i>Aptea eisenackii</i>	D239	1720-1730m	116.0 x 15.0
J-111	<i>Appendicisporites tricornitus</i>	D239	1720-1730m	112.0 x 13.0
J-112	<i>Appendicisporites problematicus</i>	D239	1750-1760m	114.0 x 15.0
J-113	<i>Odontochitina Operculata</i>	D239	1750-1716m	110.0 x 14.0
J-114	<i>Apteodinium granulatum</i>	D239	1750-1760m	103.1 x 12.8
J-115	<i>Nyktericysta arachnion</i>	D239	1750-1760m	101.8 x 9.6
J-116	<i>Chichaouodinium vestitum</i>	D239	1750-1760m	101.0 x 8.8
J-117	<i>Odontochitina ancala</i>	D239	1750-1760m	106.0 x 4.0
J-118	<i>Micrhystridium recurvatum</i>	D239	1780-1790m	101.5 x 19.5
J-119	<i>Trilobosporites trioreticulosus</i>	D239	1780-1790m	97.8 x 16.5
J-120	<i>Lycopodiumsporites marginatus</i>	D239	1780-1790m	112.0 x 12.0
J-121	<i>Cyathidites minor</i>	D239	1780-1790m	100.2 x 12.0
J-122	<i>Ornamentifera echinata</i>	D239	1780-1790m	104.0 x 10.9
J-123	<i>Litosphaeridium siphonophorum</i>	D239	1810-1820m	117.0 x 12.0
J-124	<i>Chichaouodinium vestitum</i>	D239	1810-1820m	117.2 x 12.5



J-125	<i>Cymososphaeridium</i> validum	D239	1840-1850m	102.5 x 13.0
J-126	<i>Diconodinium</i> sp. #TA	D239	1840-1850m	105.0 x 13.1
J-127	<i>C. polypes</i>	D239	1840-1850m	10.0 x 6.0
J-128	<i>Concavissimisporites</i> minor	D239	1870-1880m	106.5 x 11.0
J-129	<i>Stereisporites</i> antiquasporites	D239	1870-1880m	105.0 x 9.5
J-130	<i>Tehamadinium sousensis</i>	D239	1900-1910m	114.4 x 13.0
J-131	<i>Callaiosphaeridium</i> asymmetricum	D239	1440-1450m	105.2 x 12.0
J-132	<i>Gleicheniidites</i> sp. #TA	D239	1930-1940m	100.4 x 5.4
J-133	<i>Fromea amphora</i>	D239	1960-1970m	108.0 x 20.0
J-134	<i>Cribroperidinium</i> cf edwardsii	D239	1960-1970m	113.0 x 20.2
J-135	<i>Kiokansium</i> sp. #TA	D239	1960-1970m	104.5 x 4.5
J-136	<i>Eucommiidites</i> minor	D239	1960-1970m	102.3 x 13.0
J-137	<i>Lophotriletes babsae</i>	D239	1990-2000m	109.2 x 12.5
J-138	<i>Cicatricososporites</i> auritus	D239	1990-2000m	115.2 x 10.2
J-139	<i>Foveotriletes</i> subtriangularis	D239	1990-2000m	107.8 x 7.5
J-140	<i>Todisporites</i> minor	P239	1990-2000m	100.0 x 4.0
J-141	<i>Fromea</i> sp. #TA	D239	2020-2030m	116.0 x 16.2
J-142	<i>Oligosphaeridium</i> sp. #TA	D239	2020-2030m	107.5 x 13.0
J-143	<i>Cyclonephelium hughesii</i>	D239	2050-2060m	116.0 x 13.5
J-144	<i>Cyclonephelium chabaca</i>	D239	2050-2060m	117.5 x 11.0
J-145	<i>Cicatricosisporites</i> ornatus	D239	2050-2060m	102.5 x 8.8

J-146	<i>Distaltriangulisporites</i> sp. #TA	D239	2050-2060m	117.5 x 2.0
J-147	<i>Isabelidinium</i> <i>belfastense</i>	D239	2080-2090m	108.5 x 12.0
J-148	<i>Pilosisorites</i> <i>trichopapillosus</i>	D239	2110-2120m	114.5 x 13.8
J-149	<i>Cribooperidinium</i> cf <i>exilicristatum</i>	D239	2110-2120m	104.8 x 10.0
J-150	<i>Trilobosporites</i> <i>marylandensis</i>	D239	2170-2180m	99.5 x 16.0
J-151	<i>Classopollis classoides</i>	D239	2170-2180m	115.5 x 13.5
J-152	<i>Hystrichosphaerina</i> <i>schindewolfii</i>	D239	2230-2240m	103.0 x 17.0
J-153	<i>Scriiniodium</i> cf <i>campanula</i>	D239	2230-2240m	102.0 x 7.0
J-154	<i>Vesperopsis</i> sp. #TB	D239	2230-2240m	107.5 x 5.2
J-155	<i>Palaeoperidinium</i> sp. #TB	D239	2230-2240m	102.2 x 10.2
J-156	<i>Canningia</i> sp. #TB	D239	2290-2300m	105.8 x 10.0
J-157	<i>Florentinia cooksonii</i>	D239	2290-2300m	107.0 x 5.0
J-158	<i>Trilobosporites</i> <i>marylandensis</i>	D239	2320-2330m	112.5 x 12.0
J-159	<i>Aptea polymorpha</i>	D239	2350-2360m	112.2 x 3.5
J-160	<i>Hystrichosphaeridium</i> <i>asterigerum</i>	D239	2380-2390m	104.0 x 13.8
J-161	<i>Antulsporites</i> <i>distaverrucosus</i>	D239	2380-2390m	110.0 x 13.0
J-162	<i>Distaltriangulisporites</i> <i>perplexus</i>	D239	2380-2390m	110.0 x 9.5
J-163	<i>Surculosphaeridium</i> sp. #TA	D239	2410-2420m	117.2 x 11.8
J-164	<i>Emmetrocyta</i> sp. #TA	D239	2410-2420m	112.0 x 5.8
J-165	<i>Veryhachium</i> sp.	D239	2440-2450m	110.0 x 16.5

J-166	<i>Subtilisphaera</i> <i>perlucida</i>	D239	2440-2450m	102.5 x 16.5
J-167	<i>Systematophora</i> sp. #TA	D239	2440-2450m	102.8 x 11.8
J-168	<i>Surculosphaeridium</i> sp. #TB	D239	2440-2450m	105.6 x 10.2
J-169	<i>Micrhystridium</i> sp. #TA	D239	2500-2510m	
J-170	<i>Pareodinia</i> <i>ceratophora</i>	D239	2565-2575m	109.0 x 6.8
J-171	<i>Scriniodium</i> <i>galeritum</i>	D239	2565-2575m	99.2 x 3.0
J-172	<i>Sestrosporites</i> <i>pseudoalveolatus</i>	D239	2590-2600m	100.0 x 11.0
J-173	<i>Sentusidinium</i> sp. #TA	D239	2680-2690m	117.0 x 8.0
J-174	<i>Cerbia</i> <i>tabulata</i>	D239	2680-2690m	118.2 x 6.0
J-175	<i>Callaiosphaeridium</i> sp. #TA	D239	2680-2690m	111.2 x 5.0
J-176	<i>Vesperopsis</i> <i>mayi</i>	D239	2770-2780m	98.2 x 12.0
J-177	<i>Canningia</i> sp. #TC	D239	2770-2780m	101.0 x 12.0
J-178	<i>Surculo.</i> <i>longifurcatum</i>	D299	2800-2810m	105.2 x 13.0
J-179	<i>Callialasporites</i> <i>trilobatus</i>	D239	2440-2950m	114.5 x 12.0
J-180	<i>Muderongia</i> <i>simplex</i>	D239	2940-2950m	108.2 x 8.0
J-181	<i>Subtilisphaera</i> <i>terrula</i>	D239	2970-2980m	103.5 x 9.5
J-182	<i>Cribroperidinium</i> <i>auctificum</i>	D239	3000-3010m	108.5 x 15.0
J-183	<i>Polycingulatisporites</i> <i>clavus</i>	D239	3000-3010m	110.0 x 15.0
J-184	<i>Dingodiniam</i> <i>cerviculum</i>	D239	3000-3010m	110.8 x 4.2
J-186	<i>Oligosphaeridium</i> <i>poculum</i>	D239	3030-3040m	116.5 x 3.0
J-187	<i>Taleisphaera</i> <i>hydra</i>	D239	3240-3250m	116.0 x 13.5
J-188	<i>Muderongia</i> <i>tomaszowensis</i>	D239	3270-3280m	101.5 x 9.5

J-188	<i>Taleisphaera hydra</i>	D239	3240-3250m	106.0 x 1.0
J-189	<i>Muderongia tomaszowensis</i>	D239	3270-3280m	101.5 x 9.5
J-190	<i>Occisusysta ? balios</i>	D239	3270-3280m	108.0 x 10.0
J-191	<i>Muderongia tomaszowensis</i>	D239	3270-3280m	105.0 x 10.0
J-192	<i>Oligosphaeridium poriforatum</i>	D239	3300-3310m	99.5 x 5.0
J-193	<i>Gonyaulacysta kostromiensis</i>	D239	3270-3280m	106.5 x 15.0
J-194	<i>Pyxidinoopsis sp. #TA</i>	D239	3360-3370m	99.2 x 12.5
J-195	<i>Batialadinium jaegeri</i>	D239	3360-3370m	109.0 x 4.0
J-196	<i>Batioladinium longicornutum</i>	D239	3360-3370m	104.4 x 3.8
J-197	<i>Stiphrosphaeridium arbustum</i>	D239	3420-3430m	100.9 x 16.6
J-198	<i>Cribroperidinium exilicristatum</i>	D239	3450-3460m	109.2 x 14.0
J-199	<i>Spiniferites lenzii</i>	D239	3450-3460m	119.5 x 11.1
J-200	<i>Scriniodinium sp. #TA</i>	D239	3450-3460m	108.8 x 2.8

J-201	<i>Philosisporites</i> cf <i>grandis</i>	D239	3480-3490m	113.0 x 10.2
J-202	<i>Klukisporites</i> <i>scaberis</i>	D239	3480-3490m	109.5 x 9.0
J-203	<i>Florentinia</i> sp. #TA	D239	3510-3520m	111.0 x 16.8
J-204	<i>Phoberocysta</i> <i>neocomica</i>	D239	3510-3550m	99.5 x 3.8
J-205	<i>Achomosphaera verdieri</i>	D239	3510-3520m	110.2 x 3.0
J-206	<i>Pareodinia</i> sp. #TA	D239	3540-3550m	110.2 x 17.2
J-208	<i>Hystrichosphaerina</i> sp. #TA	D239	3540-3550m	105.5 x 5.5
J-209	<i>Cicatricosisporites</i> #TA	D239	3570-3580m	106.0 x 15.0
J-210	<i>Cyclonephelim</i> sp. #TA	D239	3570-3580m	102.0 x 14.0
J-211	<i>Sentusidinium</i> sp. #TB	D239	3570-3580m	111.0 x 7.5
J-212	<i>Sentusidinium</i> sp. #TB	D239	3570-3580m	115.0 x 5.0
J-213	<i>Stiphrosphaeridium</i> <i>dictyophorum</i>	D239 D239	3570-3580m 3630-3640m	115.0 x 5.0 106.8 x 17.5
J-214	<i>Stiphrosphaeridium</i> <i>dictyophorum</i>	D239	3630-3640m	106.8 x 17.5
J-215	<i>Apteodinium</i> sp. #TA	D239	3630-3640m	114.0 x 5.0
J-216	<i>Cribroperidinium</i> cf <i>confossum</i>	D239	3660-3670m	107.2 x 18.0
J-217	<i>Meiourogoniaulax</i> sp. #TA	D239	3690-3700m	102.2 x 7.0
J-218	<i>Phoberocysta</i> sp. #TA	D239	3690-3700m	113.0 x 4.9
J-219	<i>Pyxidinoopsis</i> sp. #TA	D239	3360-3370m	99.2 x 12.5
J-220	<i>Batioladinium</i> <i>micropodum</i>	D239	3900-3910m	111.3 x 16.5
J-221	<i>Sentusidinium rioultii</i>	D239	3900-3910m	103.8 x 7.9
J-222	<i>Cribroperidinium</i> sp. #TA	D239	3990-4000m	107.2 x 6.0

J-223	Muderongia testudinaria	D239	4020-4030m	107.0 x (CAVED)	7.0
J-224	Systematophora sp. #TA	D239	4110-4120m	109.0 x (CAVED)	6.1
J-225	Dinogymnium acuminatum	D239	840-850m	110.0 x	17.0
J-226	Pentadinium taeniagerum	D239	840-850m	102.8 x	11.5
J-228	Tricolporopollenites sp. #TA	D239	840-850m	112.0 x	5.8
J-229	Phelodinium sp. #TA	D239	870-880m	103.5 x	4.8
J-230	Achomosphaera vamulifera	D239	900-910m	109.9 x	11.0
J-231	Palambages sp.	D239	900-910m	88.9 x	3.2
J-232	Cordosphaeridium cantharellum	D239	930-940m	102.5 x	3.2
J-233	Phelodinium magnificum	D239	930-940m	103.0 x	3.2
J-234	Stiphrosphaeridium sp. #TA	D239	2740-2750m	113.1 x	11.0
J-235	Coronifera alberti	D239	3360-3370m	106.2 x	14.8

## Sambro I-29

#	Name	Well #	Depth	Coordinate
S-350	Chatangiella spectabilis	D129	1430-1460'	42.0 x 110.0
S-351	Operculodinium sp. #TD	D129	1430-1460'	44.9 x 104.7
S-353	Kallosphaeridium capulatum	D129	1610-1640'	40.0 x 91.2
S-354	Sentusidinium sp. #TD	D129	1610-1640'	37.3 x 94.7
S-355	Areoligera sp. #TB	D129	1610-1640'	37.4 x 94.2
S-356	Phelodinium sp. #TA	D129	1610-1640'	34.6 x 94.5
S-357	Impagidinium pallidum	D129	1610-1620'	49.1 x 97.8
S-358	Batiacasphaera sp. #TA	D129	1610-1640'	44.0 x 99.6
S-359	Batiacasphaera sphaerica	D129	1610-1640'	40.5 x 103.6
S-360	Kallosphaeridium biornatum	D129	1610-1640'	39.0 x 102.8
S-361	Batiacasphaera sp. #TB	D129	1610-1640'	32.9 x 102.7
S-362	Odontochitina cf. imparilis	D129	1610-1640'	33.2 x 98.3
S-368	Ceratiopsis cf. granulostriata	D129	1610-1640'	38.9 x 106.2
S-369	Canningia sp. #TF	D129	1700-1730'	40.6 x 92.6
S-370	Alterbidium minor	D129	1700-1730'	30.7 x 93.6
S-371	Chatangiella victoriensis	D129	1700-1730'	33.3 x 99.7
S-372	Cyclonephelium clathromarginatus	D129	1700-1730'	42.0 x 101.3

S-373	Chichaouadinium sp. #TA	D129	1700-1730'	32.8 x 107.6
S-374	Trithyrodinium evittii	D129	1790-1820'	41.0 x 94.4
S-375	Homotryblium abbreviatum	D129	1790-1820'	33.0 x 94.0
S-376	Renidinium cg. sp. #TA	D129	1790-1820'	35.3 x 108.0
S-377	Florentinia ferox	D129	1850-1880'	39.5 x 104.0
S-378	Hemicystodinium sp. #TA	D129	1850-1880'	38.5 x 106.6
S-379	Canningia sp. #TG	D129	2030-2060'	31.2 x 98.0
S-380	Cannosphaeropsis sp. #TC	D129	2030-2060'	33.2 x 102.3
S-381	Kallosphaeridium sp. #TB	D129	2090-2120'	39.0 x 96.5
S-382	Canningia reticulata	D129	2090-2120'	43.7 x 96.8
S-383	Cribroperidinium sp. s. WB/75	D129	2090-2120'	40.5 x 103.7
S-384	Stiphrosphaeridium arbustum	D129	2180-2210'	46.2 x 106.4
S-385	Dinopterygium cladoides	D129	2270-2300'	42.3 x 94.7
S-386	Alterbidium sp. #TA	D129	2270-2300'	34.4 x 100.4
S-388	Leptodinium sp. #TC	D129	2450-2480'	35.3 x 94.2
S-387	Trithyrodinium sp. #TC	D129	2270-2300'	41.0 x 106.5
S-389	Ctenidodinium sp. #TA	D129	2450-2480'	46.1 x 96.8
S-390	Appendicisporites sp. #TG	D129	2810-2840'	33.1 x 93.5
S-391	Alterbidium acutulum	D129	2810-2840'	28.2 x 101.4
S-392	Stephodinium coronatum	D129	2810-2840'	28.5 x 107.2
S-393	Florentina sp. #TC	D129	2990-3020'	40.5 x 98.4



S-394	<i>Trilobosporites</i> cf. <i>bernissartensis</i>	D129	3080-3110'	31.4 x 108.4
S-395	<i>Odontochitina</i> sp. #TB	D129	2368-swc	38.2 x 93.1
S-396	<i>Vesperopsis nebulosa</i>	D129	2368'	47.4 x 102.7
S-397	<i>Acanthaulax</i> cf. <i>aculeata</i>	D129	2645'	45.6 x 92.5
S-398	<i>Pseudoceratium</i> <i>retusum</i>	D129	2645'	48.0 x 97.6
S-399	<i>Kleithriasphaeridium</i> <i>loffrense</i>	D129	2645'	47.0 x 105.0
S-400	<i>Coronifera oceanica</i>	D129	2645'	42.0 x 107.6
S-401	<i>Systematophora silyba</i>	D129	3485'	49.1 x 92.4
S-402	<i>Gonyaulacysta diutina</i>	D129	3485'	41.0 x 93.8
S-403	<i>Apteodinium grande</i>	D129	3485'	41.1 x 110.5
S-404	<i>Muderongia</i> sp. #TA	D129	3515'	41.6 x 91.0
S-405	<i>Nyktericysta vitrea</i>	D129	3515'	37.4 x 91.1
S-406	<i>Ephedripites</i> sp. #TA	D129	3515'	40.0 x 93.0
S-407	<i>Vitreisporites</i> <i>pallidus</i>	D129	3515'	46.2 x 93.4
S-408	<i>Afropollis</i> sp. #TA	D129	3535'	44.8 x 95.6
S-409	<i>Muderongia</i> sp. #TB	D129	3515'	47.7 x 100.0
S-410	<i>Odontochitina</i> <i>imparilis</i>	D129	3600'	48.8 x 99.7
S-411	<i>Odontochitina</i> <i>athabaskensis</i>	D129	3600'	48.0 x 102.0
S-412	<i>Meiourogoniaulax</i> <i>stoveri</i>	D129	3640-3681'	45.1 x 99.0
S-413	<i>Laciniadinium</i> sp. #TA	D129	4650-4680'	39.3 x 98.8
S-414	<i>Apteodinium granulatum</i>	D129	5150-5180'	31.9 x 108.8
S-415	<i>Mendicodinium</i> <i>groenlandicum</i>	D129	9860-10070'	42.4 x 112.3

S-416	Senoniasphaera jurassica	D129	9860-10070'	34.5 x 110.9
S-417	Cleistosphaeridium sp. #TC	D129	5250-5280'	36.9 x 98.5

Evangeline H-98

#	Name	Well #	Depth	Coordinate
J-236	Leptodinium maculatum	D251	995-1005m	103.0 x 20.0
J-237	Deflandrea sp. #TA	D251	995-1005m	104.2 x 19.0
J-238	Spiniferites sp. A W&B/75	D251	995-1005m	108.0 x 18.9
J-239	Thalassiphora delicata	D251	995-1005m	105.0 x 18.5
J-240	Tectatodinium sp. #TA	D251	995-1005m	105.9 x 15.8
J-241	Trinovantodinium sp. #TA	D251	995-1005m	109.0 x 15.5
J-242	Reticulatosphaera stellata	D251	995-1005m	111.5 x 13.5
J-243	Cannosphaeropsis sp. #TA	D251	995-1005m	119.1 x 13.3
J-244	Sumatradinium sp. #TA	D251	995-1005m	103.2 x 11.5
J-245	Tricolporopollenites sp. #TE	D251	995-1005m	107.5 x 10.0
J-246	Lejeunecysta fallax	D251	995-1005m	110.0 x 10.0
J-247	Impagidinium patulum	D251	995-1005m	104.8 x 1.0
J-248	Achomosphaera #TC	D251	1025-1035m	99.8 x 17.8
J-249	Selenopemphix sp. A Powell 1986	D251	1025-1035m	116.2 x 13.8
J-250	Tuberculodinium vancampoae	D251	1025-1035m	110.8 x 8.0
J-251	Nematosphaeropsis lemniscata	D251	1025-1035m	110.2 x 5.0

J-252	Triporate sp. #TA	D251	1055-1065m	112.0 x 16.5
J-253	Wetzeliella articulata	D251	1055-1065m	108.5 x 15.0
J-254	Choanopollenites sp. #TA	D251	1055-1065m	112.2 x 6.2
J-255	Apectodinium homomorphum	D251	1085-1095m	110.8 x 11.9
J-256	Spiniferites granulatus	D251	1085-1095m	102.0 x 15.0
J-257	Sumatradinium #TD	D251	1085-1095m	99.5 x 14.0
J-258	Cyclopsiella vieta	D251	1085-1095m	101.2 x 6.5
J-259	Achomosphaera #TD	D251	1105-1115m	103.8 x 19.5
J-260	Impagidinium sp. C W&K/86	D251	1105-1115m	110.0 x 16.0
J-261	Nematosphaeropsis sp. #TA	D251	1105-1115m	114.8 x 10.0
J-262	Peridinioid indet.	D251	1105-1115m	110.0 x 9.5
J-263	Nematosphaeropsis sp. #TA	D251	1105-1115m	114.8 x 10.0
J-264	Sumatradinium sp. #TB	D251	1105-1115m	115.0 x 5.0
J-265	Tricolporopollenites sp. #TF	D251	1105-1115m	112.0 x 2.9
J-266	Achomosphaera sp. #TE	D251	1135-1145m	106.0 x 1.0
J-267	Impagidinium sp. #FA	D251	1135-1145m	110.0 x 3.5
J-268	Kallosphaeridium cf. capulatum	D251	1165-1175m	112.0 x 12.2
J-269	Hystriosphaeopsis quasicribrata	D251	1165-1175m	103.1 x 11.0
J-270	Batiacasphaera cf. micropapillatum	D252	1165-1175m	103.0 x 7.0
J-271	Adnatosphaeridium reticulensis	D251	1165-1175m	105.0 x 4.0
J-272	Kallosphaeridium cf. biornatum	D251	1165-1175m	6.5 x 1.0

J-273	Achoa naera sp. #TE	D251	1135-1145m	10.6 x 1.0
J-274	Polysphaeridium pseudocolligerum	D251	1175-1205m	10.6 x 19.0
J-275	Batiacasphaera sp. #TA	D251	1195-1205m	11.6 x 17.0
J-276	Sumatradinium sp. #TC	D251	1195-1205m	102.5 x 7.5
J-277	Impagidinium paradoxum	D251	1195-1205m	107.0 x 3.5
J-278	Bitectatodinium sp. #TA	D251	1195-1205m	105.8 x 3.0
J-279	Hystriochosphaeropsis ovum	D251	1125-1235m	110.0 x 16.0
J-280	Mendicodinium sp. #TA	D251	1225-1235m	117.5 x 14.0
J-281	Mendicodinium sp. #TA	D251	1225-1235m	102.0 x 8.2
J-282	Palaeocystodinium sp. #TA	D251	1255-1265m	111.5 x 19.5
J-283	Cordosphaeridium sp. #TC	D251	1255-1265m	112.0 x 17.5
J-284	Trinovantodinium sp. #TB	D251	1255-1265m	117.2 x 17.8
J-285	Cannosphaeropsis utinensis	D251	1255-1265m	112.3 x 16.5
J-286	Tuberculodinium sp. #TA	D251	1255-1265m	110.8 x 16.0
J-287	Heteraulacacysta campanula	D251	1255-1265m	112.2 x 15.0
J-288	Lejeunecysta lata	D251	1255-1265m	104.5 x 14.0
J-289	Impagidinium sp. #TB	D251	1255-1265m	112.0 x 13.0
J-290	Sumatradinium sp. #TE	D251	1255-1265m	112.5 x 11.8
J-291	Apectodinium quinquelatum	D251	1255-1265m	109.5 x 11.0
J-292	Lejeunecysta cf. lata	D251	1255-1265m	99.1 x 10.1
J-293	Spiniferites sp. #TA	D251	1255-1265m	104.0 x 3.1
J-294	Peridinoid sp. #TB	D251	1285-1295m	118.0 x 15.8
J-295	Selenopemphix sp. #TA	D251	1285-1295m	106.0 x 14.2

J-296	<i>Selenopemphix</i> sp. #TA	D251	1285-1295m	106.0 x 14.2
J-297	<i>Pentadinium laticinctum</i>	D251	1285-1295m	111.5 x 9.5
J-298	<i>Selenopemphex</i> <i>nephroides</i>	D251	1285-1295m	115.0 x 6.5
J-299	<i>Sumatradinium</i> sp. #TF	D251	1315-1325m	106.0 x 14.0
J-300	<i>Operculodinium</i> sp. #TA	D251	1315-1325m	105.1 x 10.0
J-301	<i>Areoligera</i> sp. #TA	D251	1345-1355m	106.8 x 17.5
J-302	<i>Impagidinium</i> cf. <i>aquaeductum</i>	D251	1345-1355m	114.1 x 10.0
J-303	<i>Paleocystodinium</i> sp. #TB	D251	1375-1385m	18.2 x 17.0
J-304	<i>Apteodinium</i> sp. #TA	D251	1400-1410m	107.8 x 16.0
J-305	<i>Sumatradinium</i> sp. #TG	D251	1400-1410m	108.2 x 15.2
J-306	<i>Spiniferites</i> cf. <i>pseudofurcatus</i>	D251	1400-1410m	101.2 x 15.0
J-307	<i>Hystriehokolpoma</i> <i>cinctum</i>	D251	1400-1410m	98.0 x 14.5
J-308	<i>Thalassiphora delicata</i> ss. W&B/75	D251	1400-1410m	113.0 x 11.0
J-309	<i>Thalassiphora delicata</i> ss. W&B/75	D251	1400-1410m	15.5 x 7.0
J-310	<i>Lejeunecysta communis</i>	D251	1430-1440m	117.2 x 16.0
J-311	<i>Hystriehosphaeridium</i> sp. #TA	D251	1430-1440m	101.0 x 5.1
J-312	<i>Distatodinium</i> <i>craterum</i>	D251	1460-1470m	111.0 x 19.0
J-313	<i>Rhombodinium draco</i>	D251	1490-1500m	17.0 x 15.5
J-314	<i>Chiropteridium</i> <i>lobospinosum</i>	D251	1490-1500m	115.5 x 15.5
J-315	<i>Pathanoperidinium</i> cf. <i>comatum</i>	D251	1490-1500m	106.5 x 15.1
J-316	<i>Membranophoridium</i> sp. #TB	D251	1490-1500m	116.5 x 10.0

J-317	Hystrichokolpoma rigaudiae	D251	1490-1500m	110.5 x 6.0
J-318	Hystrichokolpoma salacia	D251	1520-1530m	114.9 x 19.5
J-319	Lingulodinium machaerophorum	D251	1520-1530m	100.1 x 16.5
J-320	Lanternosphaeridium cf. vectense	D251	1520-1530m	114.0 x 16.0
J-321	Apectodinium cf. summisum	D251	1520-1530m	115.0 x 15.0
J-322	Impleetosphaeridium sp. #TA	D251	1520-1530m	98.8 x 15.0
J-323	Diphyes colligerum	D251	1520-1530m	98.2 x 15.0
J-324	Glaphyrocysta laciniiformis	D251	1520-1530m	103.5 x 13.0
J-325	Chiropteridium sp. #TA	D251	1520-1530m	106.2 x 12.0
J-326	Homotriblium pallidum	D251	1520-1530m	111.0 x 8.0
J-327	Adnatosphaeridium sp. #TA	D251	1520-1530m	108.2 x 8.1
J-328	Glaphrocysta exhuberans	D251	1520-1530m	104.8 x 7.5
J-329	Cannosphaeropsis #TB	D251	1520-1530m	108.1 x 7.0
J-330	Spiniferites membranacea	D251	1520-1530m	111.0 x 5.8
J-331	Adnato. reticulense	D251	1520-1530m	116.8 x 2.2
J-332	Ceratiopsis pannucea	D251	1520-1530m	117.0 x 1.5
J-333	Apectodinium sp. #TA	D251	1550-1560m	103.8 x 17.5
J-334	Hystrichokolpoma unispinium	D251	1550-1560m	102.1 x 17.5
J-335	Glaphyrocysta ordinatum	D251	1550-1560m	105.0 x 15.0
J-336	Amphorosphaeridium multispinosum	D251	1550-1560m	110.0 x 13.8
J-337	Alisocyta cp. circumtabulata	D251	1550-1560m	100.2 x 13.0

J-338	<i>Apectodinium</i> <i>paniculatum</i>	D251	1550-1560m	108.1 x 13.0
J-339	<i>Tanyosphaeridium</i> <i>xanthiopyxides</i>	D251	1550-1560m	113.5 x 10.0
J-340	<i>Areoligera</i> sp. #TB	D251	1550-1560m	119.2 x 7.1
J-341	<i>Cribroperidinium</i> sp. #TB	D251	1550-1560m	110.5 x 4.0
J-342	<i>Isabelidinium</i> <i>acuminatum</i>	D251	1580-1590m	108.5 x 15.0
J-343	Gen. et sp. indet.	D251	1580-1590m	106.0 x 15.0
J-344	<i>Phthanoperidinium</i> cf. <i>multispinum</i>	D251	1580-1590m	106.2 x 11.5
J-345	<i>Dinogymnium</i> sp. #TA	D251	1580-1590m	103.8 x 8.0
J-346	<i>Ceratiopsis</i> <i>striata</i>	D251	1615-1625m	103.0 x 14.5
J-347	<i>Ceratiopsis</i> <i>danica</i>	D251	1615-1625m	13.0 x 10.0
J-348	<i>Williamsidinium</i> sp. #TA	D251	1645-1655m	12.8 x 20.0
J-349	<i>Palaeocystodinium</i> sp. #TC	D251	1645-1655m	102.0 x 17.0
J-350	<i>Chatangiella</i> <i>granulifera</i>	D251	1675-1685m	100.2 x 8.5
J-391	<i>Chatangiella</i> sp. #TA	D251	1705-1715m	104.2 x 17.0
J-391a	<i>Dinogymnium</i> <i>undulosum</i>	D251	1705-1715m	113.6 x 17.8
J-392	<i>Alterbidinium</i> sp. #TA	D251	1705-1715m	115.5 x 14.5
J-394	<i>Ceratiopsis</i> <i>diebelii</i>	D251	1735-1745m	112.3 x 14.0
J-395	<i>Chatangiella</i> <i>granulata</i>	D251	1735-1745m	103.8 x 2.8
J-396	<i>Isabelidinium</i> <i>cooksoniae</i>	D251	1765-1775m	111.2 x 15.1
J-397	<i>Isabelidinium</i> <i>korojensis</i>	D251	1765-1775m	108.0 x 12.0
J-398	<i>Isabelidinium</i> cf. <i>cretaceum</i>	D251	1765-1775m	113.5 x 10.0
J-399	Dinoflagellate indet. 1	D251	1765-1775m	104.5 x 10.0



J-400	Dinoflagellate indet 2	D251	1795-1805m	111.2 x 19.2
J-401	Isabelidinium glabrum	D251	1795-1805m	119.0 x 14.0
J-402	Ceratiopsis diebelii	D251	1795-1805m	99.5 x 12.5
J-403	Fromea fragilis	D251	1795-1805m	102.5 x 12.0
J-404	Dinogymnium enclaense	D251	1825-1835m	109.5 x 17.1
J-405	Dinogymnium pustulicostatum	D251	1825-1835m	116.2 x 11.5
J-406	Odontochitina costata	D251	1885-1895m	113.5 x 6.0
J-407	Xenascus gochtii	D251	1885-1895m	102.9 x 1.0
J-408	Dinogymnium albertii	D251	1945-1955m	118.4 x 16.2
J-409	Pervosphaeridium truncigerum	D251	1945-1955m	100.5 x 14.5
J-410	Hystriochidinium cg. #TA	D251	1945-1955m	114.4 x 14.0
J-411	Xiphophoridium alatum	D251	1945-1955m	109.0 x 9.0
J-412	Spinidinium cf echinoideum	D251	1945-1955m	119.0 x 17.0
J-413	Florentinia resex	D251	1975-1985m	111.2 x 12.9
J-414	Heterosphaeridium difficile	D251	1975-1985m	119.0 x 9.2
J-415	Appendicisporites cristatus	D251	2005-2015m	117.5 x 11.5
J-416	Kleithriasphaeridium corrugatum	D251	2005-2015m	118.0 x 7.5
J-417	Cyclonephelium hughesii	D251	2065-2075m	116.0 x 14.8
J-418	Dinogymnium acuminatum	D251	2095-2105m	117.5 x 11.0
J-419	Lycopodiacidites casperatus	D251	2095-2105m	103.0 x 9.5
J-420	Subtilisphaera pontis-mariae	D251	3175-3185m	105.5 x 8.0
J-421	Afropollis sp. #TB	D251	3205-3215m	111.5 x 10.0
J-422	Lagenorhytis cg. #TA	D251	3295-3305m	109.0 x 11.0

J-424	Sentusidinium cf. rioultii	D251	3370-3380m	108.2 x 15.0
J-425	Cyclonephelium paucispinum	D251	3370-3380m	117.0 x 11.2
J-426	Ascodinium scabrosum	D251	3400-3410m	105.0 x 19.0
J-427	Heterosphaeridium sp. #TA	D251	3490-3500m	112.0 x 19.0
J-428	Oligosphaeridium albertense	D251	3520-3530m	101.0 x 16.2
J-429	Pterodinium cg. sp. #TA	D251	3790-3800m	110.0 x 10.0
J-430	Oligosphaeridium porosum	D251	3850-3860m	111.5 x 12.6
S-234	Cribroperidinium sp. #CC	D251	2275-2285m	32.6 x 112.3
S-418	Canningia sp. #TG	D251	2185-2195m	44.2 x 92.2
S-419	Apteodinium sp. #TC	D251	2215-2225m	45.2 x 92.2
S-420	Exochosphaeridium pseudohystrichodinium	D251	2245-2255m	33.5 x 92.1
S-422	Heterosphaeridium sp. #TB	D251	2335-2345m	34.9 x 92.3
S-423	Scriniodinium campanula	D251	2395-2405m	39.6 x 109.3
S-424	Distaltriangulisporites	D251	2455-2465m	41.1 x 97.4
S-426	Wallodinium luna	D251	2545-2555m	39.0 x 94.0
S-427	?Oligosphaeridium sp. #TC	D251	2545-2585m	30.1 x 92.8

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#	Name	Well #	Depth	Coordinate
S-1	Spiniferites sp. #TA WB/75	D242	500-510m	34.0 x 110.3
S-2	Homotryblium tenuispinosum	D242	540-550m	39.3 x 94.1
S-3	Operculodinium placitum	D242	540-550m	31.1 x 97.4
S-4	Operculodinium israelianum s. WB/75	D242	540-550m	37.5 x 100.4
S-5	Tuberculodinium sp. WB/75	D242	540-550m	34.0 x 103.8
S-6	Achomosphaera ramulifera	D242	500-510m	28.7 x 93.1
S-7	Glaphyrocysta sp. B WB/75	D242	500-510m	35.6 x 95.7
S-8	Canningia sp. #TA	D242	500-510m	39.6 x 95.1
S-9	Operculodinium centrocarpum	D242	500-510m	35.7 x 98.0
S-10	Wetzeliiella sp. #TA	D242	500-510m	43.1 x 98.3
S-11	Glaphyrocysta ordinata	D242	500-510m	31.7 x 99.8
S-12	Tsugapollenites igniculus	D242	500-510m	41.9 x 106.3
S-13	Lentiniella extensa	D242	500-510m	31.8 x 112.5
S-14	Lingulodinium sp. B WB/75	D242	470-480m	49.9 x 92.2
S-15	Pentadinium laticinctum	D242	470-480m	35.8 x 97.0
S-16	Osmundacidites sp.	D242	470-480m	34.6 x 108.3

S-17	<i>Tuberculodinium</i> <i>vancampoe</i>	D242	440-450m	44.4 x 109.5
S-18	<i>Spiniferites ramosus</i>	D242	570-580m	36.2 x 91.4
S-19	<i>Spiniferites speciosus</i>	D242	690-700m	34.2 x 97.3
S-20	<i>Spiniferites</i> <i>pseudofurcatus</i>	D242	570-580m	42.4 x 101.0
S-21	<i>Tricolporopollenites</i> sp. #TA	D242	600-610m	45.8 x 94.4
S-22	<i>Camerozonosporites</i> sp. #TA	D242	600-610m	29.9 x 92.1
S-23	? <i>Platicarya</i> sp. #TA	D242	810-820m	47.5 x 92.0
S-24	? <i>Corylus</i> sp. #TA	D242	780-790m	40.7 x 99.0
S-25	<i>Membranophoridium</i> sp. #TA	D242	720-730m	30.9 x 102.8
S-26	<i>Lingulodinium</i> <i>macherophorum</i>	D242	720-730m	39.7 x 100.8
S-27	<i>Homotryblum</i> <i>abbreviatum</i>	D242	1110-1120m	44.6 x 105.0
S-28	<i>Distatodinium craterum</i>	D242	1110-1120m	36.0 x 111.2
S-29	<i>Ascotomocystis potane</i>	D242	1140-1150m	36.0 x 111.2
S-30	<i>Canningia</i> <i>ringnesiorum</i>	D242	1140-1150m	29.2 x 101.2
S-31	<i>Taxodiaceopollenites</i> <i>hiatus</i>	D242	1140-1150m	05.5 x 103.9
S-32	<i>Fibrocysta axialis</i>	D242	1170-1180m	40.6 x 92.6
S-33	<i>Exochosphaeridium</i> <i>bifidum</i>	D242	1170-1180m	34.3 x 97.7
S-34	<i>Dinopterygium</i> <i>fehmannense</i>	D242	1200-1210m	43.6 x 91.9
S-35	<i>Thalassiphora pelagica</i>	D242	1230-1240m	45.6 x 100.5
S-36	<i>Heteraulacacysta</i> <i>campanula</i>	D242	1260-1270m	43.6 x 101.6
S-37	<i>Homotryblum pallidum</i>	D242	1260-1270m	44.7 x 109.8

S-38	<i>Glaphyrocysta</i> <i>exhuberans</i>	D242	1260-1270m	36.0 x 111.4
S-39	<i>Cordosphaeridium</i> sp. A WB/75	D242	810-820m	43.5 x 93.0
S-40	<i>Hystrichokolpoma</i> <i>rigaudiae</i>	D242	810-820m	38.5 x 97.0
S-41	<i>Hystrichosphaeropsis</i> <i>quasicribrata</i>	D242	720-730m	42.8 x 94.8
S-42	<i>Impagidinium paradoxum</i>	D242	570-580m	40.2 x 109.0
S-43	<i>Impletosphaeridium</i> sp. I s. M/76	D242	500-510m	31.5 x 110.7
S-44	<i>Caryapollenites</i> <i>simplex</i>	D242	600-610m	30.3 x 95.2
S-45	<i>Cyclopsiella vieta</i>	D242	600-610m	34.7 x 97.4
S-46	<i>Lentinia serrata</i>	D242	600-610m	49.0 x 97.7
S-47	Tricolpate grain	D242	600-610m	43.5 x 97.3
S-48	Onagraceous pollen	D242	600-610m	38.8 x 103.8
S-49	<i>Kallosphaeridium</i> cf. <i>capulatum</i>	D242	600-610m	45.4 x 104.8
S-50	Triporate grain	D242	600-610m	32.0 x 108.4
S-51	<i>Faguspollenites</i> sp. #TA	D242	600-610m	40.5 x 109.6
S-52	<i>Achomosphaera</i> #TA	D242	690-700m	35.0 x 99.1
S-53	<i>Appendicisporites</i> sp. #TA	D242	690-700m	38.0 x 98.2
S-54	<i>Ovoidites arcticus</i>	D242	690-700m	40.1 x 97.0
S-55	<i>Spiniferites speciosus</i>	D242	690-700m	43.4 x 92.9
S-56	<i>Triatriopollenites</i> sp. #TA	D242	660-670m	14.2 x 108.9
S-57	<i>Impagidinium</i> sp. #TA	D242	660-670m	39.6 x 107.0
S-58	<i>Operculodinium</i> sp. #TA	D242	660-670m	45.5 x 104.4
S-59	<i>Tricolporites</i> sp. C s. WB/75	D242	630-640m	19.6 x 103.8

S-60	Glaphyrocysta microfenestrata	D242	630-640m	42.4 x 104.0
S-61	Thalassiphora delicata	D242	630-640m	41.9 x 98.3
S-62	Lejeunecysta hayalina	D242	600-610m	35.2 x 112.0
S-63	Adnatosphaeridium multispinosum	D242	630-640m	35.6 x 96.4
S-64	Lingulodinium sp. A s. WB/75	D242	630-640m	30.0 x 93.6
S-65	Apteodinium sp. s. G/69	D242	1350-1650m	42.2 x 111.0
S-66	Pyxidiniopsis sp. #TA	D242	1350-1360m	42.0 x 102.2
S-67	Chiropteridium sp. #TA	D242	1350-1360m	30.0 x 95.5
S-68	?Apectodinium sp. #TC	D242	1350-1360m	29.9 x 92.8
S-69	Kleithriasphaeridium cf. truncatum	D242	1290-1300m	40.3 x 90.9
S-70	Kleithriasphaeridium truncatum	D242	1290-1300m	33.0 x 93.3
S-71	Exochosphaeridium sp. #TA	D242	1290-1300m	49.8 x 101.0
S-72	Thalassiphora delicata s. WB/75	D242	990-1000m	43.8 x 99.8
S-73	Nyssapollenites sp. #TA	D242	960-970m	32.2 x 101.5
S-74	Liquidambar sp. #TA	D242	960-970m	34.9 x 96.9
S-75	Pterocarya sp. #TA	D242	930-940m	22.0 x 108.5
S-76	Cyclopsiella sp. #TA	D242	930-940m	42.5 x 108.3
S-77	Lejeunecysta spatiosa	D242	930-940m	30.0 x 101.2
S-78	Achomosphaera alcicornu	D242	810-820m	41.5 x 104.5
S-79	Spiniferites speciosus	D242	810-820m	46.0 x 101.0
S-80	Adnatosphaeridium caulleryi	D242	810-820m	29.2 x 99.7

S-81	<i>Tuberculodinium</i> sp. s. WB/75	D242	810-820m	36.0 x 97.8
S-82	<i>Hemicystodinium</i> <i>zoharii</i>	D242	810-820m	41.0 x 97.1
S-83	<i>Hystriehokolpoma</i> <i>unispinum</i>	D242	810-820m	40.7 x 96.8
S-84	<i>Cyclopsiella coniata</i>	D242	810-820m	31.0 x 105.6
S-85	<i>Retitricolpites</i> sp. #TA	D242	900-910m	28.4 x 110.6
S-86	<i>Hafniasphaera saeptata</i>	D242	870-880m	42.0 x 93.7
S-87	<i>Apectodinium</i> sp. #TB	D242	840-850m	39.9 x 106.1
S-88	<i>Lejeunecysta</i> sp. #TA	D242	840-850m	34.3 x 93.6
S-89	<i>Palaeocystodinium</i> <i>gozlowense</i>	D242	840-850m	36.0 x 92.4
S-90	<i>Apectodinium</i> sp. #TA	D242	840-850m	45.6 x 91.0
S-91	<i>Selenopemphix</i> cf. <i>selenoides</i>	D242	840-850m	41.0 x 92.0
S-92	<i>Cordosphaeridium</i> <i>cantharellum</i>	D242	810-820m	39.0 x 106.2
S-93	<i>Momipites</i> sp. #TA	D242	990-1000m	06.0 x 103.8
S-94	<i>Eurydinium ingramii</i>	D242	0990-1000m	34.0 x 101.5
S-95	<i>Selenopemphix</i> <i>nephroides</i>	D242	1020-1030m	43.0 x 96.2
S-96	<i>Wetzeliella</i> cf. <i>ovalis</i>	D242	1380-1390m	41.9 x 92.8
S-97	<i>Pentadinium laticinctum</i> <i>granulatum</i>	D242	1380-1390m	37.0 x 92.1
S-98	<i>Deflandrea</i> <i>phosphoritica</i>	D242	1380-1390m	40.3 x 96.7
S-99	<i>Wetzeliella symmetrica</i>	D242	1380-1390m	44.2 x 96.7
S-100	<i>Deflandrea medcalfii</i>	D242	1380-1390m	41.7 x 100.7
S-101	<i>Wetzeliella symmetrica</i> <i>incisa</i>	D242		32.7 x 102.5

S-102	Deflandrea oebisfeldensis	D242	1380-1390m	31.0 x 107.3
S-103	Ilexpollenites sp. A s. WB/75	D242	1380-1390m	09.0 x 103.8
S-104	Apectodinium homo- morphum quinquelatum	D242	1410-1420m	30.9 x 92.0
S-105	Apectodinium homomorphum	D242	1410-1420m	41.4 x 95.0
S-106	Deflandrea andromiensis	D242	1410-1420m	38.6 x 96.4
S-107	Membranophoridium aspinatum	D242	1410-1420m	45.2 x 97.4
S-109	Rhombodinium draco	D242	1410-1420m	48.3 x 101.0
S-110	Adnatosphaeridium cf. vittatum	D242	1410-1420m	43.8 x 101.3
S-111	Hystriochokolpoma salacium	D242	1410-1420m	32.9 x 101.4
S-112	Achilleodinium sp. #TA	D242	1410-1420m	42.6 x 107.3
S-113	Tricolporate grain 1	D242	780-790m	48.2 x 103.0
S-114	Deflandrea heterophlycta	D242	1410-1420m	35.5 x 112.6
S-115	Hystriochokolpoma eisenackii	D242	1410-1420m	28.3 x 112.5
S-116	Gen. et sp. indet.	D242	1440-1450m	36.6 x 93.0
S-117	Melitasphaeridium sp. #TA	D242	1440-1450m	35.0 x 92.5
S-119	Heteraulacacysta porosa	D242	1440-1450m	46.9 x 94.0
S-120	Cordosphaeridium sp. #TB	D242	1140-1450m	48.6 x 94.6
S-121	Apteodinium sp. B s. WB/75	D242	1440-1450m	44.0 x 94.2
S-122	Bipolaribucina paradoxum	D242	1140-1450m	30.0 x 95.0



S-123	<i>Areosphaeridium dictyoplokus</i>	D242	1470-1480m	46.3 x 91.5
S-124	<i>Glaphyrocysta</i> sp. #TB	D242	1470-1480m	42.2 x 92.7
S-125	<i>Cyclonephelium</i> sp. #TA	D242	1470-1480m	39.6 x 92.0
S-126	<i>Gochtodinium spinulum</i>	D242	1470-1480m	36.4 x 95.1
S-127	<i>Aerosphaeridium arcuatum</i>	D242	1470-1480m	33.8 x 96.0
S-128	<i>Lejeunecysta granosa</i>	D242	1470-1480m	32.8 x 98.0
S-129	<i>Wetzeliella</i> sp. #TA	D242	1470-1480m	33.3 x 98.1
S-130	<i>Kisselovia</i> cf. <i>coleothrypta</i>	D242	1470-1480m	40.5 x 97.5
S-132	<i>Distatodinium ellipticum</i>	D242	1500-1510m	48.0 x 92.5
S-133	<i>Melitasphaeridium pseudorecurvatum</i>	D242	1500-1510m	36.4 x 98.2
S-134	<i>Letinia</i> sp. #TA	D242	1500-1510m	39.0 x 98.5
S-135	<i>Cleistosphaeridium</i> cf. <i>tenuifilum</i>	D242	1500-1510m	42.0 x 98.7
S-136	<i>Wetzeliella articulata</i> v. <i>conopia</i>	D242	1560-1570m	45.5 x 92.6
S-137	<i>Diphyes colligerum</i>	D242	1560-1570m	45.5 x 92.6
S-138	<i>Wilsonidium tabulatum</i>	D242	1560-1570m	40.7 x 92.6
S-139	<i>Wilsonidium lineidentatum</i>	D242	1560-1570m	28.8 x 92.5
S-140	<i>Firocysta</i> sp. #TA	D242	1560-1570m	47.7 x 93.3
S-141	<i>Rottneustia borussica</i>	D242	1560-1570m	30.4 x 95.0
S-142	<i>Wetzeliella echinulata</i>	D242	1560-1570m	47.1 x 98.2
S-143	<i>Hystrihostrogylon</i> sp. #TA	D242	1560-1570m	33.7 x 104.0
S-144	<i>Spiniferites cornutus</i>	D242	1560-1570m	31.3 x 104.4
S-147	<i>Cannosphaeropsis</i> sp. #TA	D242	1590-1600m	36.6 x 96.0

S-148	<i>Gonyaulacysta</i> sp. #TA	D242	1620-1630m	45.6 x 92.2
S-149	<i>Membranilarnacia</i> <i>ursulae</i>	D242	1620-1630m	35.0 x 92.2
S-151	<i>Leptodinium maculatum</i>	D242	1620-1630m	32.7 x 93.6
S-152	<i>Heteraulacacysta</i> sp. #TA	D242	1620-1630m	30.7 x 93.0
S-153	<i>Areoligera</i> <i>senonensis</i> s. G/69	D242	1620-1630m	31.9 x 96.4
S-154	<i>Cordosphaeridium</i> <i>gracilis</i>	D242	1620-1630m	97.0 x 96.0
S-155	<i>Cribroperidinium</i> <i>fetchamense</i>	D242	1620-1630m	47.0 x 97.5
S-156	<i>Turbiosphaera filosa</i>	D242	1620-1630m	39.5 x 92.6
S-157	<i>Ceratiopsis speciosa</i> <i>glabra</i>	D242	1620-1630m	32.9 x 95.2
S-158	<i>Cordosphaeridium</i> <i>fibrospinosum</i>	D242	1650-1660m	41.5 x 104.4
S-159	<i>Oligosphaeridium</i> complex	D242	1680-1690m	47.5 x 93.6
S-159	<i>Palaeoperidinium</i> <i>pyrophorum</i>	D242	1680-1690m	32.3 x 92.6
S-160	<i>Ceratiopsis pannucea</i>	D242	1580-1690m	54.7 x 102.9
S-161	<i>Turbiosphaera galatea</i>	D242	1680-1690m	29.8 x 107.7
S-162	<i>Palaeocystodinium</i> sp. #TA	D242	1680-1690m	38.7 x 112.4
S-163	<i>Cleistosphaeridium</i> sp. #TA	D242	1710-1720m	45.4 x 91.3
S-164	<i>Deflandrea</i> sp. #TA	D242	1710-1720m	29.6 x 93.3
S-165	<i>Isabelidinium bakeri</i>	D242	1710-1720m	44.7 x 95.6
S-166	<i>Oligosphaeridium</i> sp. #TA	D242	1710-1720m	43.2 x 99.1
S-167	<i>Ceratiopsis siebeli</i>	D242	1765-1775m	41.0 x 95.6
S-168	<i>Danea mutabilis</i>	D242	1740-1750m	30.0 x 95.5

S-169	<i>Hystrichosphaeridium</i> <i>bowerbankii</i>	D242	1765-1775m	39.8 x 107.2
S-170	<i>Odontochitina</i> <i>operculata</i>	D242	1795-1805m	40.5 x 94.2
S-171	<i>Criboperidinium</i> sp. #TB	D242	1795-1805m	42.7 x 95.0
S-172	<i>Odontochitina</i> <i>porifera</i>	D242	1795-1805m	34.7 x 97.1
S-173	<i>Turbiosphaera</i> <i>magnifica</i>	D242	1825-1835m	42.8 x 99.4
S-175	<i>Craspedodinium</i> sp. #TA	D242	1855-1865m	46.1 x 97.8
S-176	<i>Xenascus</i> <i>ceratioides</i>	D242	1855-1865m	34.8 x 99.4
S-177	<i>Xenascus</i> <i>gochtii</i>	D242	1855-1865m	39.1 x 102.6
S-178	<i>Odontochitina/Xenascus</i>	D242	1855-1865m	40.6 x 102.6
S-179	? <i>Wallodinium</i> sp. #TA	D242	1855-1865m	36.1 x 106.6
S-180	<i>Hystrichodinium</i> sp. #TA	D242	1855-1865m	32.8 x 108.2
S-181	<i>Hystrichosphaeridium</i> <i>truncigerum</i>	D242	1885-1895m	35.4 x 96.5
S-182	<i>Codoniella</i> <i>campanulata</i>	D242	1885-1895m	34.6 x 96.5
S-183	<i>Cyclonephelium</i> <i>vannophorum</i>	D242	1915-1925m	36.2 x 95.5
S-184	<i>Surculosphaeridium</i> <i>longifurcatum</i>	D242	1915-1925m	34.6 x 95.2
S-185	<i>Ariadnaesporites</i> <i>spinocaperatus</i>	D242	1915-1925m	44.6 x 97.3
S-186	<i>Florentinia</i> <i>cooksoniae</i>	D242	1915-1925m	30.8 x 100.2
S-187	<i>Oligosphaeridium</i> <i>anthophorum</i>	D242	1915-1925m	37.7 x 101.9
S-188	<i>Epelidosphaeridia</i> <i>spinosa</i>	D242	1915-1925m	35.2 x 103.8
S-189	<i>Membranophoridium</i> sp. #TB	D242	1915-1925m	36.0 x 105.0

S-189B	Arcellites sp. #TA	D242	1915-1925m	36.0 x 105.0
S-192	Oligosphaeridium asterigerum	D242	1945-1955m	41.9 x 91.8
S-193	Litosphaeridium siphoniphorum	D242	1945-1955m	48.6 x 94.6
S-194	Cyclonephelium distinctum	D242	1945-1955m	44.9 x 94.8
S-195	Biharisporites sp. #TA	D242	1945-1955m	44.8 x 109.1
S-196	Kiokansium williamsii	D242	1975-1985m	33.7 x 93.6
S-197	Chichaouadinium cf. vestitum	D242	1975-1985m	42.2 x 93.6
S-198	Cribroperidinium edwardsii	D242	2005-2015m	34.0 x 91.8
S-199	Odontochitina cf. rhakodes	D242	2005-2015m	35.6 x 92.5
S-200	Florentinia deanei	D242	2005-2015m	36.2 x 93.0
S-201	Vesperopsis sp. #TA	D242	2005-2015m	42.4 x 95.6
S-202	Vesperopsis mayi	D242	2035-2045m	42.2 x 97.9
S-203	Aequitriradites ornatus	D242	2035-2045m	45.1 x 104.6
S-204	Subtilisphaera perlucida	D242	2035-2045m	23.0 x 101.4
S-204	Cicatricosisporites angustus	D242	2035-2045m	43.0 x 104.5
S-205	Palaeohystrichophora infusorioides	D242	2065-2075m	41.8 x 93.6
S-206	?Appendicisporites	D242	2065-2075m	46.5 x 104.0
S-207	Odontochitina ancala	D242	2065-2075m	47.5 x 105.5
S-208	Senoniasphaera rotundata	D242	2065-2075m	37.0 x 110.8
S-209	Chlamydophorella sp. #TA	D242	2095-2105m	42.3 x 91.8
S-210	Cibotiidites sp. #TA	D242	2095-2104m	35.6 x 94.0

S-212	<i>Rugubivesiculites reductus</i>	D242	2115-2125m	33.8 x 94.6
S-213	<i>Acanthotriletes</i> sp. #TA	D242	2115-2125m	41.0 x 102.8
S-214	<i>Polysphaeridium laminaspinosum</i>	D242	2155-2165m	30.2 x 91.8
S-215	? <i>Exochosphaeridium</i> sp.	D242	2155-2165m	29.2 x 91.4
S-216	<i>Appendicisporites bifurcatus</i>	D242	2155-2165m	46.5 x 98.0
S-217	<i>Rouseisporites</i> sp. #TA	D242	2155-2165m	35.1 x 107.2
S-218	<i>Ariadnaesporites fustiformis</i>	D242	2155-2165m	30.5 x 110.3
S-219	<i>Florentinia verdieri</i>	D242	2185-2195m	35.5 x 104.3
S-220	<i>Oligosphaeridium</i> sp. #TA	D242	2215-2525m	49.6 x 98.0
S-222	<i>Costatoperforosporites foveolatus</i>	D242	2215-2525m	35.5 x 93.2
S-224	<i>Biretisporites</i> sp. #TA	D242	2215-2225m	31.5 x 98.7
S-225	<i>Appendicisporites auritus</i>	D242	2215-2225m	43.8 x 99.5
S-226	<i>Oligosphaeridium totum</i>	D242	2215-2225m	29.5 x 106.0
S-227	<i>Appendicisporites problematicus</i>	D242	2215-2225m	36.7 x 108.0
S-228	<i>Cymosphaeridium validum</i>	D242	2245-2255m	44.5 x 91.2
S-229	<i>Oligosphaeridium poculum</i>	D242	2245-2255m	48.2 x 97.7
S-230	<i>Megaspore</i> sp. #TA	D242	2245-2255m	40.2 x 99.7
S-230	<i>Cibotiidites</i> sp. #TB	D242	2245-2255m	43.2 x 99.7
S-231	<i>Appendicisporites</i> sp. #CB	D242	2275-2285m	29.6 x 99.5
S-232	<i>Florentinia mantellii</i>	D242	2275-2285m	29.6 x 100.6

S-233	Palaeoperidinium cretaceum	D242	2275-2284m	34.9 x 103.7
S-234	Cribroperidinium sp. #TC	D242	2275-2285m	32.6 x 112.3
S-235	Kiokansium sp. #TA	D242	2305-2315m	28.6 x 93.4
S-236	Ascodinium scabrosum ostium	D242	2305-2315m	31.8 x 94.1
S-237	Gonyaulacysta cassidata	D242	2305-2315m	35.0 x 96.6
S-238	Apteodinium sp. #TA	D242	2305-2315m	44.0 x 92.2
S-239	Cyclonephelium chabaca	D242	2305-2315m	28.6 x 107.0
S-240	Pterodinium sp. #TB	D242	2365-2375m	32.3 x 94.3
S-241	Pterodinium sp. #TC	D242	2400-2410m	39.7 x 97.2
S-242	Taurocusporites segmentatus	D242	2400-2410m	35.5 x 97.8
S-243	Aequitriradites sp. #TA	D242	2430-2440m	34.1 x 93.4
S-244	Appendicisporites cristatus	D242	2430-2440m	35.8 x 96.0
S-245	Kiokansium sp. #TB	D242	2430-2440m	36.1 x 111.3
S-246	Cicatricosisporites sp. #TA	D242	2460-2470m	37.3 x 94.6
S-247	?Tubotuberella sp. #TA	D242	2520-2530m	37.2 x 107.8
S-248	Callaiosphaeridium asymmetricum	D242	2550-2560m	40.6 x 111.4
S-249	Microreticulati- sporites diatretus	D242	2580-2590m	37.6 x 94.0
S-250	Canningia attadalica	D242	2610-2620m	30.8 x 111.1
S-251	Protoellipsodinium spinosum	D242	2640-2650m	46.6 x 102.2
S-252	Trilobosporites marylandensis	D242	2670-2680m	46.0 x 92.7

S-253	<i>Concavissimisporites</i> <i>apigranulosus</i>	D242	2670-2680m	35.2 x 103.7
S-254	<i>Nyktericysta</i> <i>cf. vitrea</i>	D242	2850-2860m	30.7 x 104.2
S-255	<i>Neoraistrichia</i> <i>truncata</i>	D242	2940-2950m	33.4 x 100.0
S-256	<i>Nyktericysta davisii</i>	D242	2970-2980m	34.9 x 86.6
S-257	<i>Chichaouadinium</i> <i>vestitum</i>	D242	3090-3100m	40.0 x 99.4
S-258	<i>Maculatisporites</i> <i>microverrucatus</i>	D242	3120-3130m	36.0 x 101.0
S-259	<i>Achomosphaera</i> <i>verdieri</i>	D242	3180-3190m	39.0 x 96.7
S-260	<i>Pilosisorites</i> <i>trichopapillosus</i>	D242	3320-3330m	38.9 x 103.0
S-261	<i>Systematophora</i> <i>cf. silyba</i>	D242	3430-3440m	37.8 x 96.2
S-262	<i>Subtilisphaera terrula</i>	D242	3430-3440m	49.2 x 102.4
S-263	<i>Callialasporites</i> <i>trilobatus</i>	D242	3430-3440m	47.2 x 104.1
S-264	<i>Canningia</i> sp. #TB	D242	3430-3440m	38.6 x 107.6
S-265	<i>Canningia</i> sp. #TE	D242	3430-3440m	49.1 x 107.6
S-266	<i>Pilosisorites</i> sp. #TA	D242	3430-3440m	46.0 x 109.5
S-267	<i>Cicatricosisporites</i> <i>australiensis</i>	D242	3460-3470m	35.7 x 93.9
S-268	<i>Oligosphaeridium</i> <i>anthophorum</i>	D242	3460-3470m	45.8 x 108.0
S-269	<i>Hystrichosphaerina</i> <i>schindewolfii</i>	D242	3520-3530m	42.1 x 93.3
S-270	<i>Occisucysta tentoria</i>	D242	3580-3590m	43.2 x 100.8
S-271	<i>Amphorosphaeridium</i> sp. #TA	D242	3580-3590m	45.0 x 102.7
S-272	<i>Endoscrinium</i> cf. <i>galeritum</i>	D242	3580-3590m	43.8 x 102.1

S-273	<i>Contignisporites cooksonae</i>	D242	3640-3650m	29.8 x 97.0
S-274	<i>Cerbia tabulata</i>	D242	3670-3680m	33.8 x 102.0
S-274	<i>Pseudoceratium pelliiferum</i>	D242	3670-3680m	46.0 x 102.2
S-285	<i>Cleistosphaeridium polypes s.s.</i>	D242	3790-3800m	44.7 x 92.0
S-276	<i>Callaiosphaeridium trycherium</i>	D242	3910-3920m	38.8 x 108.4
S-278	<i>Stiphrosphaeridium dictyophorum</i>	D242	3940-3950m	47.0 x 92.8
S-279	<i>Appendicisporites sp. #TC</i>	D242	3970-3980m	43.1 x 106.7
S-280	<i>Trichodinium speetonensis</i>	D242	4060-4070m	41.6 x 95.9
S-281	<i>Kleithriasphaeridium sp. #TA</i>	D242	4060-4070m	44.9 x 98.1
S-282	<i>Pterodinium sp. #TD</i>	D242	4060-4070m	38.2 x 106.4
S-283	<i>Occisucysta duxburyi</i>	D242	4060-4070m	45.1 x 107.4
S-284	<i>Canningia sp. #TC</i>	D242	4090-4100m	34.7 x 100.3
S-285	<i>Trilobosporites sp. #TA</i>	D242	4120-4130m	43.2 x 96.0
S-286	<i>Tuberositriletes grossetuberculatus</i>	D242	4120-4130m	45.3 x 104.0
S-287	<i>Cribroperidinium cooksonae</i>	D242	4250-4160m	43.4 x 112.2
S-288	<i>Coronifera albertii</i>	D242	4030-4040m	40.7 x 99.1
S-289	<i>Polystephanephorus sp. #TA</i>	D242	4180-4190m	45.8 x 101.2
S-290	<i>Aptea polymorpha</i>	D242	4300-4310m	20.1 x 103.3
S-291	<i>Taleisphaera hydra</i>	D242	4270-4280m	39.0 x 93.3
S-292	<i>Gleicheniidites sp. #TB</i>	D242	4270-4280m	38.3 x 99.9
S-293	<i>Aptea eisenackii</i>	D242	4270-4280m	34.6 x 103.2



S-294	<i>Oligosphaeridium diluculum</i>	D242	4300-4310m	44.3 x 103.5
S-295	<i>Kreuselisporites</i> sp. #TA	D242	4300-4310m	52.1 x 103.5
S-296	<i>Microreticulatisporites</i> sp. #TA	D242	4330-4340m	30.0 x 101.8
S-297	<i>Pseudoceratium pelliiferum</i>	D242	4330-4340m	39.6 x 103.3
S-300	<i>Oligosphaeridium</i> cf. complex	D242	4360-4370m	47.4 x 100.7
S-301	<i>Subtilisphaera rotundata</i>	D242	4420-4430m	47.0 x 95.0
S-302	<i>Canningia</i> sp. #TC	D242	4420-4430m	24.3 x 104.6
S-303	<i>Cicatricosisporites pseudotripartitus</i>	D242	4450-4460m	29.5 x 92.0
S-303A	<i>Cicatricosisporites sprumontii</i>	D242	4450-4460m	31.0 x 94.7
S-304	<i>Contignisporites</i> cf. <i>fornicatus</i> B/80	D242	4450-4460m	44.3 x 96.6
S-305	<i>Cerbia</i> sp. #TA	D242	4450-4460m	46.1 x 99.9
S-306	<i>Callaiosphaeridium</i> sp. #TA	D242	4480-4490m	35.8 x 94.1
S-309	<i>Staplinisporites</i> sp. #TA	D242	4540-4550m	43.3 x 101.3
S-310	<i>Cribroperidinium</i> sp. #TD	D242	4540-4550m	32.0 x 102.4
S-313	<i>Tehamadinium</i> cf. <i>tenuiceras</i>	D242	4570-4580m	38.2 x 96.5
S-314	<i>Lycopodiumsporites</i> sp. #TA	D242	4660-4670m	29.0 x 112.3
S-315	<i>Muderongia parvata</i>	D242	4690-4700m	42.2 x 107.5
S-316	<i>Endoceratium</i> cf. <i>ludbrookiae</i>	D242	4720-4730m	32.6 x 101.7
S-319	<i>Coronifera</i> sp. #TB	D242	4720-4730m	31.1 x 110.0

S-320	<i>Pseudoceratium</i> <i>expolitum</i>	D242	4780-4790m	49.6 x 98.1
S-321	<i>Pseudoceratium</i> <i>parvum</i>	D242	4780-4790m	45.2 x 105.0
S-322	<i>Aequitriradites</i> sp. #TB	D242	5200-5210m	29.5 x 92.7
S-323	? <i>Occisucysta</i> sp. A s. BW/78	D242	5200-5210m	43.0 x 97.9
S-324	<i>Palaeoperidinium</i> <i>cretaceum</i>	D242	2365-2375m	32.4 x 96.1
S-327	<i>Alnipollenites</i> sp. #TA	D242	960-970m	32.7 x 94.4
S-328	<i>Quercoidites</i> sp. #TA	D242	1170-1180m	21.7 x 104.3
S-118	<i>Cordosphaeridium</i> <i>funiculatum</i>	D242	1440-1450m	33.6 x 91.6
S-143	<i>Caryapollenites</i> sp. #TA	D242	990-1000m	43.7 x 105.7
S-144	<i>Cribroperidinium</i> sp. #TA	D242	1590-1600m	34.0 x 103.9
S-145	<i>Pyxidiniopsis</i> sp. #TB	D242	1590-1600m	34.6 x 98.3
S-173	<i>Ulmipollenites</i> sp. #TA	D242	1050-1060m	10.8 x 111.6
S-174	<i>Retitricolpites</i> sp. #TA	D242	780-790m	38.5 x 92.6
S-298	<i>Heterosphaeridium</i>	D242	4330-4340m	34.0 x 104.8
S-299	<i>Contignisporites</i> sp. #TA	D242	4360-4370m	36.3 x 101.6
S-307	<i>Tehamadinium</i> cg. sp. #TA	D242	4510-4530m	29.6 x 106.8
S-308	<i>Veryhachium reductum</i>	D242	4540-4550m	47.8 x 96.1
S-324	<i>Diervilla echinata</i>	D242	1140-1150m	30.1 x 99.3
S-325	<i>Membranophoridium</i> sp. #TC	D242	1170-1180m	47.3 x 98.7

S-325	<i>Spiniferites</i> cf. <i>cingulatus</i>	D242	1500-1510m	36.4 x 102.6
S-327	<i>Spiniferites</i> <i>granulatus</i>	D242	690-700m	43.3 x 92.3
S-328	<i>Tricolporopollenites</i> sp. N s. WB/75	D242	690-700m	40.7 x 111.3
S-311	<i>Odontochitina</i> sp. #TA	D242	4540-4550m	43.3 x 102.5
S-312	<i>Subtilisphaera</i> <i>perlucida</i>	D242	4570-4580m	45.0 x 97.4
S-325	<i>Tiliaepollenites</i> sp. #TA	D242	780-790m	38.4 x 104.6
S-326	<i>Tripoporopollenites</i> sp. F s. WB/75	D242	780-790m	37.6 x 97.3
S-8	<i>Spiniferites</i> sp. A s. WB/75	D242	540-550m	45.1 x 100.4

APPENDIX D

MICROPALAEONTOLOGY WORK SHEETS

- Under separate cover -

## Appendix E

### LOCATION OF FORAMINIFERA AND OSTRACODE SPECIES

#### Chebucto G-90

*Turborotalia opima opima* (440-50, sq. 6).  
*Globigerina cf. praebulloides* (440-50, sq. 18)  
*Globigerina cf. bulloides* (470-80, sq. 8)  
*Globigerina cf. trilobus* (500-10, sq. 20)  
*Globigerina cf. senelis* (540-50, sq. 18)  
*Globigerina ouachitaensis* (570-80, sq. 5)  
*Orbulina universa* (750-60, sq. 21)  
*Globigerina officinalis* (840-50, sq. 19)  
*Globigerina cf. tripartita* (840-50, sq. 32)  
*Marginulina cf. glabra* (415-25, sq. 5)  
*Nonionella auris* (480-90, sq. 31)  
*Textularia cf. badensis* (470-80, sq. 22)  
*Cibicides floridana* (540-50, sq. 7)  
*Planulina depressa* (570-80, sq. 6)  
*Uvigerina cf. danvillensis* (630-40, sq. 18)  
*Marginulina subperba* (630-40, sq. 31)  
*Pullenia bulloides* (630-40, sq. 19)  
*Hoeglundina cf. eocenica* (630-40, sq. 30)  
*Plectofrondiculina vaughan* (720-30, sq. 5)  
*Marginulinopsis tuberculata* (720-30, sq. 7)  
*Melonis planatus* (720-30, sq. 20)  
*Nodosaria stainforthi* (720-30, sq. 19)  
*Sphaeroidina cf. bulloides* (720-30, sq. 18)  
*Heterolepa peypeni* (720-30, sq. 17)  
*Bulimina inflata* (720-30, sq. 31)  
*Tritaxia alazanensis* (750-60, sq. 8)  
*Uvigerina cf. yazooensis* (750-60, sq. 19)  
*Gyroidinoides cf. soldani* (750-60, sq. 9)  
*Oridorsalis umbonatus* (750-60, sq. 22)  
*Spiroplectammina mississippiensis* (780-90, sq. 7)  
*Bolvina cf. gardnerai* (780-90, sq. 31)  
*Globocassidulina subglobosa* (780-90, sq. 8)  
*Stilostomella curvatura* (780-90, sq. 20)  
*Melonis pompiliodes* (810-20, sq. 21)  
*Globorotalia cennetralis* (960-70, sq. 8)  
*Globigerina venezuelana* (1380-90, sq. 20)  
*Globigerina eocaena* (1380-90, sq. 22)  
*Siphonina danvillensis* (960-70, sq. 7)  
*Hoeglundina eocenica* (960-70, sq. 9)  
*Ceratobulimia af. eximia* (960-70, sq. 33)  
*Nodosaria lamellata* (960-70, sq. 32)  
*Stilostomella cookei* (960-70, sq. 22)

*Uvigerina* cf. *glabrans* (960-70, sq. 10)  
*Heterolepa pseudoungerinaus* (960-70, sq. 46)  
*Marginulinopsis texasensis* (960-70, sq. 20)  
*Planulina cooperensis* (990-1000, sq. 7)  
*Guttulina elegans* (990-1000, sq. 8)  
*Guttulina spicaeformis* (990-1000, sq. 20)  
*Gyroidinoides* cf. *soldanii* (990-1000, sq. 32)  
*Massilina decorata* (1050-60, sq. 21)  
*Globocassidulina subglobosa* (1050-60, sq. 9)  
*Marginulina hantkeni* (1050-60, sq. 20)  
*Heterolepa pippeni* (1080-90, sq. 21)  
*Cibicides* cf. *lobatus* (1080-90, sq. 9)  
*Gyroidinoides planata* (1110-20, sq. 9)  
*Cassidulinoides* sp. #CA (1140-50, sq. 6)  
*Bulimina cooperensis* (1170-80, sq. 7)  
*Uvigerina cocoaensis* (1200-10, sq. 6)  
*Uvigerina cocoaensis* (1230-40, sq. 7)  
*Plectofrondicularia cookei* (1230-40, sq. 6)  
*Martinotiella* cf. *petrosa* (1350-60, sq. 22)  
*Ammodiscus glabratus* (1350-60, sq. 10)  
*Cyclammina* cf. *cancellata* (1350-60, sq. 8)  
*Ceratobulimina contraria* (1380-90, sq. 7)  
*Hoeglundina* af. *eocenica* (1380-90, sq. 8)  
*Pullenia quinqueloba* (1380-90, sq. 21)  
*Melonis affine* (1380-90, sq. 10)  
*Martinotiella* cf. *cocoaensis* (1380-90, sq. 34)  
*Glomospira diffundens* (1410-20, sq. 9)  
*Bulimina alazanensis* (1440-50, sq. 19)  
*Uvigerina cocoaensis* (1440-50, sq. 7)  
*Siphonina jacksonensis* (1440-50, sq. 32)  
*Valvulina* cf. *jarvisi* (1440-50, sq. 8)  
*Henryhowella* sp. #CA (990-1000, sq. 44)  
*Pseudohastigerina micra* (1470-80, sq. 32)  
*Globorotalia cerroazulensis* s.s (1480-90, sq. 8)  
*Globorotalia cerroazulensis cocoaensis* (1470-80, sq. 20)  
*Globorotalia cerroazulensis pomeroli* (1470-80, sq. 9)  
*Globorotalia broedermanni* (1470-80, sq. 21)  
*Globigerinatheca mexicana* (1470-80, sq. 7)  
*Globigerinatheca index* (1470-80, sq. 19)  
*Globorotalia bulbrookii* (1470-80, sq. 22)  
*Globorotalia* cf. *spinulosa* (1470-80, sq. 34)  
*Globorotalia lehneri* (1500-10, sq. 8)  
*Bulimina tuxpamensis* (1500-10, sq. 7)  
*Bulimina* cf. *semicostata* (1500-10, sq. 19)  
*Pleurostomella cubensis* (1569-70, sq. 8)  
*Bulimina impendens* (1560-70, sq. 18)  
*Krithe* sp. #CA (1470-80, sq. 10)  
*Globorotalia acuta* (1590-1600, sq. 30)

*Globorotalia aragonensis* (1590-1600, sq. 32)  
*Globorotalia pentacamerata* (1590-1600, sq. 31)  
*Pseudohastigerina wilcoxensis* (1620-30, sq. 7)  
*Globorotalis formosa* (1620-30, sq. 32)  
*Chiloguembelina cf. moresi* (1620-30, sq. 18)  
*Gavelinella cushmani* (1590-1600, sq. 20)  
*Bulimina trinitatensis* (1590-1600, sq. 8)  
*Anomalinoidea cf. vulgaris* (1590-1600, sq. 18)  
*Tritaxia cf. jarvisi* (1590-1600, sq. 5)  
*Tritaxia globulifera* (1590-1600, sq. 6)  
*Marssonella trinitatensis* (1590-1600, sq. 17)  
*Cibicidioides constrictus* (1590-1600, sq. 29)  
*Marginuliopsis cf. enbornensis* (1620-30, sq. 19)  
*Tritaxia cubensis* (1620-30, sq. 9)  
*Allomorphia subtriangularis* (1620-30, sq. 31)  
*Occultocythereis (?) sp. #CA* (1590-1600, sq. 19)  
*Globorotalia pseudomenardii* (1650-60, sq. 33)  
*Chiloguembelina crinita* (1680-90, sq. 8)  
*Spiroplectammania spectabilis* (1650-60, sq. 32)  
*Textularia plummerae* (1650-60, sq. 21)  
*Glomospira charoides* (1650-60, sq. 9)  
*Planoglobulina glabrata* (1765-75, sq. 32)  
*Pseudotextularia difformis* (1765-75, sq. 9)  
*Rosita fornicata* (1765-75, sq. 33)  
*Rosita contusa* (1765-75, sq. 45)  
*Abathomphalus mayaroensis* (1765-75, sq. 31)  
*Heterohelis punctulata* (1765-75, sq. 18)  
*Globotruncanella petaloidea* (1765-75, sq. 42)  
*Planoglobulina brazoensis* (1765-75, sq. 20)  
*Pseudotextularia elegans* (1795-1805, sq. 20)  
*Globotruncanella elevata* (1795-1805, sq. 8)  
*Globotruncanella stuartiformis* (1795-1805, sq. 32)  
*Marginotruncana marginata* (1795-1805, sq. 19)  
*Globotruncana bulloides* (1795-1805, sq. 9)  
*Globotruncana linneiana* (1855-65, sq. 32)  
*Bolivinoidea draco miliaris* (1765-75, sq. 7)  
*Neoflabellina rugosa leptodisca* (1765-75, sq. 8)  
*Stensoina exsculpta s.s.* (1765-75, sq. 22)  
*Bolivina incrassata gigantea* (1765-75, sq. 19)  
*Arenobulimina americana* (1765-75, sq. 6)  
*Stensoina excolata* (1765-75, sq. 30)  
*Stensoina pommerana* (1765-75, sq. 21)  
*Gaudryina rudita* (1795-1805, sq. 9)  
*Dorothia bullata* (1795-1805, sq. 21)  
*Heterostomella americana* (1795-1805, sq. 34)  
*Heterostomella austinana* (1825-35, sq. 20)  
*Gavelinella cf. clementiana* (1855-65, sq. 21)  
*Gaudryina austinana* (1855-65, sq. 9)

*Marginotruncana coronata* (1885-1895, sq. 44)  
*Marginotruncana pseudolinneiana* (1885-95, sq. 45)  
*Marginotruncana schneegansi* (1885-95, sq. 32)  
*Whiteinella baltica* (1885-95, sq. 21)  
*Dicarinella cf. concavata* (1885-95, sq. 9)  
*Dicarinella asymetrica* (1885-95, sq. 8)  
*Cythereis* (?) sp. #CA (1885-95, sq. 20)  
*Praeglobotruncana stephani* (1915-25, sq. 8)  
*Heterohelix moremani* (1915-25, sq. 31)  
*Hedbergella delrioensis* (1915-25, sq. 7)  
*Rotalipora greenhornensis* (1945-55, sq. 43)  
*Rotalipora cf. deeckeii* (1945-55, sq. 42)  
*Gavelinella tourainensis* (1915-25, sq. 21)  
*Gavelinella cenomanica* (1915-25, sq. 20)  
*Dorothia af. filiformis* (1915-25, sq. 19)  
*Ammobaculites comprimatus* (1945-55, sq. 18)  
*Ammobaculites subcretaceus* (1945-55, sq. 19)  
*Marssonella trochus* (1945-55, sq. 8)  
*Quinqueloculina lirellangula* (1945-55, sq. 20)  
*Tritaxia pyramidata* (1945-55, sq. 30)  
*Quasispiroplectammina nuda* (1945-55, sq. 32)  
*Gavelinella ammonides* (1975-85, sq. 18)  
*Rhacythereis* sp. #CA (1915-25, sq. 32)  
*Protocythere alexanderi* (1945-55, sq. 44)  
*Schuleridea jonesiana* (2005-2015, sq. 20)  
*Rhacythereis af. dentonensis* (2005-15, sq. 19)  
*Cythereis cf. eaglefordensis* (2005-15, sq. 7)  
*Ammobaculites reophacoides* (2245-55, sq. 6)  
*Cornicythereis cf. subgoodlandensis* (2035-45, sq. 6)  
*Pontocyprilla* (?) sp. #CA (2035-45, sq. 17)  
*Protocythere* sp. #CA (2035-45, sq. 19)  
*Eocytheropteron paenorbiculatum* (2035-45, sq. 7)  
*Mandocythere* (?) sp. #CA (2035-45, sq. 18)  
*Procythere speetonensis* (2065-75, sq. 7)  
*Rhacythereis cf. dentonensis* (2065-75, sq. 19)  
*Rhacythereis af. reticulata* (2125-35, sq. 7)  
*Cornicythereis bonnemaia* (2125-35, sq. 18)  
*Favusella washitaensis* (2610-20, sq. 19)  
*Hedbergella trochoidea* (2610-20, sq. 8)  
*Hedbergella delrioensis* (2610-20, sq. 20)  
*Lenticulina nodosa* (2275-85, sq. 29)  
*Gavelinella intermedia* (2275-85, sq. 17)  
*Gavelinella berthelini* (2305-15, sq. 29)  
*Trochammina* sp. #CA (2335-45, sq. 18)  
*Epistomina cretosa* (2550-60, sq. 18)  
*Trocholina af. infragranulata* (2640-50, sq. 7)  
*Gavelinella barremiana* (2640-50, sq. 8)  
*Epistomina cf. carpenteri* (2640-50, sq. 6)



*Tritaxia singularis* (2760-70, sq. 8)  
*Epistomina carpenteri* (2760-70, sq. 9)  
*Saracenaria cf. frankei* (2850-60, sq. 7) -  
*Marssonella cf. oxsycona* (3150-60, sq. 19)  
*Mandocythere harrisiana* (2305-15)  
*Verneuiliinoides neocomiensis* (3320-30, sq. 18)  
*Epistomina hechti* (3550-60, sq. 5)  
*Reophax minuta* (3550-60, sq. 17)  
*Gaudryinella tealbyensis* (3610-20, sq. 4)  
*Textularia foeda* (3700-10, sq. 2)  
*Marsonella kummi* (4240-50, sq. 5)  
*Epistomina oronata* (4540-50, sq. 18)  
*Epistomina caracolla* (4540-50-60, sq. 6)  
*Marginuliopsis humilus* (4630-40, sq. 4)  
*Lenticulina cf. guttata* (4630-40, sq. 5)  
*Planularia crepidularis* (4780-90, sq. 14)

*Guembelitria columbiana* (840-50, sq. 6)  
*Globorotalia* sp. #CA (840-50, sq. 7)  
*Siphonina claibornensis* (840-50, sq. 18)  
*Siphoninella claibornensis* (840-50, sq. 19)  
*Quinqueloculina* sp. #CA (840-50, sq. 16)  
*Lenticulina alato-limbatus* (840-50, sq. 14)  
*Marginulina* sp. #CA (840-50, sq. 8)  
*Planularia dissona* (870-80, sq. 18),  
*Rosita fornicata* (870-80, sq. 5),  
*Gyroidinoides imitata* (870-80, sq. 7)  
*Globigerinelloides multispina* (900-10, sq. 6)  
*Heterohelix striata* (900-10, sq. 7)  
*Hedbergella* sp. #CA (900-10, sq. 18)  
*Praebulimina carseyae* (900-10, sq. 19)  
*Gaudryina rudita* (900-10, sq. 20)  
*Pullenia cretacea* (900-10, sq. 21)  
*Hoeglundina supracretacea* (900-10, sq. 33)  
*Globotruncana arca* (900-10, sq. 43)  
*Praeglobobulimina aspera* (930-40, sq. 7)  
*Heterohelix glabrans* (930-40, sq. 6)  
*Guembelitria cretacea* (930-40, sq. 8)  
*Gavelinella correcta* (960-70, sq. 6)  
*Gavelinella pseudopapillosa* (960-70, sq. 7)  
*Globotruncana orientalis* (960-70, sq. 42)  
*Lenticulina navarroensis* (960-70, sq. 18)  
*Dorothia* sp. #CA (960-70 sq. 19 & 20)  
*Dentalina* cf. *basiplanata* (960-70, sq. 8)  
*Vaginulina cretacea* (960-70, sq. 5)  
*Dorothia* cf. *conula* (990-1000, sq. 6)  
*Rosita contusa* (990-1000, sq. 31)  
*Pseudotextularia* sp. #CA (990-1000, sq. 8)  
*Bolivina incrassata* (990-1000, sq. 7)  
*Pulsiphonina prima* (990-1000, sq. 20)  
*Archaeoglobigerina blowi* (990-1000, sq. 19)  
*Praeglobobulimina kickapooensis* (1020-30, sq. 8)  
*Dorothia bulletta* (1020-30, sq. 9)  
*Globotruncanita* cf. *angulata* (1020-30, sq. 10)  
*Globotruncana rosetta* (1020-30, sq. 22)  
*Rugoglobigerina* cf. *rotundata* (1020-30, sq. 21)  
*Spiroplectammina semicomplanata* (1050-60, sq. 18)  
*Pseudouvigerina triangularis* (1050-60, sq. 30)  
*Marginulina curvatura* (1050-60, sq. 6)  
*Archaeoglobigerina cretacea* (1050-60, sq. 11)  
*Rugoglobigerina rugosa* (1050-60, sq. 22)

*Globotruncanella petaloidea* (1050-60, sq. 23)  
*Pseudoguembelina costulata* (1050-60, sq. 21)  
*Pseudotextularia deformis* (1050-60, sq. 45)  
*Pseudotextularia elegans* (1050-60, sq. 33)  
*Racemiguembelina powelli* (1050-60, sq. 9)  
*Gansserina gansseri* (1050-60, sq. 34)  
*Globotruncana aegyptiaca* (1050-60, sq. 19)  
*Globotruncana insignis* (1050-60, sq. 8)  
*Rosita plicata* (1050-60, sq. 35)  
*Globotruncana ventricosa* (1050-60, sq. 32)  
*Globotruncanita stuarti* (1050-60, sq. 31)  
*Bolivina incrassata gigantea* (1230-40, sq. 33)  
*Rehacythereis communis* (840-50, sq. 20)  
*Cytherella* (870-80, sq. 6)  
*Loxoconcha levinsoni* (900-10, sq. 9)  
*Monoceratina* cf. *nitida* (900-10, sq. 10)  
*Cytheropteron* sp. #CA (900-10, sq. 32)  
*Loxoconcha* sp. #CA (900-10, sq. 34)  
*Loxoconcha* sp. #CB (900-10, sq. 36)  
*Cuneoceratina pedata* (900-10, sq. 22)  
*Loxoconcha* cf. *fletcheri* (930-40, sq. 18)  
*Brachycythere rhomboidalis* (960-70, sq. 21)  
*Nigeria arachoides* (960-70, sq. 9)  
*Haplocytheridea plummeri* (1050-60, sq. 7)  
*Valvulineria allomorphinoides* (1080-90, sq. 10)  
*Arenobulimina* cf. *americana* (1080-90, sq. 11)  
*Gyroidinoides girardana* (1080-90, sq. 23)  
*Allomorphina navarroana* (1980-90, sq. 22)  
*Praebulimina reussi* (1110-20, sq. 7)  
*Rugoglobigerina hexacamerata* (1110-20, sq. 6)  
*Pseudoguembelina excolata* (1110-20, sq. 18)  
*Gaudryina laevigata* (1110-20, sq. 31)  
*Osangularia navarroana* (1110-20, sq. 31)  
*Pseudouvigerina seligi* (1110-20, sq. 8)  
*Lagena* cf. *hexagona* (1110-20, sq. 20)  
*Arenobulimina americana* (1140-50, sq. 6)  
*Rosita patelliformis* (1140-50, sq. 19)  
*Pseudoguembelina palpebra* (1140-50, sq. 18)  
*Bolivinoidea draco miliaris* (1140-50, sq. 7)  
*Ammobaculites stephensoni* (1170-80, sq. 9)  
*Anomalinoidea henbesti* (1170-80, sq. 20)  
*Pullenia americana* (1200-10, sq. 21)  
*Gavelinella spissocostata* (1200-10, sq. 8)  
*Tritaxia capitosa* (1200-10, sq. 7)  
*Globorotalites micheliniana* (1200-10, sq. 20)  
*Globotruncanita elevata* (1230-40, sq. 21)  
*Globotruncana bulloides* (1230-40, sq. 20)

*Planoglobulina glabrata* (1230-40, sq. 34)  
*Pseudonodosaria manifesta* (1230-40, sq. 10)  
*Dorothia cf. retusa* (1230-40, sq. 7)  
*Stensioina pommerana* (1230-40, sq. 10)  
*Brachycythere ovata* (1080-90, sq. 9)  
*Cytheropteron* sp. #CB (1080-90, sq. 33),  
*Hermanites* cf. #CA (1080-90, sq. 21),  
*Brachycythere rhomboidalis* (1170-80, sq. 8),  
*Brachycythere* sp. #CA (1170-80, sq. 7),  
*Loxoconcha cretacea* (1170-80, sq. 19),  
*Loxoconcha* sp. #CB (1170-80, sq. 31),  
*Xestoleberis opina* (1200-10, sq. 19),  
*Fissocarinocythere pidgeoni* (1200-10, sq. 9),  
*Phacorrhabdotus pokornyi* (1230-40, sq. 9),  
*Globorotalites multiseptus* (1260-70), sq. 9),  
*Reussella szajnochae* (1260-70, sq. 20),  
*Anomalinoidea cf. henbesti* (1260-70, sq. 10),  
*Ammodiscus cretaceus* (1260-70, sq. 22),  
*Lenticulina munsteri* (1320-30, sq. 8),  
*Marginotruncana coronata* (1320-30, sq. 19),  
*Fronicularia lanceola bidentata* (1120-30, sq. 22),  
*Dicarinella asymetrica* (1320-30, sq. 30),  
*Marginotruncana marginata* (1320-30, sq. 18),  
*Whiteinella baltica* (1320-30, sq. 11),  
*Marginotruncana pseudolinneiana* (1320-30, sq. 7),  
*Whiteinella paradubia* (1320-30, sq. 32),  
*Globorotalites multiseptus* (1320-30, sq. 33),  
*Stensioina esculpta esculpta* (1320-30, sq. 20),  
*Arenobulimina* sp. #CA (1320-30, sq. 9),  
*Gaudryina austinana* (1320-30, sq. 21),  
*Marssonella trochus* (1320-30, sq. 34)  
*Krithe swaini* (1260-70, sq. 8),  
*Cuneoceratina pedata* (1320-30, sq. 10)  
*Dicarinella primitiva* (1320-30, sq. 6),  
*Marginotruncana schneegansi* (1320-30, sq. 31),  
*Saracenaria triangularis* (1350-60, sq. 18),  
*Glomospira corona* (1350-60, sq. 8),  
*Hedbergella delroiensis* (1350-60, sq. 33),  
*Dicarinella imbricata* (1350-60, sq. 21)  
*Brachycythere* sp. #CA (1350-60, sq. 9),  
*Morrowina* sp. #CA (1350-60, sq. 6),  
*Amphicytherura* sp. #CA (1350-60, sq. 19),  
*Cythereis dallasensis rhachis* (1380-90, sq. 22)  
*Epistomina* sp. #CA (1410-20, sq. 3),  
*Gavelinella tourainensis* (1410-20, sq. 20),  
*Dorothia* af. *filaformis* (1410-20, sq. 19),  
*Dicarinella algeriana* (1410-20, sq. 21),

*Lingulogavelinella turonica* (1440-50, sq. 7)  
*Cythereis* af. *sagena* (1410-20, sq. 4)  
*Ammobaculites comprimatus* (1440-50, sq. 9),  
*Marssonella* cf. *trochus* (1440-50, sq. 8),  
*Rotalipora* cf. *deecke*i (1440-50, sq. 19),  
*Gavelinella cenomanica* (1480-90, sq. 20),  
*Epistomina* cf. *charlottae* (1480-90, sq. 7),  
*Lenticulina* cf. *gaultina* (1660-70, sq. 14),  
*Trochammina* sp. #CA (1750-60, sq. 7),  
*Recurvoides* sp. #CA (1810-20, sq. 17)  
*Eocytheropteron* sp. #CA (1480-90, sq. 9),  
*Cythereis eaglefordensis* (1510-20, sq. 19),  
*Neocythere* sp. #CA (1510-20, sq. 31),  
*Protocythere* cf. *speetonensis* (1510-20, sq. 7),  
*Eocytheropteron* sp. #CB (1510-20, sq. 32),  
*Rehacythereis* sp. #CA (1570-80, sq. 15),  
*Hutsonia* sp. #CA (1660-70, sq. 14),  
*Cythereis ornatissima* (1720-30, sq. 4),  
*Schuleridea jonesiana* (1870-80, sq. 6),  
*Rehacythereis reticulata* (1870-80, sq. 18),  
*Planileberis* sp. #CA (1870-80, sq. 19),  
*Eocytheropteron* cf. *semiconstrictum* (1900-10, sq. 5),  
*Rehacythereis* sp. #CB (1900-10, sq. 6)  
*Epistomina* cf. *chapmani* (2080-90, sq. 7),  
*Tritaxia singularis* (2170-80, sq. 5),  
*Gavelinella* sp. #CB (2170-80, sq. 6),  
*Cytheropteron* sp. #CC (2020-30, sq. 4),  
*Protocythere speetonensi* (2080-90, sq. 6)  
*Gavelinella* cf. *barremiana* (2330-40, sq. 4),  
*Reophax* sp. #CA (2230-40, sq. 15),  
*Epistomina spinulifera* (2230-40, sq. 16),  
*Tritaxia pyramidata* (2320-30, sq. 7),  
*Tritaxia singularis* (2320-30, sq. 21),  
*Gavelinella* cf. *bielensis* (2320-30, sq. 9),  
*Lenticulina nodosa* (2320-30, sq. 8),  
*Epistomina cretosa* (2350-60, sq. 17)  
*Gaudryinella tealbyensis* (2535-45, sq. 7),  
*Marginulinopsis* sp. #CA (2565-75, sq. 5),  
*Gyroidinoides* sp. #CB (2565-75, sq. 4),  
*Epistomina cretosa* (2565-75, sq. 6),  
*Epistomina hechti* (2565-75, sq. 16),  
*Marssonella kummi* (2565-75, sq. 17),  
*Verneuillinoides neocomiensis* (2565-75, sq. 18),  
*Conorboides* sp. #CA (2565-75, sq. 30),  
*Lenticulina* cf. *ouachitaensis* (2565-75, sq. 28),  
*Lenticulina heirermanni* (2590-2600, sq. 6),  
*Lenticulina praegaultina* (2590-2600, sq. 7).

*Epistomina ornata* (2680-90, sq. 17),  
*Epistomina cf. carcolla* (2710-20, sq. 20),  
*Caucasella hoterivica* (2710-20, sq. 19),  
*Saracenaria* sp. #CA (2740-50, sq. 16),  
*Marginulinopsis humilus* (2770-80, sq. 8),  
*Pseudonodosaria humilus* (2770-80, sq. 9),  
*Lenticulina cf. kugleri* 2770-80, sq. 20),  
*Lenticulina ouachensis* (2830-40, sq. 6)  
*Protocythere* sp. #CA (2680-90, sq. 18),  
*Alatocythere* sp. #CA (2740-50, sq. 17)  
*Epistomina caracolla* (3300-10, sq. 8),  
*Ceratobulimina* sp. #CA (3300-10, sq. 9),  
*Gaudryina* sp. #CA (3360-70, sq. 19),  
*Epistomina* sp. #CC (3360-70, sq. 20),  
*Pseudonubeculina nodulosa* (3420-30, sq. 19),  
*Lenticulina saxonica saxonica* (3510-20, sq. 32),  
*Lenticulina kugleri* (3510-20, sq. 31),  
*Vaginulina recta* (3510-20, sq. 20),  
*Marginulinopsis sigali* (3510-20, sq. 19),  
*Marssonella cf. oxycona* (3510-20, sq. 33)  
*Lenticulina saxonica saxonica* (3540-50, sq. 20),  
*Lenticulina cf. saxonica bifurcilla* 3540-50, sq. 21),  
*Conorotalites cf. bartensteini* (3540-50, sq. 22),  
*Eoeponidella* sp. #CA 3540-50, sq. 34),  
*Tristix insigne* (3570-80, sq. 19),  
*Caucasella hoterivica* (3570-80, sq. 20),  
*Lingulina nodosaria* (3630-40, sq. 19),  
*Pseudotextulariella* sp. #CA (3630-40, sq. 31),  
*Patellina* sp. #CA (3660-70, sq. 21),  
*Conorboides hofkeri* (3660-70, sq. 20),  
*Vaginulinopsis recticulosa* (3690-3700, sq. 20),  
*Marssonella hauteriviana* (3780-90, sq. 19),  
*Ammodiscus cretaceous* (3930-40, sq. 17)  
*Epistomina uhligi* (4050-60, sq. 9),  
*Epistomina stellicostata* (4050-60, sq. 21),

*Marginotruncana marginata* (1430-60, sq. 31)  
*Gaudryina austinana* (1430-60, sq. 9)  
*Neoflabellina deltoidea* (1430-60, sq. 8)  
*Kyphopyxa christneri* (1430-60, sq. 19)  
*Vaginulina wadei* (1430-60, sq. 7)  
*Nodosaria affinis* (1430-60, sq. 6)  
*Lenticulina munsteri* (1430-60, sq. 30)  
*Epistomina stelligera alveolata* (1430-60, sq. 42)  
*Hoeglundina supracretacea* (1430-60, sq. 43)  
*Arenobulimina subsphaerica* (1430-60, sq. 44)  
*Pseudolamarckina* (?) sp. #CA (1430-60, sq. 18)  
*Marginulina silicula* (1430-60, sq. 32)  
*Haplocytheridea globosa* (1430-60, sq. 20)  
*Cythereis ornatissima* (1430-60, sq. 21)  
*Brachycythere* cf. *ovata* (1430-60, sq. 33)  
*Archaeoglobigerina blowi* (1610-40, sq. 6)  
*Dorothia conula* (1520-50, sq. 7)  
*Vaginulina texana* (1520-50, sq. 8)  
*Gyroidinoides globosa* (1520-50, sq. 20)  
*Gavelinella stephensoni* (1520-50, sq. 19)  
*Veenia* sp. #CA (1520-50, sq. 9)  
*Brachycythere sphenoides* (1610-40, sq. 7)  
*Whiteinella paradubia* (1790-1820, sq. 9)  
*Heterohelix* cf. *moremani* (1970-2000, sq. 21)  
*Epistomina stelligera s.s.* (1700-30, sq. 8)  
*Vaginulina cretacea* (1700-30, sq. 20)  
*Praebulimina* cf. *reussi* (1790-1820, sq. 8)  
*Gyroidinoides depressa* (1970-2000, sq. 8)  
*Gyroidinoides* cf. *umbilicatus* (1970-2000, sq. 20)  
*Globorotalites multiseptus* (1970-2000, sq. 32)  
*Gavelinella ammonoides* (1970-2000, sq. 33)  
*Haplocytheridea* cf. *plummeri* (1700-30, sq. 7)  
*Neocythere annulospinata* (1970-2000, sq. 18)  
*Dicarinella algeriana* (2450-80, sq. 8)  
*Hedbergella delrioensis* (2450-80, sq. 20)  
*Ammobaculites comprimatus* (2450-80, sq. 19)  
*Palmula* cf. *cushmani* (2360-90, sq. 31)  
*Coscinophragma* (?) sp. #CA (2360-90, sq. 19)  
*Cythereis* af. *eaglefordensis* (2540-70, sq. 17)  
*Whiteinella baltica* (3080-3110, sq. 19)  
*Dorothia* af. *filiformis* (2630-60, sq. 31)  
*Epistomina cretosa* (2630-60, sq. 20)  
*Ammobaculites reophacoides* (2630-60, sq. 19)  
*Lenticulina* cf. *gaultina* (2630-60, sq. 32)  
*Protocythere alexanderi* (2720-50, sq. 20)  
*Eocytheropteron* (?) sp. #CA (2720-50, sq. 19)  
*Alatocythere* sp. #CA (2720-50, sq. 32)  
*Neocythere annulospinata* (2810-40, sq. 19)  
*Rehacythereis* af. *dentonensis* (2810-40, sq. 19)  
*Schuleridea jonesiana* (3080-3110, sq. 18)  
*Protocythere speetonensis* (3170-3200, sq. 19)  
*Orthonatocythere* sp. #CA (3170-3200, sq. 18)  
*Epistomina* sp. #CA (3350-80, sq. 31)  
*Lenticulina nodosa* (3540-80, sq. 20)  
*Ceratolamarckina* (?) sp. #CA (3540-80, sq. 20)  
*Gaudryinella tealbyensis* (3540-80, sq. 19)  
*Trocholina* cf. *infragranulata* (5250-80, sq. 4)

# INTEGRATED BIOSTRATIGRAPHY

## OF

### CHEBUCTO G-90

440-550m	Miocene.
570-970m	Oligocene.
1140-1450m	Late Eocene.
1470-1570m	Middle Eocene.
1590-1630m	Early Eocene.
1650-1720m	Late Paleocene.
1740-1750m	Early Paleocene.
-Unconformity-	
1765-1865m	Campanian.
1885-1915m	Santonian.
-Unconformity-	
1915-1985m	Cenomanian.
2005-2255m	Albian.
2275-3300m	Aptian.
3320-5180m	Barremian.
5200-TD	Hauterivian.



# INTEGRATED BIOSTRATIGRAPHY

OF

ALMA F-67

840-880m	Late Cretaceous Undifferentiated (Eocene caving).
900-1060m	Maastrichtian.
1080-1240m	Campanian.
1260-1330m	Santonian.
1350-1390m	Coniacian.
1410-1450m	Turonian.
1480-1730m	Cenomanian.
1750-2210m	Albian.
2230-2920m	Aptian.
-Unconformity-	
2940-3250m	Early Barremian.
3270-3490m	Hauterivian.
3510-4000m	Valanginian/ Berriasian.
4020-4180m	Tithonian.
4200-TD	Tithonian/ Kimmeridgian Undifferentiated

INTEGRATED BIOSTRATIGRAPHY  
OF  
SAMBRO I-29

1430-1460m Campanian.

1520-1640m Santonian.

1700-2120m Coniacian.

-Unconformity-

2180-2570m Cenomanian.

2630-3290m Albian.

3350-3380m Aptian.

3485-3980m Barremian.

4040-5780m Early Cretaceous  
Undifferentiated.

9860-10070m Late Jurassic  
Undifferentiated.