PALYNOLOGY OF UPPER PALAEOZOIC AND LOWER MESOZOIC FIELD SAMPLES AND CORES FROM ELLESMERE, MELVILLE AND ADJACENT ISLANDS

by

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INTRODUCTION

The palynology of 31 field samples from Ellesmere Island and 11 core samples from the western part of the Sverdrup Basin is reported on here. Field samples are from Blister Hill (1 sample), E. Blister (2), Foshèim Anticline (7), Lake Cliffs (3), MacDonald River, Tanquary Fiord (10), Nunatak (1), Yelverton Inlet (3), and Yelverton Pass & Lake (4). Subsurface cores are from the following oil exploration wells: Brock C-50 (4 samples), Cape Norem A-80 (2), Collingwood K-33 (1), Drake Point D-68 (2), Foshiem N-27 (1), and Sandy Point L-46 (1).

The results are summarized overleaf and are discussed in detail in the following section. The palynomorphs recorded from each sample are listed in the appendix.

SUMMARY OF RESULTS

TABLE 1.

A. FIELD SAMPLES

Location		Age	Environment of Deposition
BLISTER HILL			
C-72304	77-EL-1, 174	Early Liassic	Non-marine
E. BLISTER 81°48'N, 71°45'W			
C-72390	77-EL. STA 8	Scythian, probably Smithian-Spathian	Non-marine
C-72391	77-EL. STA 9	Indet.	Probably non-marine
FOSHEIM ANTICLINE			
C-33106	74-WR-3, 0	Early Liassic	Marine (R)
C-36973	74-WR-3, 294	Indet.	Marine
C-36979	74-WR-3, 384	Liassic	Marine
C-36982	74-WR-3, 476	Liassic	Non-marine
C-36988	74-WR-3, 579	Liassic	Non-marine
C-36995	74-WR-3, 670	Liassic	Non-marine
C-36999	74-WR-3, 780	Liassic	Non-marine
LAKE CLIFFS 81°51'N, 70°30'W			
C-72355	77-EL-5, 18	Permian, probably Upper	Non-marine
C-72358	77-EL-5, 58	Scythian, possibly Smithian	Marine (A)
C-72360	77-EL-5, 111	Late Spathian	Marine (A)
MACDONALD RIVER, TANQUARY FIORD			
C-55047	75-WR-1, 9	Smithian	Marine (A)
C-55048	75-WR-1, 10	early Smithian	Marine
C-55050	75-WR-1, 12	Scythian (undiff.)	Marine
C-55053	75-WR-1, 15	Barren	-
C-55055	75-WR-1, 17	Barren	-
C-55058	75-WR-1, 20	Barren	-
C-55061	75-WR-1, 23	Indet.	Non-marine
C-55076	75-WR-1, 38	Lower Jurassic	Marine (R)
C-55144	75-WR-3, 12	Barren	-
C-55154	75-WR-3, 23	Lower Jurassic	Marine (R)
NUNATAK 81°54'N, 73°44'W			
C-72387	77-EL. STA 5	Indet.	Marine
YELVERTON INLET			
C-45386	75-MSA-39	Scythian (undiff.)	Marine
C-45458	75-MSA-73	Indet.	Indet.
C-45460	75-MSA-73	Probably Rhaeto-Liassic	Non-marine

Location		Age	Environment of Deposition
YELVERTON PASS & LAKES			
C-47987	75-WR-12, 1	Early Jurassic, probably late Pliensbachian	Marine (R)
C-47989	75-WR-12, 3	Probably Liassic	Non-marine
C-55394	75-WR-12, 9	Probably Liassic	Non-marine
C-55397	75-WR-12, 12	Probably Liassic	Non-marine
B. WELL CORES			
BROCK C-50			
C-30842	1570'	Late Scythian, probably Late Spathian	Marine
C-30842	2570'	Smithian-Spathian	Marine
C-30842	3910-20'	Late Dienerian-Early Smithian	Marine
C-30842	5134'	Griesbachian-Dienerian	Marine
CAPE NOREM A-80			
C-30200	8395'	Early Smithian	Marine
C-30200	9738'	Early Smithian	Marine
COLLINGWOOD K-33			
C-76642	6245'	Late Scythian-early Anisian	Marine
DRAKE POINT D-68			
C-45610	9820'	Griesbachian-Dienerian	Marine (R)
C-45610	9861'	Griesbachian	Marine (R)
FOSHEIM N-27			
C-51834	8490'	Indet.	Marine
SANDY POINT L-46			
C-30224	2893'	Indet.	Indet.

Environment of Deposition:
- Marine (A) - Rich in marine palynomorphy
- Marine - Marine palynomorphs common
- Marine (R) - Marine palynomorphs infrequent or rare.

SUMMARY

The stratigraphic position of each productive sample which can be dated from the palynomorphs present, is indicated on Chart 1. Permian, Scythian, early Anisian, Rhaeto-Liassic and Liassic assemblages are recorded.

1. Permian Assemblage

Only one sample contains a Permian, possibly Upper Permian assemblage.

2. Scythian and early Anisian assemblages

As there is a lack of knowledge about the precise ranges of Lower and Middle Triassic species in the Arctic, many of the Scythian samples are dated on the basis of "influences". Where two species occur together whose ranges are not known to significantly overlap elsewhere, an attempt is made to assess which is the dominant influence. The ranges of some taxa appear to be different from those in published literature from other parts of the world and could only be clarified by a detailed study of a long and complete section.

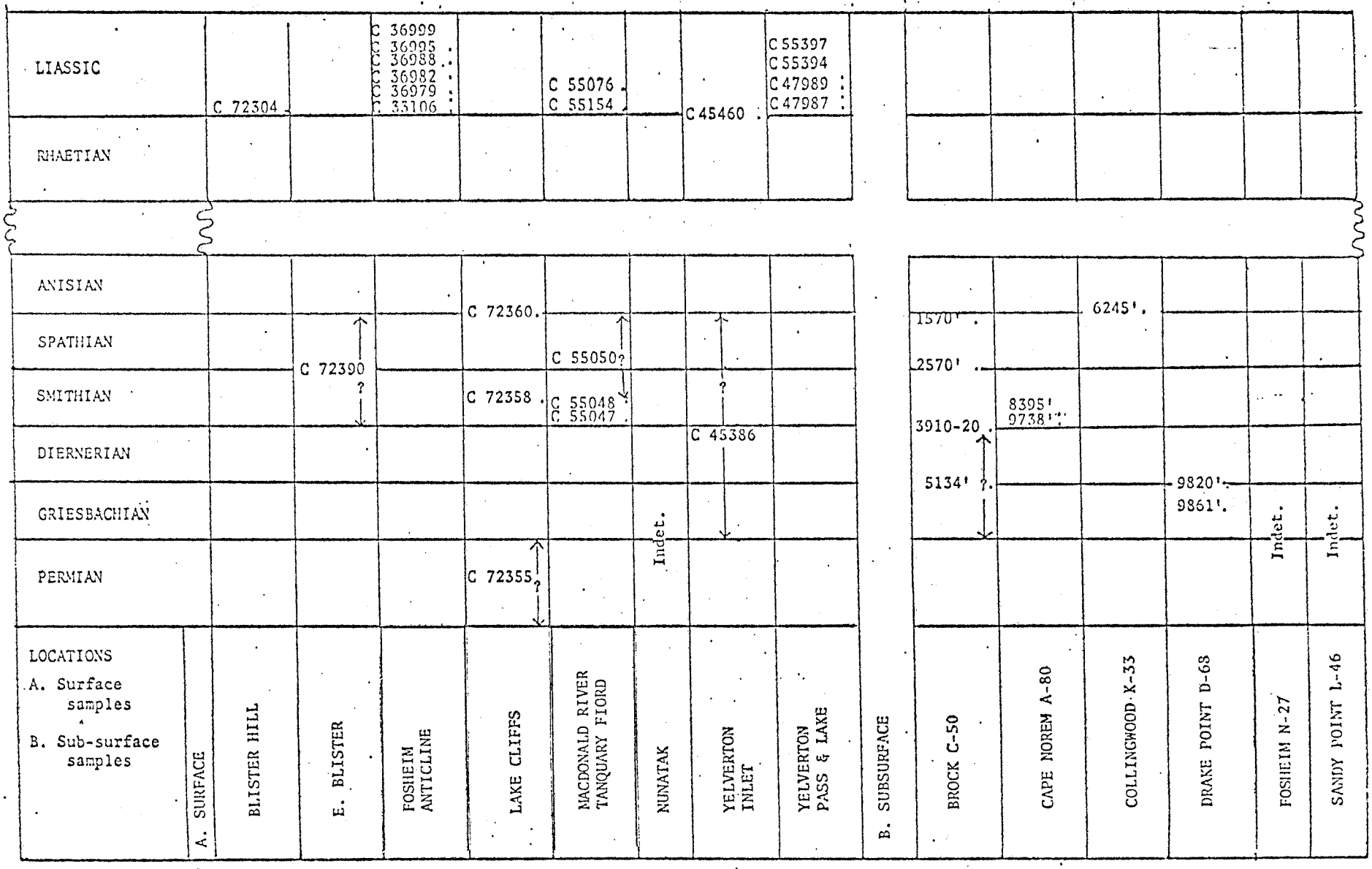
3. Rhaeto-Liassic and Liassic assemblages

No definitely Rhaetian assemblages are found here, i.e. similar to those described from Arctic Canada by Fisher & Boujak 1975. Taken in isolation, some of these samples appear Rhaetian since they contain many typical Rhaetian marker species. However, some assemblages are composed entirely of reworked material because an underlying sample clearly indicates a younger age.

Other samples contain mostly Rhaetian forms but with a few lower Jurassic species present (i.e. Classopollis, Exesipollenites, Lycopodiumsporites).

These could be transitional Rhaeto-Liassic in age or may be Liassic with a large quantity of reworked palynomorphs. Wherever there is a Lower Jurassic indicator species present, however rare, the sample is dated as Liassic. When the date is tentative this is indicated in the individual sample description and discussion.

CHART I. PALYNOLOGICAL CORRELATION OF PRODUCTIVE SAMPLES (SURFACE AND SUBSURFACE) DISCUSSED IN TEXT.



INDIVIDUAL SAMPLE AGE, REMARKS AND DISCUSSION

A. FIELD SAMPLES

BLISTER HILL - DISTRICT OF FRANKLIN

Sample No.: C-72304. 77-EL-1, 174

Age: Early Liassic

Environment: Non-marine

Remarks: This poorly preserved assemblage contains abundant fungal spores and large organic fragments. Spores as a group are abundant (*Calamospora, Leiotriletes, Verrucosisporites, Polypodiisporites, Dictyophyllidites*, etc.).

The rare occurrence of *Exesipollenites tumulus* suggests a Liassic age. However, this assemblage also contains a number of Rhaetian markers (*Ricciisporites tuberculatus* abundant, *Camerozonosporites rudis, Zebrasporites interscriptus).* The presence of *Camerosporites pseudoverrucatus, Paracirculina* spp. and a specimen of *Granosaccus* sp. which are more commonly found in the Upper Karnian (Fisher & Bujak 1975) indicates the presence of recycled Triassic palynomorphs.

E. BLISTER

Sample No.: C-72390 77-EL. STA 8.

Age: Scythian, probably Smithian-Spathian

Environment: Non-marine

Remarks: This sample contains a poorly preserved assemblage with much organic debris and many large laevigate spores possibly reworked from the Devonian. The assemblahe lacks diversity but contains three forms which

suggest a Scythian age: *Grebespora concentrica, Aratisporites* sp., and *Klausipollenites staplinii.* The first is common in the Lower Triassic of western Canada (Jansonius 1962) and the genus *Aratrisporites* is confined to the Triassic elsewhere in the world *Klausipollenites staplinii* is recorded from the Lower Triassic of western Canada but its occurrence in the Upper Permian of Germany makes it an unreliable Triassic indicator.

One specimen resembling *Nevesisporites limatulus* and a possible *Infernopollenites sulcatus* are also present. Those species usually occur in the Smithian-Spathian.

There are however, a number of Permian forms present *(Decussatisporites* sp., *Protohaploxypinus limpidus* and *Vittatina striata)* which is interpreted as the result of reworking.

Sample No.: C-72391 77-EL. STA 9

Age: Indeterminate

Environment: Probably non-marine

Remarks: Spore and plant fragments are too highly carbonised to identify.

FOSHEIM ANTICLINE, District of Franklin

Sample No.: C-33106. 74-WR-3, 0

Age: Early Liassic

Environment: Marine

Remarks: This sample contained a diverse, fairly well preserved assemblage with many large bisaccate pollen and organic fragments. The presence of rare specimens of *Exesipollenites tumulus* indicates this sample is of Liassic

age. Other typically Jurassic forms include *Alisporites giganteus*, *Araucariacites* sp., *Podocarpidites* sp., *Quadraeculina anellaeformis* and *Stereisporites cicatricosus*. *Iraquispora laevigata* and *I. speciosa* range throughout the Rhaeto-Liassic and could be either in situ or reworked.

Several species in the assemblage (*Zebrasporites laevigatus*, *Z. interscriptus*, *Camerozonosporites* sp., *Ovalipollis breviformis*, and *Cingulizonatisporites* sp.) occur chiefly in the Rhaetian and are most probably reworked. *Paracirculina* sp., *Granosaccus ornatus* and the dinoflagellate *Heibergella* are typically of Karnian-Norian age and again indicate reworking. Evidence of recycled Triassic strata is common in the early Liassic of the Arctic islands.

A few dinoflagellates, mostly with Jurassic affinity were noted, the most prominent being *Nannoceratopsis* sp. No marine forms typical of the Late Pleinsbachian and Toarcian were recovered. This tends to suggest the sample is pre mid Pliensbachian in age

FOSHEIM ANTICLINE

Sample No.: C-36973. 74-WR-3. 294

Age: Indeterminate

Environment: Marine

Remarks: Pollen, spores and acritarchs are sparse and poorly preserved in this sample. Upper Devonian reworking is common. The only stratigraphically significant species is one specimen of *Corollina* sp. cf. *meyeriana* which typically ranges from the middle Keuper to the early Jurassic.

Sample No.: C-36979. 74-WR-3. 384

Age: Liassic

Environment: Marine

Remarks: Typically Rhaetian species such as *Riccisporites* sp ., *Cingulizonates* sp., *Corollina* sp., and *Zebrasporites laevigatus* are associated with Jurassic forms such as *Lycopodiumsporites* sp. and *Steriesporites* sp. This is considered to be a Jurassic assemblage with a large quantity of reworked Triassic palynomorphs.

FOSHEIM ANTICLINE

Sample No.: C-36982. 74-WR-3. 476

Age: Jurassic, most probably Liassic.

Environment: Non-marine.

Remarks: This assemblage is predominantly Rhaetian in character, containing such species as *Riccisporites tuberculatus, Limbosporites lundbladii, Zebrasporites laevigatus, Camerozonosporites rudis* and *Triancoraesporites ancorae.* It does, however, contain *Lycopodiumsporites* sp. and *Sterisporites perforatus* which indicate a Jurassic age. The Rhaetian and Norian species present are therefore interpreted as the result of reworking.

Sample No.: C-36988. 74-WR-3. 579

Age: Liassic

Environment: Non-marine.

Remarks: This sample shows similar characteristics to the two previous ones. It is dominated by Rhaetian forms *(Camerosporites rudis, Riccisporites tuberculatus, R.* sp., *Limbosporites lundbladii, Triancoraesporites anchorae, Zebrasporites laevigatus and Semiretisporis gothae.* The only Jurassic indi-

cators are two specimens of *Lycopodiumsporites semimuris* and as underlying samples in the section are almost certainly Liassic, this sample must also be assigned a Liassic age. This must again indicate the abundance of reworked Triassic palynomorphs in the Lower Jurassic.

FOSHEIM ANTICLINE

Sample No.: C-36995. 74-WR-3. 670.

Age: Jurassic, probably early Liassic

Environment: Non-marine

Remarks: Palynomorphs are common but very degraded and frequently indeterminate. Four specimens of *Lycopodiumsporites austroclavatidites* indicate a post Triassic age. *Iraquispora speciosa* ranges in age from the late Middle to Upper Rhaetian and into the Hettangian in Europe (Lund 1977, Schultz 1966). The presence of common specimens of *Paracirculina* sp. and a questionable specimen of *Ovalipollis breviformis* and *Limbosporites* sp. are interpreted as being the result of reworking.

FOSHEIM ANTICLINE

Sample No.: C-36999. 74-WR-3. 780

Age: Liassic

Environment: Non-marine

Remarks: This assemblage contains abundant spores and pollen, especially large bisaccates. The abundance of *Lycopodiumsporites* spp., *Podocarpidites* spp., *Classopollis torosus*, *Pinuspollenites parvisaccatus*, *Cerebropollenites mesozoicus* together with questionable specimens of *Cardargasporites* and *Quadraeculina* and the large number of *Alisporites giganteus* indicates an early Jurassic age. The presence of *Callialasporites turbatus* suggests the

sample is unlikely to be older than Sinemurian (Reiser & Williams 1969).

This sample is different in character from all the underlying ones because it lacks the abundant Rhaetian reworking and has many Jurassic species not recorded lower in the section.

LAKE CLIFFS 81°51'; 70°30'

Sample No.: C-72355. 77-EL-5, 18

Age: Permian, probably Upper Permian.

Environment: Non-marine

Remarks: This sample contains a fairly well preserved assemblage composed of striate pollen and many representitives of the genus *Weylandites*. Most species are long ranging Permian forms, e.g. *Protohaploxypinus limpidus, P. varius, Straitopodocarpites pantii, Weylandites lucifer, W. vittifer*. However, the rare occurrence of *Protohaploxypinus microcorpus*, and *Gnetaceaepollenites sinuosus* suggests an Upper Permian age.

LAKE CLIFFS

Sample No.: C-72358. 77-EL-5, 58

Age: Scythian, possibly Smithian

Environment: Marine

Remarks: Abundant acritarchs, striate pollen and small fungal spores characterise this sample. The lack of plant tissue together with the numerous species of *Micrhystridium* and *Filisphaeridium* indicate an open marine environment of deposition.

The striate pollen is Scythian in aspect consisting mainly of *Lunatisporites* spp. The lack of Griesbachian-Dienerian forms typically found in

the Sverdrup Basin (*Equisetosporites steevesi*, *Foveofusa* and *Lynotolypa*) suggests a slightly younger age. Only one specimen of *Equisetosporites steevesi* is present and the preservation of this suggests it is older than the bulk of the assemblage.

Rare specimens of *Nevesisporites limatulus*, *Aratrisporites paenulatus* and *Kraeuselisporites* spp. indicate an upper Scythian age, and as there is also a lack of obvious Anisian influence, a Smithian age is proposed.

LAKE CLIFFS

Sample No.: C-72360 77-EL-5, 111

Age: Late Spathian

Environment: Marine

Remarks: A fairly well preserved assemblage containing striate pollen typical of the Scythian and abundant acritarchs. *Nevesisporites limatulus* is more common in this sample and typically occurs in the Smithian to early Anisian of Western Australia (Dolby and Balme 1975). *Platysaccus queenslandi* is rare here but first appears in the upper part of the Lower Triassic of the Salt Range (Balme 1970). Rare specimens of *Infernopollenites parvus*, *Guttulapollenites* sp. and *Striatoabieites aytugii* also suggest an Anisian influence. Similarly, rich acritarch assemblages with great speciation in the genera *Micrhystridium/Filisphaeridium* are common in the Middle Triassic of Arctic Canada. This sample is therefore interpreted as probably transitional between the Lower and Middle Triassic.

MACDONALD RIVER, TANQUARY FIORD

Sample No.: C-55047 75-WR-1, 9

Age: Smithian

Environment: Marine

Remarks: This is a poorly preserved assemblage rich in acritarchs and laevigate spores with rare striate pollen. The overall assemblage is Scythian in character. Acritarchs belonging to the genera *Micrhystridium* and *Veryhachium* are very abundant. A distinctive *Veryhachium* species resembling *V. triqueter* of Sargeant, but larger, is common here, and is typically found in the marine Smithian of the Sverdrup Basin.

Sample No.: C-55048 75-WR-1, 10

Age: Early Smithian

Environment: Marine

Remarks: A well preserved assemblage dominated by spores and acritarchs with little plant debris. A few spore species composed 90% of the spore/pollen assemblage. Lycophytes are particularly abundant (*Densoisporites* and *Kraeuselisporites*) together with possible bryophytes *(Retusotriletes)* and suggest the proximity of a marshy environment.

Veryhachium aff. *triqueter* is again present (as in C-55047) and indicates a Smithian age. A few specimens of *Equisetosporites steevesi* and *Striatoabieites richteri* suggest an older influence (Griesbachian-Dienerian). An early Smithian date is therefore postulated.

TANQUARY FIORD

Sample No.: C-55050. 75-WR-1. 12

Age: Scythian, undifferentiated

Environment: Marine

Remarks: This sample contains a poorly preserved assemblage dominated by reworked Devonian spores. The overall species list indicates a Scythian age but there is inadequate evidence to refine the dating further. The frequency of *Lundbladispora* and *Densoisporites* species may indicate the possibility of a Smithian age.

Sample No.: C-55053. 75-WR-1. 15

Age: Indeterminate

Environment: Indeterminate

Remarks: This sample is barren except for a single spore which is possibly reworked. There are a few fragments of carbonised debris.

Sample No.: C-55055. 75-WR-1. 17

Age: Indeterminate

Environment: Indeterminate.

Remarks: This sample is barren and contains mineral fragments only.

MACDONALD RIVER, TANQUARY FIORD

Sample No.: C-55058. 75-WR-1. 20

Age: Indeterminate.

Environment: Indeterminate.

Remarks: This sample contains a single spore and no plant debris.

Sample No.: C-55061. 75-WR-1. 23

Age: Indeterminate.

Environment: Non-marine.

Remarks: A few poorly preserved spores and pollen are intermixed with abundant comminuted plant residue. No diagnostic species are present.

Sample No.: C-55076. 75-WR-1. 38

Age: Lower Jurassic, probably pre-Toarcian

Environment: Marine

Remarks: A few poorly preserved palynomorphs are dispersed amongst finely comminuted organic matter. The presence of one specimen of *Classopollis* and a specimen of ?*Exesipollenites tumulus* associated with frequent *Lycopodiumsporites austroclavatidites* and *L.* spp. indicates a Liassic age. A pre-Toarcian date is suggested because although the sample contains rare indeterminate dinoflagellate cysts, there are no specimens of the *Nannoceratopsis gracilis/senex* group present.

There is a lack of reworked Rhaetian which is so prominent in many of the Fosheim Anticline samples.

TANQUARY FIORD, MACDONALD RIVER W.

Sample No.: C-55144. 75-WR-3. 12

Age: Indeterminate

Environment: Indeterminate

Remarks: This sample is barren. It contains a few fragments of carbonised matter.

Sample No.: C-55154. 75-WR-3 23

Age: Lower Jurassic

Environment: Marine

Remarks: This is a rich, fairly well preserved assemblage dominated by the spores *Dictyophyllidites* and *Iraquispora (Kyrtomisporites)*. Large plant fragments are also common.

Rare specimens of *Classopollis classoides* indicate a Lower Jurassic age. Similarly *Iraquispora laevigata*, *Lycopodiumsporites* sp., *Polycingulatisporites* sp. and *Stereisporites cicatricosus* commonly occur in the Liassic. Many of the other associated species are interpreted as being reworked from the Rhaetian (*Riccisporites* spp., *Zebrasporites* sp.) and also lower in the Triassic (*Falcisporites stabilis*, *Granosaccus ornatus*, *Ovalipollis ovalis*).

This sample has much in common with the lowest one from Fosshiem Anticline (74-WR-3, 0).

NUNATAK 81°54'N, 73°44'W

Sample No.: C-72387. 77-EL STA 5

Age: Indeterminate

Environment: Marine

Remarks: This very poorly preserved assemblage contains few spores and pollen but abundant *Micrhystridium* specimens. No stratigraphically useful species are present.

YELVERTON INLET

Sample No.: C-45386. 75-MSA-39

Age: Scythian - undifferentiated

Environment: Marine

Remarks: Palynomorphs are infrequent and very poorly preserved. Specimens of *Lunatisporites* spp., and *Protohaploxypinus* spp. indicate a Scythian age but the sample is too poor to refine the dating further.

YELVERTON INLET

Sample No.: C-45458. 75-MSA-73

Age: Indeterminate

Environment: Indeterminate

Remarks: This sample contains abundant fine debris but few palynomorphs. There is nothing to indicate the age.

YELVERTON INLET

Sample No.: C-45460. 75-MSA-73

Age: Probably Rhaeto-Liassic

Environment: Non-marine

Remarks: The sample contains a relatively depauperate association of microfossils many of which are indeterminate. A number of specimens of *Zebrasporites laevigatus* suggest a Rhaetian age (Fisher & Bujak 1975, Lund 1977). However, the presence of rare specimens of *Stereisporites cicatricosus* and *Iraquispora laevigata* probably indicate a lower Jurassic influence. A tentative Rhaeto-Liassic age is therefore assigned to this sample, although a slightly younger age cannot be discounted.

YELVERTAON PASS AND LAKE

Sample No.: C-47987. 75-WR-12. 1

Age: Early Jurassic, probably Late Pliensbachian

Environment: Marine.

Remarks: Abundant organic matter with poorly preserved *Annulispora* sp., and *Steriesporites* spp. dominate this assemblage. A small number of the dinoflagellate *Nannoceratopsis senex* and a specimen of *Mancodinium semitabulatum* indicate a Late Pliensbachian age. The abundance of *Stereisporites cicatricosus* and *S.* sp., cf. *antiquasporites* are characteristic of the Lower Jurassic.

Sample No.: C-47989. 75-WR-12. 3

Age: Probably Liassic

Environment: Non-marine

Remarks: This sample contains a few poorly preserved palynomorphs. Pollen grains are rare. The assemblage is similar to, but less diverse than C-47987 and is too poor to date categorically. Because of its stratigraphic position it is probably Liassic with reworked Rhaetian.

YELVERTON PASS AND LAKE

Sample No.: C-55394. 75-WR-12. 9

Age: Probably Liassic

Environment: Non-marine.

Remarks: This sample contains a poorly preserved assemblage dominated by *Riccisporites tuberculatus* tetrads and *Cingulizonates rhaeticus*. These typically Rhaetian forms must have been reworked because one of the underlying samples is Liassic (75-WR-12, 1).

Sample No.: C-55397. 75-WR-12. 12

Age: Probably Liassic

Environment: Non-marine

Remarks: Much fine organic debris and a few poorly preserved spores occur in this sample. Although some Rhaetian forms are present (*Riccisporites* sp., *Cingulizonates* sp.), there is an indication of an early Jurassic age (*Lycopodiumsporites* sp., and *Iraquispora speciosa)*.

B. WELL SAMPLES

BROCK C-50

Depth: 1570' C-30842

Age: Late Scythian, probably Late Spathian

Environment: Marine

Remarks: This sample contains a very diverse assemblage dominated by striate bisaccates, acritarchs and small fungal spores. Frequent specimens of *Lunatisporites noviaulensis*, *L. acutus* and *Protohaploxypinus jacobii* are characteristic of the Scythian. There is, however, a strong Middle Triassic influence indicated by *Striatoabieites aytugii*, *Infernopollenites sulcatus*, several species of *Filisphaeridium* and *Tasmanites* sp. This suggests the sample is Late Spathian in age.

Depth: 2570'. C-30842

Age: Smithian - Spathian

Environment: Marine.

Remarks: A poorly preserved assemblage dominated by large striate bisaccate pollen and abundant acritarchs. The abundant striate pollen together with *Nevesisporites limatulus* suggests a Scythian age. *Nevesisporites limatulus* is most abundant in the mid Smithian - mid Spathian of Western Australia (Dolby and Balme 1976) indicating that this sample may be of comparable age.

BROCK C-50

Depth: 3910-20. C-30842.

Age: Late Dienerian - Early Smithian.

Environment: Marine (but less so than the other three Brock samples).

Remarks: A poorly preserved marine assemblage with *Cycadopites* spp. and large

striate pollen dominant. The abundance of *Equisetosporites* spp., *Aratrisporites* spp., striate pollen and trilete cavate spores indicates a Scythian age. *Equisetosporites* occurs most frequently in the Griesbachian-Dienerian and *Aratrisporites* is abundant in the early Smithian of Western Australia (Dolby and Balme 1976) suggesting that this sample is Late Dienerian to Early Smithian in age.

Depth: 5134'. C-30842.

Age: Griesbachian-Dienerian

Environment: Marine

Remarks: A poorly preserved marine assemblage. Some striate pollen grains are present but the most common palynomorphs are *Equisetosporites* spp. and *Micrhystridium* spp. The abundance of *Equisetosporites* species combined with the rarity of *Aratrisporites* suggests a lower Scythian age.

CAPE NOREM A-80

Depth: 8395'. C-30200

Age: Early Smithian.

Environment: Marine

Remarks: Spores, pollen and small fungal spores are abundant though poorly preserved in this sample. *Striatoabieites richteri, S. duivenii* and very rare specimens of cf., *Equisetosporites steevesi* occur here and are most commonly found in the Griesbachian-Dienerian. However, the presence, in small numbers, of *Nevesisporites limatulus* suggests a Smithian influence.

CAPE NOREM A-80

Depth: 9738'. C-30200.

Age: Early Smithian.

Environment: Marine

Remarks: This poorly preserved marine assemblage contains abundant fungal spores, striate pollen plus many of the same species as in the sample from 8395'. The total assemblage is Scythian in composition containing many specimens belonging to the genera *Lunatisporites*, *Protohaploxypinus* and *Striatoabieites*. Common *Nevesisporites limatulus* suggest a Smithian date. *Infernopollenites* spp. are also present and are usually typical of the Middle Triassic.

Striatoabieites richteri and *Equisetosporites steevesi*, both common in this sample, normally abound in the lower Scythian. The sample is therefore dated as early Smithian.

COLLINGWOOD K-33

Depth: 6245'. C-76642

Age: Very late Scythian - very early Anisian.

Environment: Marine

Remarks: Palynomorphs are common although thin and often fragmented. Striate pollen and heavy spined acritarchs are the dominant forms. The presence of *Lunatisporites* sp. and *Protohaploxypinus* spp. suggests a late Scythian age. There is, however, a strong Anisian element in the form of *Striatoabieites aytugii*, *Staurosaccites quadrifidus*, heavy spined acritarchs and questionable specimens of *Infernopollenites* and *Rimaesporites*. The sample is therefore dated as borderline between the Lower and Middle Triassic.

DRAKE POINT D-68

Depth: 9820'. C-45610,

Age: Griesbachian-Dienerian

Environment: Slightly marine

Remarks: This sample contains abundant, fairly well preserved palynomorphs Striate pollen is particularly common. Only a few specimens of the acritarch genus *Micrhystridium* were recorded which indicates that the environment of deposition may have been marginal marine.

The combination of *Lunatisporites novimundi*, *Equisetosporites steevesi* and *Aculeisporites variabilis* is typical of the Griesbachian-Dienerian in Arctic Canada. The mixed Permian assemblage (*Corisaccites* aff. *alutus* from the early Permian and *Lueckisporites* sp. from the Upper Permian) indicates reworking into the Triassic rather than in situ occurrence. Upper Devonian spores and megaspores are also common.

DRAKE POINT D-68

Depth: 9861'. C-45610.

Age: Griesbachian

Environment: Slightly marine.

Remarks: This sample is again dominated by striate pollen and shows many similarities to 9820'. The presence of several species of *Equisetosporites* indicates a lower Scythian age. Specimens of *Foveofusa* allow a further refinement in dating, as this genus is restricted to the Greisbachian in the Sverdrup Basin (Staplin, in press). Forms reworked from the Devonian and Permian are present but are rare compared with the sample above (9820').

FOSHEIM N-27

Depth: 8490'. C-51834

Age: Indeterminate

Environment: Marine

Remarks: This sample is almost barren, containing three acritarch specimens, two of which were barely recognizable, and a few highly carbonised sporomorphs. The degree of metamorphism is Staplin 4 to 4+.

SANDY POINT L-46

Depth: 2893'. C-30224

Age: indeterminate

Environment: Indeterminate

Remarks: This sample contains finely comminuted mineral matter and very few spores and pollen, none of which is stratigraphically useful.

APPENDIX

INDIVIDUAL SAMPLE SPECIES LISTS

Key for species abundance:

VR	Very rare.	1 specimen/slide
R	Rare	2-5 specimens/slide
C	Common	6-20 specimens/slide
A	Abundant	More than 20 specimens/slide

A. FIELD SAMPLES

B. WELL SAMPLES (Cores)

A. FIELD SAMPLES

BLISTER HILL - DISTRICT OF FRANKLIN

77-EL-1 C-72304

174

Spores:

Camerosporites pseudoverrucatus (R)
Camerozonosporites rudis (R)
Dictyophyllidites mortoni (R)
Fungal spores (A)
Polypodiisporites sp. (R)
Paracirculina sp. (A)
P. quadruplicis (R)
Pseudoenzonalasporites sp. (R)
Riccisporites tuberculatus (C)
Zebrasporites interscriptus (VR)

Pollen:

Alisporites sp. (C)
Cycadopites (C)
Exesipollenites tumulus (R)
Granosaccus sp. (VR)
Ovalipollis sp. (R)
Vitreisporites pallidus (R)

Plankton:

None

Age: Early Liassic.

E. BLISTER 81°48', 71°45'

77-EL Sta. 8 C-72390

Spores:

Aratrisporites sp. (VR)
Acanthotriletes sp. (R)
Apiculatisporis sp. (R)
Grebespora concentrica (C)
cf. *Nevesisporites limatulus* (VR)

Pollen:

Allisporites spp. (C)
Decussatisporites sp. (VR)
?Infernopollenites sulcatus (VR)
Klausipollenites staplinii (C)
Protohaploxypinus cf. *limpidus* (R)
Spheripollenites scissus (R)
Vittatina striata (R)

Plankton: none.

Reworking: ? Devonian spores (C)

Age: Scythian, probably Smithian-Spathian.

E. BLISTER

77-EL, STA. 9 C-72391

Spores and Pollen:
Highly carbonised

Plankton: none

Age: indeterminate

FOSHEIM ANTICLINE, District of Franklin

74-WR-3, 0 C-33106

Spores:

Annulispora folliculosa (R)
Aratrisporites fischeri (R)
A. tenuispinosus (R)
Camerosporites sp. (VR)
Camerozonosporites ?rudis (R)
Cingulizonates sp. (R)
Contignisporites problematicus (C)
Dictyophyllidites mortoni (R)
Iraquispora speciosa & I. laevigata (R)
Paracirculina sp. (C)
Polycingulatisporites sp. (VR)
Rimaesporites sp. (R)
Steriesporites cicatricosus (R)
Zebratasporites interscriptus (R)
A. laevigatus (R)

Pollen:

Alisporites giganteus, A. grandis & A. spp. (A)
Araucariacites sp. (R)
Chordasporites singulichorda (R)
Exesipollenites tumulus (R)
Falcisporites stabilis (C)
Granosaccus ornatus (R)
Ovalipollis breviformis (R)
Podocarpidites sp. (R)
Quadraeculina anellaeformis (R)

Plankton:
Heibergella assymetrica (R)
Nanoceratopsis sp. (VR)

Reworking:
Devonian/Carboniferous spores (C)

Age: Early Liassic.

FOSHEIM ANTICLINE

74-WR-3, 294 C-36973

Spores and Pollen:
Long ranging spores
Corollina cf. *Meyeriana* (VR)
Bisaccates (R)

Plankton:
Micrhystridium (R)

Reworking:
Devonian (C)

Age: indeterminate.

FOSHEIM ANTICLINE

74-WR-3, 384 C-36979

Spores:
Aratrisporites fischeri (R)
Annulispora sp. (R)
Cingulizonates sp. (R)
Circulina sp. (R)
Corollina sp. (including tetrads) (C)
Iraquispora speciosa (VR)
Lycopodiumsporites sp. (R)
Osmundacidites sp. (R)
Riccisporites tuberculatus (R)
R. sp. *(laevigate)* (R)
Stereisporites sp. (R)
Zebrasporites laevigatus (VR)

Pollen:
Alisporites spp. (R)
Lunatisporites ?rhaeticus (VR)
Ovalipollis sp. (VR)
Rhaetipollis germanicus (VR)

Plankton:

Leofusa Jurassica (VR)
Filisphaeridium sp. (R)
Micrhystridium sp. (3 spp or more) (C)

Reworking:

?Devonian spores (R)

Age: Liassic.

FOSHEIM ANTICLINE

74-WR-3, 476 C-36982

Spores:

Aratrisporites spp. (C)
Camerozonosporites rudis (R)
Densoisporites cf. *lockerensis* (R)
Limbosporites lundbladii (C)
Lycopodiumsporites sp. (VR)
Riccisporites tuberculatus (C)
R. sp. *(Laevigate)* (C)
Steriesporites perforatus (VR)
Triancoraesporites ancorae (C)
Zebrasporites laevigatus (R)

Pollen:

Bisaccates (R)

Reworking:

?Devonian spores (R)
Norian dinoflagellate (Sverdrupiella usitata) (R)

Age: Liassic.

FOSHEIM ANTICLINE

74-WR-3, 579 C-36988

Spores:

Annulispora folliculosa (R)
Camarozonosporites rudis (R)
Cingulizonates sp. (VR)
Contignisporites problematicus (R)
Densoisporites sp. (C)
Limbosporites lundbladii (R)
Lycopodiumsporites semimuris (R)
Riccisporites tuberculatus (A)
R. sp. *(Laevigate)* (R)
Semiretisporis gothae (C)
Triancoraesporites anchorae (VR)
Zebrasporites laevigatus (R)

Pollen:
Bisaccates (*Alisporites, Platysaccus Sulcatisporites*) (R)

Plankton:
None

Reworking:
Devonian/Carboniferous spores (C)

Age: Liassic.

FOSHEIM ANTICLINE

74-WR-3, 670 C-36995

Spores:
Iraquispora speciosa (R)
Lycopodiumsporites austroclavatidites (R)
Paracirculina sp. (C)

Pollen:
Bisaccates indet. (R)
?Ovalipossis breviformis (VR)
?Limbosporites sp. (VR)

Plankton:
none

Age: Jurassic, probably early Liassic

FOSHEIM ANTICLINE

74-WR-3, 780 C-36999

Spores:
?Cadargasporites verrucosus (R)
Lycopodiumsporites austroclavatidites (C)
L. semimuris (R)
L. spp. (C)
Perotrilites sp. (C)
Polycingulatisporites sp. (R)

Pollen:
Alisporites giganteus, A. cf. *grandis* (C)
A. plicatus & A. spp. (C)
Callialasporites (Inaperturopollenites) turbatus (R)
Cerebropollenites mesozoicus (R)

Chordasporites singulichorda (VR)
Classopollis torosus (R)
Pinuspollenites (Indusiisporites) parvisaccatus (R)
Podocarpidites cf. *ellipticus* (R)
P. sp (R)
cf. *Quadraeculina anellaeformis* (VR)
Vitreisporites pallidus (R)

Plankton: none

Reworking:
Rhaetian - Riccisporites tuberculatus (VR)

Age: Liassic

LAKE CLIFFS 81°51', 70°30'

77-EL-18 C-72355

Spores:
Kraeuselisporites sp. (R)

Pollen:
Alisporites tenuicorpus (R)
Falcisporites nuthallensis (R)
Gnetaceaepollenites sinuosus (VR)
Marsupipollenites sp. (C)
Protohaploxypinus limpidus (C)
P. microcorpus (R)
P. sewardi (R)
P. varius (C)
Striatopodocarpites pantii (C)
S. rarus (VR)
Vitreisporites pallidus (R)
Weylandites cincinnata (R)
W. lucifer (C)
W. striata (A)
W. vittifer (C)

Plankton: none

Age: Permian, probably Upper Permian.

LAKE CLIFFS

77-EL-5, 58 C-72358

Spores:

Aratrisporites paenulatus (VR)
Fungal spores (A)
Granulatisporites sp. (R)
Kraeuselisporites cf. *apiculatus* (VR)
K. sp. (VR)
Nevesisporites limatulus (R)
Polypodiisporites mutabilis (VR)

Pollen:

Cycadopites follicularis (R)
Equisetosporites steevesi (VR)
Lunatisporites spp (C)
L. hexagonalis (C)
L. noviaulensis (C)
L. novimundi (C)
L. pellucidus (VR)
Protohaploxypinus jacobii (R)
Spheripollenites scissus (VR)

Plankton:

Filisphaeridium spp. (C)
Micrhystridium (many species) including *M. fragile, M. setasessitante* (A)
Veryhachium spp., including *V. irregulare* (R)

Age: Scythian, possibly Smithian

LAKE CLIFFS C-72360
77-EL-5, 111

Spores:

Aratrisporites sp. (R)
Nevesisporites limatulus (C)

Pollen:

Alisporites sp. (R)
Cycadopites follicularis (C)
Equisetosporites multistriatus (VR)
E. steevesi (R)
Guttulapollenites sp. (R)
Infernopollenites parvus (VR)
Lunatisporites hexagonalis (C)
L. ?novimundi (VR)

L. pellucidus (C)
L. spp. (C)
Platysaccus queenslandi (R)
Protohaploxypinus sp. (R)
Striatoabieites cf. *aytugii* (VR)

Plankton:
Filisphaeridium spp. (C)
Micrhystridium spp. (A) many species including
M. cf. *balmei*, *M. breve*, *M.* sp. *H.* (Jansonius)
M. jekhowskyi, *M. setasessitante*
Veryhachium spp. (R) including *V. irregulare*,
V. riburgense, *V. valensii*
Leofusa jurassica (R)
Leiosphaeridium (R)

Reworking:
?Devonian spores (C)
Permian spores (VR)

Age: Late Spathian

MACDONALD RIVER, Tanquary Fiord

75-WR-1, 9 C-55047

Spores:
Aratrisporites sp. (VR)
Densoisporites sp. (R)
Leiotriletes sp. etc. (C)
Kraeuselisporites sp. (R)
Verrucosisporites sp. (R)

Pollen:
Lunatisporites hexagonalis (R)
L. ? pellucidus (R)
?Platysaccus sp. (VR)
Protohaploxypinus jacobii (R)
P. samoilovichii (R)

Plankton:
Micrhystridium spp. (A)) 90%
Veryhachium spp. (A)) 10%
including *V. brevispinosum*, *V.* aff.
triqueter, *V. valensii*

Age: Smithian.

MACDONALD RIVER, Tanquary Fiord

75-WR-1, 10 C-55048

Spores:
Aculeisporites variabilis (VR)
Densoisporites sp. (A)
Leiotriletes sp. (A)
Retusotriletes sp. (A)
Kraeuselisporites sp. (A)
Lundbladispora cf. *brevicula* (A)

Pollen:
Cycadopites sp. cf. *folliculosa* (R)
Equisetosporites steevesi (R)
Lunatisporites hexagonalis (R)
L. novimundi (R)
Platysaccus sp. (VR)
Protohaploxypinus jacobii (R)
P. samoilovichii & *P.* sp. (R)
Striatoabieites cf. *richteri* (R)

Plankton:
Micrhystridium spp. (A) 80%) Total acritarch
Veryhachium (spp. (A) 20%) population

Reworking:
Devonian spores (C)
Permian pollen - *Protohaploxypinus limpidus* (R)

Age: Early Smithian.

MACDONALD RIVER, Tanquary Fiord

75-WR-1 12 C-55050

Spores:
Indet spores (A)
Densoisporites sp. (C)
Kraeuselisporites sp. (VR)
Lundbladispora cf. *brevicula* (C)

Pollen:
Alisporites sp. (VR)
Cycadopites folliculosa (VR)
Lunatisporites hexagonalis (VR)
L. novimundi (R)
L. transversundatus (VR)
L. spp. (R)
Platysaccus sp. (R)

Plankton:
Micrhystridium spp. (A) 40%) total acritarch
Veryhachium valensii (A) 60%) assemblage

Reworking:
Devonian spores (A)

Age: Scythian - undifferentiated.

MACDONALD RIVER, Tanquary Fiord

C-55053

75-WR-1, 15

One possibly reworked spore - otherwise barren.
No acritarchs

Age: Indeterminate

MACDONALD RIVER

C-55055

75-WR-1, 17

Barren

Age: Indeterminate

MACDONALD RIVER, Tanquary Fiord

C-55058

75-WR-1, 20

Single indeterminate spore, otherwise barren of microfossils and plant debris.

Age: Indeterminate.

C-55061

75-WR-1, 23

Spores:
?Camerozonosporites sp. (R)
Indet. spores (C)
Verrucosisporites sp. (R)

Pollen:
Alisporites sp. (VR)
?Corollina sp. (R)

Plankton:
None

Age: Indeterminate.

MACDONALD RIVER - Tanquary Fiord

C-55076

75-WR-1, 38

Spores:
Anapiculatisporites sp. (A)
Antulsporites varigranulatus (VR)
Apiculatisporites sp. (R)
Contignisporites cf. *problematicus* (R)
Cyathidites sp. (R)
Granulatisporites rotunda (R)
Lycopodiumsporites austroclavatidites (C)
L. spp. (R)
Stereisporites cicatricosus (R)
S. cf. *perforatus* (R)

Pollen:
Alisporites sp. (R)
Classopollis sp. (VR)
Cycadopites follicularis (R)
?Exesipollenites tumulus (R)
Vitreisporites pallidus (R)

Plankton:
Dinoflagellates indet. (R)
Leiofusa jurassica (C)

Age: Lower Jurassic, probably pre-Toarcian.

MACDONALD RIVER W.

C-55144

75-WR-1, 12

Barren

Age: Indeterminate.

MACDONALD RIVER W. Tanquary Fiord

75-WR-3; 23 C-55154

Spores:

?Camerosporites sp. (R)
Camerozonosporites sp. (R)
Cingulizonates sp. (R)
?Contignisporites problematicus (R)
Dictyophyllidites mortoni (A)
Iraquispora laevigata (A)
I. speciosa (R)
I. sp. (A)
Lycopodiumsporites sp. (R)
?Paracirculina sp. (R)
Polycingulatisporites sp. (R)
Riccisporites tuberculatus (R)
R. sp. *(Laevigate)* (C)
Stereisporites cicatricosus (R)
Zebrasporites sp. (VR)

Pollen:

Alisporites sp. (C)
Brachysaccus sp. (R)
?Chordasporites singulichorda (R)
Classopollis classoides (R)
Cycadopites sp. (R)
Falcisporites stabilis (R)
Granosaccus ornatus (R)
Ovalipollis ovalis (R)
Taeniaesporites ?rhaeticus (VR)
Vitreisporites pallidus (R)

Plankton:

Dinoflagellate (VR)

Reworking:

?Palaeozoic - numerous visicles (C)
Permian (VR)

Age: Lower Jurassic

NUNATAK 81°54', 73°44' C-72387

77-EL, STA 5

Spores and Pollen:

Indet. spores (R)
?Chordasporites sp. (VR)
Cycadopites sp. (R)
?Minutosaccus sp. (VR)
Pollen Indet. (R)

Plankton:

Micrhystridium sp. (A)

Age: Indeterminate.

YELVERTON INLET

75-MSA-39 C-45386

Spores: *Verrucosisporites* sp. (VR)

Pollen:

Cycadopites sp. (R)
?Ovalipollis sp. (VR)
Lunatisporites ?hexagonalis (R)
L. ?novimundi (VR)
L. ?transversundatus (VR)
L. spp. (C)
Protohaploxypinus samoilovichii (VR)

Plankton:

Micrhystridium spp. (A)

Age: Scythian - undifferentiated.

YELVERTON INLET

75-MSA-73 C-45458

Spores: Indet. (R)

Pollen: Indet. (VR)

Age: Indeterminate.

YELVERTON INLET

75-MSA-73 C-45460

Spores:

Acanthotriletes sp. (VR)
Annulispora folliculosa (C)
?Camarozonosporites sp. (VR)
?Cingulizonates sp. (VR)
Dictyophyllidites mortoni (R)
Iraquispora laevigata (VR)
Stereisporites cicatricosus (R)
Zebrasporites laevigatus (C)

Pollen:

?Granosaccus sp. (VR)

Age: Probably Rhaeto-Liassic.

YELVERTON PASS AND LAKE

75-WR-12, 1 C-47987

Spores:

Annulispora folliculosa (C)
Camerozonosporites rudis (R)
Cingulizonates sp. (R)
Contignisporites problematicus (R)
Dictyophyllidites mortoni (R)
Granulatisporites sp. and
Apiculatisporites spp. (A)
Iraquispora laevigata (R)
Lycopodiumsporites sp. (R)
Paracircucina sp. (R)
Stereisporites sp. cf.
antiquasporites (C)
S. cicatricosus (A)
Zebrasporites interscriptus (C)

Pollen:

Brachysaccus sp. (VR)
Cycadopites spp. (R)
Chordasporites singulichorda (VR)
Granosaccus ornatus (R)
?Parcisporites annectus (R)
Striatoabieites aytugii (R)

Plankton:

Nannoceratopsis senex (R)
Manocodinium semitabulatum (VR)

Age: Early Jurassic, probably Late Pleinsbachian.

YELVERTON PASS AND LAKE

75-WR-12, 3 C-47989

Spores:

Annulispora sp. (R)
Apiculatisporites sp. (R)
Contignisporites problematicus (VR)
Dictyophyllidites sp. (R)
Indet. spores (C)
Stereisporites sp. (R)
Zebrasporites laevigatus (VR)

Pollen:

Alisporites sp. (R)
Platysaccus sp. (VR)
?Taeniaesporites sp. (VR)

Plankton: None

Contamination: Few spores and pollen

Age: Probably Liassic.

YELVERTON PASS AND LAKE

75-WR-12, 9 C-55394

Spores:

Aratrisporites sp. (R)
Camerosporites sp. (R)
Camerozonosporites sp. (VR)
Cingulizonates rhaeticus (C)
Dictyophyllidites mortoni (C)
Granulatispora sp. (R)
?Polycingulatisporites sp. (VR)
Riccisporites tuberculatus (A)
R. sp. *(Laevigate)* (A)
Stereisporites sp. (VR)
Zebrasporites laevigatus (VR)

Pollen:

Brachysaccus sp. (R)
Cycadopites sp. (VR)
Granosaccus ornatus (VR)

Plankton: None

Age: Probably Liassic.

YELVERTON PASS AND LAKE

75-WR-12, 12 C-55397

Spores:

Annulispora sp. (VR)
?Aratrisporites sp. (VR)
Camerozonosporites sp. (R)
Cingulizonates sp. (R)
Iraquispora speciosa (VR)
Lycopodiumisporites sp. (VR)
Riccisporites sp. (C)
Verrucosisporites sp (C)
Zebrasporites laevigatus (R)

Pollen:

Cycadopites sp. (VR)
?Ovalipollis breviformis (VR)
Vitreisporites sp. (VR)

Plankton: None

Age: Probably Liassic.

B. WELL SAMPLES - CORES

BROCK C-50 C-30842

1570' (CORE)

Spores:
Aratrisporites tenuispinosus and spp. (C)
Fungal spores and sporangia (A)
Lundbladispora sp. (R)
Lycopodiacites sp. (R)

Pollen:
Alisporites spp. (C)
Infernopollenites parvus (C)
I. sulcatus and *I.* spp. (R)
Lunatisporites acutus (R)
L. noviaulensis (C)
Protohaploxypinus jacobii (VR)
Striatoabites aytugii (C)

Plankton:
Filisphaeridium spp. (4+) (A)
Leofusa jurassica (R)
Micrhystridium sp. (R)
Tasmanites (R)
Veryhachium sp. cf. *trispinosum* (R)

Reworking:
Devonian and Carboniferous (R)

Contamination:
Jurassic (C) *Contignisporites, Lycopodiumsporites*

Age: Late Scythian, probably Late Spathian.

BROCK C-50 C-30842

2570' (CORE)

Spores: *Aratrisporites* spp. (R)
Nevesisporites limatulus (C)

Pollen:
Cycadopites follicularis (A)
Infernopollenites parvus (R)
Lunatisporites acutus (R)
L. hexagonalis (R)
L. novimundi (C)
L. noviaulensis (R)
Protohaploxypinus jacobii (VR)
P. samoilovichii (C)

Plankton:
Micrhystridium spp. (at least 3 spp. including *M. jekhowskyi)* (A)
Veryhachium valensii (R)
V. ?riburgense (R)

Reworking:
Devonian/Carboniferous spores (R)

Contamination:
Jurassic spores (R)
Recent pollen (R)

Age: Smithian-Spathian.

BROCK C-50

3910-20' (CORE) C-30842

Spores:
Aratrisporites parvispinosus (C)
Densoisporites nejburgii (R)
D. spp. (R)
Kraeuselisporites apiculatus (VR)
K. spinosus (R)
Proprisporites pocockii (VR)

Pollen:
Cycadopites follicularis (A)
C. hartii, C., sp. *K., C. minimus* (R)
Equisetosporites multistriatus (R)
E. scottii (R)
E. steevesi (C)
E. spp. including *E. extensus* (R)
Klausipollenites staplinii (R)
Lunatisporites hexagonalis (C)
L. novimundi (VR)
L. transversundatus (R)
Protopaploxypinus jacobii (VR)
P. samoilovichii (R)

Plankton:
Micrhystridium spp. (C)
Veryhachium valensii (R)

Incertae sedis:
Linotolypa (R)

Reworking:
Devonian spores (C)

Age: Late Dienerian - Early Smithian.

BROCK C-50

5134' (CORE) C-30842

Spores:

Aratrisporites spp. including
A. ?flexibilis, A. ?fischeri (R)
Densoisporites sp. (R)
Kraeuselisporites ?apiculatus and spp. (R)
Lundbladisporita cf. *brevicula* (R)
Lycospora imperialis (R)

Pollen:

Aculeisporites variabilis (VR)
Equisetosporites steevesi (A)
E. multistriatus, and *E. scottii* (A)
Klausipollenites spp. (R)
Lunatisporites hexagonalis (C)
L. novimundi (R)
L. spp. (R)
Protohaploxypinus samoilovichii (R)
Striatoabieites spp. (R)

Plankton:

Micrhystridium spp. (A)
Veryhachium ?riburgense (VR)

Incertae sedis:

Grebespora concentrica (VR)
Linotolypa sp. (VR)

Age: Griesbachian - Dienerian.

CAPE NOREM A-80 C-30200

8395' (CORE)

Spores:

Apiculatisporis cf. *lanjouwii* (C)
Fungal spores (A)
Kraeuselisporites spinosus (R)
K. sp. (R)
Lundbladispora cf. *brevicula* (VR)
Nevesisporites limatulus (R)

Pollen:

?Aculeisporites variabilis (R)
cf. *Equisetosporites steevesi* (VR)
Infernopollenites cf. *parvus* (R)

Pollen Cont.
Lunatisporites novimundi (R)
L. pellucidus (R)
Protohaploxypinus jacobii (R)
P. samoilovichii (C)
P. spp. (R)
Striatoabieites richteri (R)
S. duivenii (C)
S. spp. (R)

Plankton:
Micrhystridium spp. (C) including
M. jekhowskyi
Veryhachium sp. (R)

Age: Early Smithian

CAPE NOREM A-80 C-30200

9738' (CORE)

Spores:
Apiculatisporis cf. *lanjouwii* (C)
Fungal spores (A)
Kraeuselisporites spinosus (R)
Nevesisporites limatulus (C)

Pollen:
Cycadopites follicularis (C)
Equisetosporites steevesi (C)
Infernopollenites parvus and spp. (R)
Lunatisporites hexagonalis (C)
L. novimundi (C)
L. pellucidus (R)
L. rugosus (R)
Protohaploxypinus jacobii (C)
P. samoilovichii (C)
P. spp. (C)
Striatoabieites duivenii (R)
S. richteri (C)

Plankton:
Leofusa jurassica (VR)
Micrhystridium spp. (3 spp.+) (C)

Incertae sedis:
Grebespora concentrica (R)
?Fungal body (R)

Age: Early Smithian

COLLINGWOOD K-33

6245' (CORE) C-76642

Spores: none

Pollen:
Infernopollenites sp. (VR)
Lunatisporites sp. (R)
Minutosaccus sp. (VR)
Protohaploxypinus samoilovichii (R)
P. spp. (C)
?Rimaesporites sp. (VR)
Staurosaccites quadrifidus (C)
Striatoabieites aytugii (C)
?Triadispora sp. (R)

Plankton:
Micrhystridium breve (R)
M. spp. (A)
Veryhachium riburgense, irregulare (R)

Incertae sedis:
Schizosporis scissus (R)

Contamination:
Recent Pollen (R)

Age: Late Scythian - Early Anisian.

DRAKE POINT D-68

9820' (CORE) V-45610

Spores:
Kraeselisporites apiculatus (VR)
K. ?spinosus (R)
Megaspore - undescribed (R)

Pollen:
Aculeisporites variabilis (R)
Crustaesporites globosus (R)
Equisetosporites spp. including
E. multistriatus and
E. steevesi (C)
Klausipollenites sp. (VR)
Lunatisporites albertae (R)
L. gracilis, L. rugosus,
L. transversundatus (R)

Pollen cont.
L. hexagonalis (R)
L. novimundi (A)
Ovalipollis sp. (VR)
Protohaploxypinus jacobbi (R)
P. samoilovichii (R)
Triadispora sp. (R)

Plankton:
Micrhystridium spp. (R)

Incertae sedis:
Grebespora concentrica (VR)

Reworking:
U. Devonian spores (C)
Permian (*Lueckisporites* sp., *Corisaccites* aff. *alutus*) (VR)

Age: Griesbachian - Dienerian

DRAKE POINT D-68

9861' (CORE) C-45610

Spores:
Aculeisporites variabilis (R)
Densoisporites sp. (VR)
D. playfordi (VR)
Lundbladispora ?obsoleta (VR)
L. spp. (R)
Megaspores - undescribed forms.

Pollen:
Equisetosporites multistriatus (R)
E. steevesi (R)
E. spp. (C)
Lunatisporites hexagonalis (R)
L. novimundi (A)
L. rugosus (R)
L. transversundatus (R)
Protohaploxypinus jacobii (VR)
P. samoilovichii (C)
Taeniaesporites pellucidus (R)

Plankton:
Micrhystridium spp. (R)

Incertae sedis:
Foveofusa sp. (R)

Reworking:
U. Devonian spores and megaspores (R)
Permian *Protohaploxypinus* cf. *limpidus* (R)
Weylandites cf. *cincinnatus* (R)

Age: Griesbachian

FOSHEIM N-27

C-51834

8490 (CORE)

Spores:
Few highly carbonised.

Plankton:
Micrhystridium sp. (R)
Veryhachium cf. *reductum* (VR)

Age: Indeterminate.

SANDY POINT L-46

C-30224

2893' (CORE)

Spores and pollen:
Few carbonised fragments

Plankton:
None

Age: indeterminate.