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DEPARTMENT OF ENERGY, MINES AND RESOURCES

Geological Survey of Canada



BIOSTRATIGRAPHIC DETERMINATIONS FROM THE SUBSURFACE
OF THE DISTRICTS OF MACKENZIE AND FRANKLIN AND THE YUKON TERRITORY

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ABSTRACT

Identifications and age determinations are presented for fossils from 20 wells and one borehole in the Districts of Franklin and Mackenzie and in the Yukon Territory. Ages range from Ordovician to Cenozoic and are based on identifications of spores, pollen, dinoflagellates, acritarchs, conodonts, foraminifers, ostracodes, corals, brachiopods, stromatoporoids, pelecypods and dacryconarids.

RÉSUMÉ

Les auteurs donnent les identifications et les âges des fossiles de 21 sondages des districts de Franklin et de Mackenzie et du territoire de Yukon. Les âges des fossiles s'étendent du Ordovocien au Cenozoic et sont déterminé par les études des spores, des grains de pollen, des dinoflagellés, des acritarches, des conodontes, des foraminifères, des ostracodes, des coraux, des brachiopodes, des stromatoporidés, des pelecypods et des dacryconarides.

BIOSTRATIGRAPHIC DETERMINATIONS FROM THE SUBSURFACE OF THE
DISTRICTS OF FRANKLIN AND MACKENZIE AND THE YUKON TERRITORY

INTRODUCTION

The assimilation of information obtained from wells drilled in northern Canada is of prime importance to the continuing exploration of the petroleum resources of the region. Biostratigraphic dating of rocks penetrated by wells allows precise correlation of strata with rock units in other wells and with surface stratigraphic sections. It provides important age control for interpreting the structural configuration of the subsurface rocks and of the patterns of sedimentation during geological time.

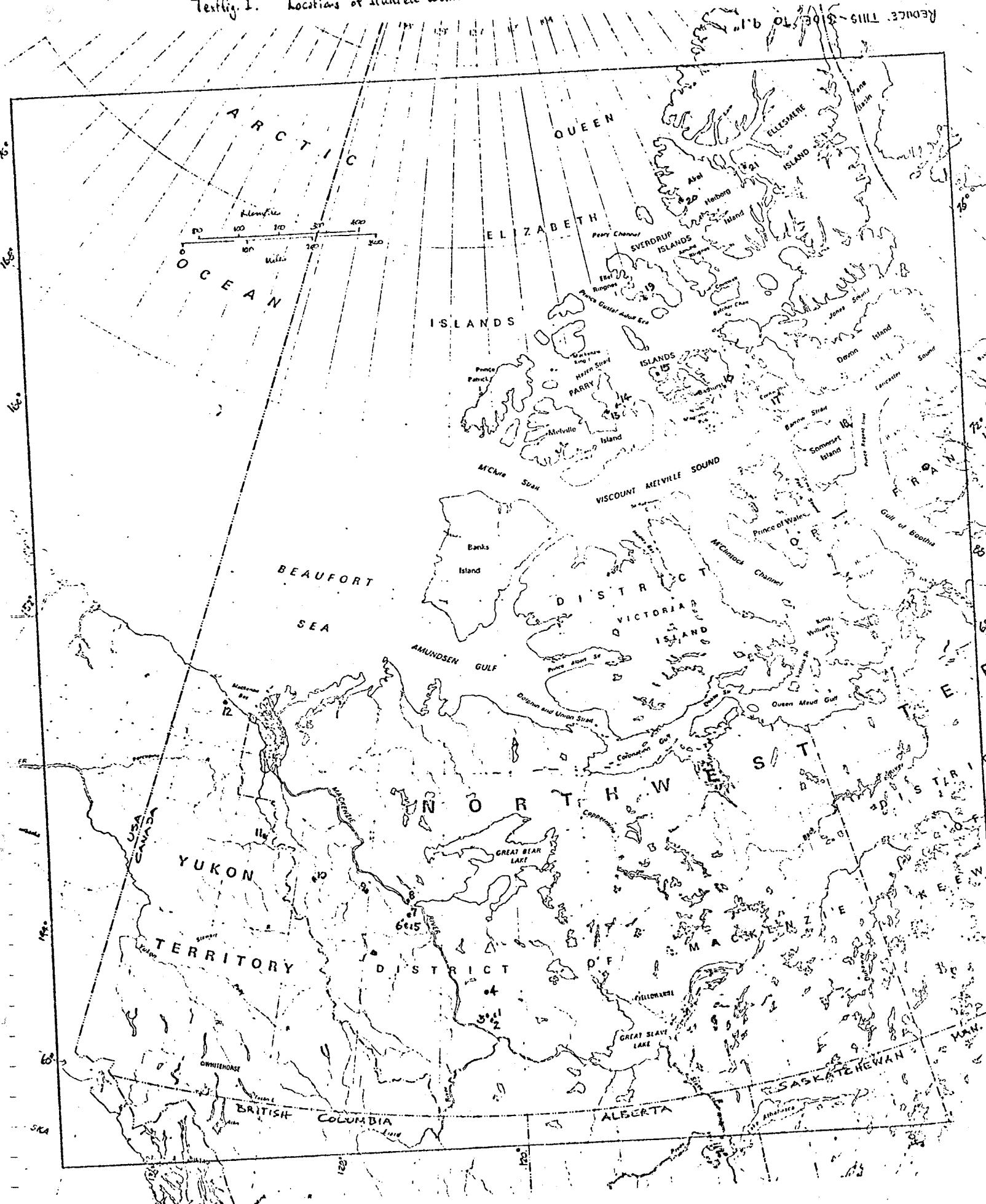
Where possible, the fossiliferous intervals in the wells have been assigned to formations by G.R. Davies, R.W. Macqueen, U. Mayr, N.C. Meijer-Drees, A.D. Miall, D.W. Myhr, K.J. Roy, C.J. Yorath, and F.G. Young, all of the Geological Survey of Canada. The lithostratigraphic frameworks have not yet been established for the remaining intervals and formational assignments are not possible. The fossils are stored in the collections of the Geological Survey of Canada in Calgary.

Some of the biostratigraphic information presented in this report has been abstracted to appear in editions of the Schedule of Wells published by the Department of Indian Affairs and Northern Development and which present syntheses of the stratigraphies of the sedimentary basins of northern Canada.

The report was compiled by J.W. Andrechuk; similar reports have been published by the Geological Survey of Canada as Papers 70-15, 71-15, 72-38, 74-11, 74-39 and 75-10.

Textfig. 1. Locations of studied wells.

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WELLS STUDIED AND SHOWN ON FIGURE 1

<u>Locality</u>	<u>Well Name</u>	<u>Year Completed</u>	<u>Ages Reported</u>	<u>Authors</u>
1	Husky <i>et al.</i> , Willow Lake G-32	1970	Devonian	Pedder
2	Husky <i>et al.</i> , Willow Lake 0-27A	1970	Devonian	Pedder
3	I.O.E. Triad Ebbutt J-70	1964	Devonian	Norris
4	Husky <i>et al.</i> , Willow Lake H-10	1970	Devonian	Pedder
5	Shell Keele River L-04	1965	Cretaceous, Cenozoic	Brideaux
6	CanDel <i>et al.</i> , Tate J-65	1972	Cretaceous, Cenozoic	Brideaux
7	DPW Borehole No. 519	?1973	Cretaceous, Cenozoic	Brideaux
8	CanDel <i>et al.</i> , Fort Norman K-14	1972	Cretaceous, Cenozoic	Brideaux
9	Aquit. <i>et al.</i> , Dodo Canyon K-03	1972	Cretaceous, Cenozoic	Brideaux
10	CanDel <i>et al.</i> , Arctic Red F-47	1973	Cretaceous, Cenozoic	Brideaux
11	Gulf Mobil Caribou N-25	1974	Devonian	Uyeno
12	Pacific <i>et al.</i> , Roland Bay Y.T. L-41	1973	Jurassic	Jeletzky
13	Dome <i>et al.</i> , Weatherall 0-10	1974	Devonian	McGregor
14	Panarctic <i>et al.</i> , Collingwood K-33	1975	Triassic	Tozer
15	Panarctic <i>et al.</i> , Bent Horn N-72	1974	Devonian	Uyeno
16	Sun-KR-Panarctic Allison River N-12	1971	Devonian	Norris
17	Panarctic-Deminex Cornwallis Central Dome K-40	1971	Ordovician	Barnes
18	Panarctic-Deminex Garnier 0-21	1971	Ordovician	Barnes
19	Panarctic <i>et al.</i> , Kristoffer Bay B-06	1972	Triassic, Jurassic, Cretaceous	Wall
20	Horn River-CCS-Getty Mid Fiord J-53	1974	Triassic, Jurassic, Cretaceous	Wall
21	Panarctic-Union-Arco Taleman J-34	1974	Triassic	Brideaux

CORRELATIONS AND IDENTIFICATIONS OF FOSSILS

Cenozoic and Cretaceous Assemblages

(palynomorphs)

by W.W. Brideaux

DPW Borehole No. 519

64°55'50"N, 125°37'30"W, Figure 1, loc. 7,

Depth 5-14 feet, core;

GSC loc. C-39597

derived Cretaceous dinoflagellates and spores

derived Paleozoic spores

Laevigatosporites ovatus Wilson and Webster

Sigmopollis hispidus Hedlund

Liliacidites variegatus Couper

Sequoiapollenites paleocenicus Stanley

Tricolpites hians Stanley sensu Elsik

T. mutabilis Leffingwell

Wodehouseia spinata Stanley

Retitricolporopollenites sp.

Aquilapollenites spp.

Extratriporopollenites spp.

Betulaceoipollenites sp.

Retitricolpites spp.

Phyllocladidites sp.

Cranwellia sp.

Striatopollis sp.

Radialisporis sp.

Ulmipollenites sp.

Verrutricolpites sp.

Granatriporites sp.

Zlivilisporis sp.

Spiniferites sp.

Hystrichokolpoma sp.

Deflandrea sp.

WetzelIELLA homomorpha homomorpha Deflandre and Cookson
age: Paleocene, possibly late Paleocene, as indicated by the
pollen assemblage together with the presence of *W.
homomorpha homomorpha*.

CanDel et al., Tate J-65

64°24'39"N, 125°26'48"W, Figure 1, loc. 6,

Depth 400-5400 feet, cuttings;

Cretaceous (undivided) above 4810 feet. Imperial Formation 4810 to
5530 feet.

GSC loc. C-52553/400-5400

Comments: Figure 2 shows the distribution of palynomorphs in the studied intervals. The three samples at 400 feet, 700 feet and 1200 feet are of Maastrichtian age and are dominated by angiosperm pollen. A few dinoflagellate species occur also.

The sample at 1600 feet yielded the highest influx of dinoflagellate species and indicates a change to more marine conditions of deposition. The age of the sample is most likely Campanian, but possibly Maastrichtian.

The five samples taken between 3600 feet and 5400 feet are considered Campanian in age. Domination of the assemblages by dinoflagellate cysts continues, suggesting open marine conditions of deposition. The residue of the sample at 5400 feet contains few palynomorphs, mainly dinoflagellates and a few deltoid trilete spores. An abundance of kerogen occurs, commonly in the form of phytoclasts.

CanDel et al., Arctic Red F-47

65°36'25"N, 130°53'53"W, Figure 1, loc. 10,
Depth 0-900 feet, cuttings;
GSC loc. C-33952/0-900

Comments: Figure 3 shows the distribution of palynomorphs in the studied intervals. All residues contained an abundance of fine, cominuted kerogen particles, light brown in colour after oxidation, and a relatively sparse concentration of plant microfossils.

The age of the samples in the interval between 0 feet and 400 feet is Cenomanian based on the occurrence of tricolporate angiosperm pollen, a few rare dinoflagellate species and *Sequoiapollenites*. The samples in the interval between 420 feet and 800 feet are Late Albian-Cenomanian in age. The relatively impoverished assemblage does not permit a further refinement. The age of the sample at 900 feet is questionable. Although the accompanying chart (Fig. 3) indicates Albian, the pollen and spore assemblage permits only the assignment of an Early Cretaceous age. The character of the residue, however, shows no change from the other five samples and the sample is possibly of similar age.

CanDel et al., Fort Norman K-14

64°53'42"N, 125°18'08"W, Figure 1, loc. 8,
Depth 200 feet, cuttings;
GSC loc. C-52554/200

derived Devonian spores
caved Upper Cretaceous dinoflagellates and pollen
Oligosphaeridium anthophorum (Cookson and Eisenack) Davey
O. complex (White) Davey and Williams
Coronifera oceanica Cookson and Eisenack
Palaeoperidinium cretaceum (Pocock ex Davey) Lentini and Williams
Aptea eisenackii (Davey) Davey
Cyclonephelium compactum Deflandre and Cookson

Cribroperidinium intricatum Davey
Canningia minor Cookson and Hughes
Fromea amphora Cookson and Eisenack
Cleistosphaeridium sp. AE of Brideaux and McIntyre
C. multisporosum (Singh) Brideaux
Senoniasphaera microreticulata Brideaux and McIntyre
Gonyaulacysta obesa Brideaux
Baltisphaeridium admixtum Brideaux
Odontochitina operculata (O. Wetzel) Deflandre and Cookson
Serinioidinium rostratum Brideaux and McIntyre
Spiniferites ramosus (Ehrenberg) Mantell
Exochosphaeridium phragmites Davey, Downie, Sarjeant and Williams
Hystrichosphaeridium cooksoni Singh
Luxadinium propatulum Brideaux and McIntyre
Endoscrinium campanula (Gocht) Vosshennikova
various trilete spores
age: Early Cretaceous, middle? or late Albian.

Depth 500 feet, cuttings;
GSC loc. C-52554/500

Cranwellia sp.
Tricolporites sp.
Aquilapollenites sp.
Diconodinium sp.

age: Campanian-Maastrichtian, but interpreted as caved. This sample apparently yielded no indigenous material.

Depth 900 feet, cuttings;
GSC loc. C-52554/900

caved Upper Cretaceous pollen
Oligosphaeridium asterigium (Gocht) Davey and Williams
Senoniasphaera microreticulata Brideaux and McIntyre
age: Early Cretaceous, probably Albian.

Depth 1400 feet, cuttings;
GSC loc. C-52554/1400

caved Upper Cretaceous dinoflagellates and pollen
Palaeoperidinium cretaceum (Pocock ex Davey) Lentin and Williams
Cribroperidinium sp.
Oligosphaeridium pulcherrimum (Deflandre and Cookson) Davey and Williams
Caligodinium aceras (Manum and Cookson) Lentin and Williams
derived Carboniferous spores
age: Early Cretaceous, Hauterivian to Albian.

Depth 2200 feet, cuttings;
GSC loc. C-52554/2200

caved Upper Cretaceous dinoflagellates and pollen
Pseudoceratium n. sp. cf. *P. pelliferum* Pocock *auct. non* Gocht
Caligodinium aceras (Manum and Cookson) Lentin and Williams
Cyclonephelium distinctum Deflandre and Cookson
C. cf. C. vannophorum Davey
Exochosphaeridium phragmites Davey, Downie, Sarjeant and Williams
Spiniferites ramosus (Ehrenberg) Mantell
Palaeostomocystis fragilis Cookson and Eisenack
age: Early Cretaceous, Albian.

Comments: The sample at 200 feet yields a diverse Middle? or Late Albian assemblage of dinoflagellates. Other samples at 900 feet, 1400 feet and 2200 feet have less diverse assemblages of Early Cretaceous age. Upper Cretaceous pollens are present in all of the samples and several contain assemblages of Upper Cretaceous dinoflagellates, particularly the sample at 2200 feet. One sample, at 500 feet, contains only Upper Cretaceous pollen, the kerogen is dark yellow to black. These Upper Cretaceous assemblages are interpreted as being caved material and indicate the presence, at some interval above 200 feet, of strata of Campanian to Maastrichtian age.

Aquitaine et al., Dodo Canyon K-03

65°02'33.36"N, 126°46'13.96"W, Figure 1, loc. 9,

Depth 450 feet, cuttings;

GSC loc. C-30258/450

caved Upper Cretaceous dinoflagellates

Exochosphaeridium sp. cf. *E. scitulum* Singh

Spiniferites ramosus (Ehrenberg) Mantell

Oligosphaeridium complex (White) Davey and Williams

O. albertense (Pocock) Davey and Williams

Palaeostomocystis fragilis Cookson and Eisenack

Cleistosphaeridium multispinosum (Singh) Brideaux

Odontochitina operculata (O. Wetzel) Deflandre and Cookson

Heliodinium voigtii Alberti

Hystrichosphaeridium cooksoni Singh

age: Early Cretaceous, probably Albian.

Depth 1050 feet, cuttings;

GSC loc. C-30268/1050

caved Upper Cretaceous dinoflagellates and pollen

Odontochitina operculata (O. Wetzel) Deflandre and Cookson

Caligodinium aceras (Cookson and Eisenack) Lentin and Williams

Achromosphaera sp. cf. *A. neptunii* (Eisenack) Davey and Williams

Palaeoperidinium cretaceum (Pocock ex Davey) Lentin and Williams

Cyclonephelium distinctum Deflandre and Cookson

Spiniferites cingulatus (O. Wetzel) Sarjeant

Gleicheniidites senoncicus Ross sensu Skarby

Vitreisporites pallidus (Reissinger) Nilsson

Appendicisporites potomacensis Brenner

Cicatricosporites hughesii Dettmann

Distaltriangulisporites perplexus (Singh) Singh

age: Early Cretaceous, probably Albian.

Depth 1600 feet, cuttings;

GSC loc. C-30268/1600

Heliodinium voigtii Alberti

Exochosphaeridium phragmites Davey, Downie, Sarjeant and Williams

Pterodinium sp. cf. *P. alatum* Eisenack

Microdinium opacum Brideaux

Chlamydophorella nyei Cookson and Eisenack

Spiniferites ramosus (Ehrenberg) Mantell

age: Early Cretaceous, probably Albian.

Table 6. Occurrences of taxa in cuttings from the
Shell Keele River L-04 well.

EXPLANATION OF SYMBOLS

X	Present	0	10-25
S	Single spec.	A	25-
R	2-3	D	Dominant
F	3-16	R	Derived

Taxonomy & Occurrences of taxa in cuttings from the
Shell Creek River L-04 well.

EXPLANATION OF SYMBOLS			
Stratigraphic	Prep No.	GSC Loc. No.	Sample Interval
X	Present	O	10-25
S	Single spec.	A	25-
R	2-3	D	Dominant
F	3-10	R	Derived
TAXON			
DR			Carboniferous spores
R			<u>Cleistosphaeridium</u> sp. AE of Brinkman and McIntyre
R			<u>Spiniferites singulatus</u> <u>singulatus</u> O. Wetzel
R			<u>Cribroperidinium intricatum</u> Davey
R			<u>Balmeisporites halodictyon</u> Cookson and Dettmann
R	R		<u>Gleicheniidites senonicus</u> Ross
F			<u>Cycadopites fragilis</u> Singh
R	O		<u>Odontochitina operculata</u> (O. Wetzel) Doffendre and Cookson
R	R		<u>Spiniferites ramosus</u> (Ehrenberg) Mantell
R			<u>Palaeoperidinium cretaceum</u> (Pocock) ex Davey
R			<u>Stereisporites antiquasporites</u> (Wilson and Webster) Dettmann
R			<u>Cicatricosporites australiensis</u> (Cookson) Potonié
R			<u>Vitreisporites pallidus</u> (Reissinger) Nilsson
DR			Jurassic dinocysts
X	X	X	caved Upper Cretaceous dinocysts

Depth 2300 feet, cuttings;

GSC loc. C-30268/2300

caved Upper Cretaceous dinoflagellates (rare)

Odontochitina operculata (O. Wetzel) Deflandre and Cookson

Microdinium opacum Brideaux

Vitreisporites pallidus (Reissinger) Nilsson

age: Early Cretaceous, Hauterivian to Albian, probably
Albian.

Depth 2800 feet, cuttings;

GSC loc. C-30268/2300

Senoniasphaera microreticulata Brideaux and McIntyre

Cyclonephelium distinctum Deflandre and Cookson

Gonyaulacysta hyalodermopsis (Cookson and Eisenack) Sarjeant

Oligosphaeridium complex (White) Davey and Williams

O. anthophorum (Cookson and Eisenack) Davey

Palaeoperidinium cretaceum (Pocock ex Davey) Lentin and Williams

Gardodinium eisenackii Alberti

Aptea cf. A. polymorpha Eisenack

Endoscrinium campanula (Gocht) Vosshennikova

Leptodinium cancellatum Brideaux and McIntyre

L. delicatum (Davey) Davey

Odontochitina operculata (O. Wetzel) Deflandre and Cookson

Appendicisporites sp.

Aequitriradites spinulosus (Cookson and Dettmann) Cookson and

Dettmann

age: Early Cretaceous, probably Albian.

Shell Keele River L-04

(Note GSC Paper 70-15, p. 18)

64°23'39"N, 125°01'42"W, Figure 1, loc. 5,

Depth 500-2200 feet, cuttings;

GSC loc. C-52554/500-2200

Comments: Figure 4 shows the distribution of palynomorphs in the well. With the exception of the sample at 500 feet, which yields an assemblage of Albian age, the samples submitted for analysis from this well yield only poorly preserved, sparse assemblages. The sample at 2200 feet is dominated by amorphous kerogen. This type of residue recalls those recovered from samples of the "Fish Scale Zone" of central and southern Alberta, (latest Albian or earliest Cenomanian age) and the Boundary Creek Formation (early Late Cretaceous) of the Mackenzie Delta region.

Jurassic Assemblages

(pelecypods)

by J.A. Jeletzky

Pacific et al., Roland Bay Y.T. L-41

69°20'30"N, 138°56'55"W, Figure 1, loc. 12,

Depth 8448-8478 feet, core; Kingak Formation 3567-3597 feet below top;
GSC loc. C-41865

Comments: Poorly preserved *Buchia* of mid-Upper Jurassic affinities belonging either to *Buchia mosquensis* (von Buch) sensu lato or to *Buchia piocchii* (Gabb) sensu lato. The specimens derived either are from some part of the generalized *Buchia mosquensis* (von Buch) sensu lato zone or from some part of the generalized *Buchia piocchii* (Gabb) sensu lato zone [see Jeletzky (1967, p. 10, 34, 35) for further details concerning the age and distribution of these zones in the northern Yukon]. Loc. C-41865 is accordingly from beds equivalent to the middle or lower part (except for the basal 200 ft or so) of the Lower member of the Husky Formation of the eastern slope of the Richardson Mountains. So far as known, the equivalents of the Husky Formation form part of a thick shale-siltstone sequence embracing most or all of the Jurassic and known under the name of Kingak Shale in and around the Roland Bay area of the northern Yukon.

Cretaceous, Jurassic and Triassic Assemblages

(foraminifers and associated microfaunas)

by J.H. Wall

Horn River-CCS-Getty Mid Fiord J-53

79°52'37"N, 94°57'10"W, Figure 1, loc. 20,
Depth 70-4800 feet, cuttings;
GSC loc. C-48832/70-4800

Depth 70-100 feet, Deer Bay Formation, 1346-1376 feet above base;
Haplophragmoides spp. - small, nondescript, siliceous and partly pyritized forms
Ammobaculites sp., small - one
Recurvoides sp. - one
?Uvigerinammina sp.
Verneuilinoides sp. - one
Depth 100-200 feet, Deer Bay Formation 1246-1346 feet above base;
Bathysiphon sp. - one
Miliammina sp. - one
Haplophragmoides spp. - one large species represented by one specimen and a smaller species represented by several specimens
?Uvigerinammina sp.
Verneuilinoides sp.
ostracode, genus indeterminate, a small subquadrate to subtriangular form - one specimen
Depth 200-300 feet, Deer Bay Formation 1146-1246 feet above base;
?Reinholdella sp. - one pyritized cast
Depth 300-345 feet, Deer Bay Formation 1101-1146 feet above base;
Haplophragmoides sp., poorly preserved

Depth 345-580 feet, Deer Bay Formation, 866-1101 feet above base;
Diabase sill
Depth 580-700 feet, Deer Bay Formation, 746-866 feet above base;
Bathysiphon sp., fairly slender form
Ammodiscus sp.
Glomospira sp.
Haplophragmoides spp.
Ammobaculites sp., small, slender form
?*Uvigerinammina* sp.
Verneuilinoides sp. - one
Depth 700-800 feet, Deer Bay Formation, 646-746 feet above base;
Hippocrepina sp. - one
Glomospira or *Glomospirella* sp.
?*Tolypammina* sp. - one
Haplophragmoides spp. - two large specimens and several
smaller forms, similar to above
Ammobaculites sp., small, curved test - one
Gaudryina milleri Tappan - terminal portion of one specimen
G. cf. G. topagorukensis Tappan, a small species, two
specimens
Verneuilinoides sp.
stratigraphic equivalent: upper part of Deer Bay Formation,
based on general similarity of assemblage to that from the
outcrop section of the upper part of the formation near the
south end of Buchanan Lake, Axel Heiberg Island. Forms in
common include ?*Uvigerinammina* sp., *Gaudryina milleri*, *G. cf.*
G. topagorukensis and *Verneuilinoides* sp.
age: Early Cretaceous, Neocomian, probably Valanginian
environment: marine, shallow, inner neritic to near shore
Depth 800-870 feet, Deer Bay Formation, 576-646 feet above base;
two small agglutinated foraminifers only
Depth 870-920 feet, Deer Bay Formation, 526-576 feet above base;
Diabase sill
Depth 920-1030 feet, Deer Bay Formation, 416-526 feet above base;
no microfossils obtained
Depth 1030-1090 feet, Deer Bay Formation, 356-416 feet above base;
Diabase sill with one 10-foot shale interval
Depth 1090-1200 feet, Deer Bay Formation, 246-356 feet above base;
Bathysiphon sp., slender
Glomospira sp., small - one
Glomospirella sp.
Haplophragmoides sp.
H. cf. H. goodenoughensis Chamney
Reophax or incomplete *Ammobaculites* sp.
Textularia sp. - one
Dorothia sp.
Lenticulina sp., compressed, fairly small - one
Depth 1200-1280 feet, Deer Bay Formation, 166-246 feet above base;
Bathysiphon sp., slender
Ammodiscus sp., compressed, thin-walled, poorly preserved
Haplophragmoides sp.
H. cf. H. goodenoughensis Chamney
Trochammina sp., flat, indistinct features
Lenticulina sp., small, pyritized - one

Depth 1280-1390 feet, Deer Bay Formation, 56-166 feet above base;
Diabase sill
Depth 1390-1500 feet, basal 56 feet or Deer Bay Formation and top 54
feet of Awingak Formation
sparse foraminiferal assemblage which may be due to caving as most
of this interval is described as siltstone:
Haplophragmoides cf. *H. goodenoughensis* Chamney
Recurvooides sp. - one
Trochammina sp., large, depressed spire - one
Depth 1500-1600 feet, Awingak Formation, 54-154 feet below top;
Bathysiphon sp., slender
Ammodiscus sp., small, thin-walled
Haplophragmoides sp.
H. cf. H. goodenoughensis Chamney - one
Ammobaculites sp. - one
Depth 1600-1700 feet, Awingak Formation, 154-254 feet below top;
Bathysiphon sp. - one
Ammodiscus sp., thin-walled, small to medium-sized
Haplophragmoides spp.
H. cf. H. goodenoughensis Chamney
Recurvooides disputabilis *disputabilis* Dain - one
R. disputabilis plana Dain (?) - two
Ammobaculites sp.
?Verneuilinoides sp.
Lenticulina sp., poorly preserved - one
gastropod, pyritized, low-spired - one
Depth 1700-1800 feet, Awingak Formation, 254-354 feet below top;
sparse agglutinated foraminiferal fauna:
Ammodiscus sp. - as above
Haplophragmoides sp.
Ammobaculites sp., asymmetric coil - one
Trochammina sp., very small, rounded - one
Depth 1800-1900 feet, Awingak Formation, 354-454 feet below top;
Ammodiscus sp., as above
Haplophragmoides spp.
Depth 1900-2000 feet, Awingak Formation, 454-554 feet below top;
Ammodiscus sp., as above
Arenoturrispirillina jeletzkyi Chamney? - one poorly preserved
specimen
Haplophragmoides sp.
Lenticulina spp. - poorly preserved
Vaginulinopsis sp. - one
Stratigraphic equivalent and age (depth 800-2000 ft): the
microfauna obtained from this interval is inadequate for
refined dating or correlation but does indicate a Late
Jurassic age and equivalence with that from the Deer Bay
Formation. The single questionable occurrence of
Arenoturrispirillina jeletzkyi from 1900 to 2000 feet in-
dicates the presence of lower Deer Bay equivalent either
here or in one of the shaly intervals above.
environment: marine, shallow, inner neritic to near shore

Depth 2000-2100 feet, Awingak Formation, 554-654 feet below top;
Haplophragmoides sp., - common
Lenticulina sp. - one recrystallized specimen
Depth 2100-2200 feet, Awingak Formation, 654-754 feet below top;
Haplophragmoides sp., as above - dominant
Recurvoides sp.
Lenticulina spp. - 10 or more specimens
Saracenaria sp. - one complete specimen
Marginulinopsis sp., small - one
Geinitzinita praenodulosa Dain - one
nodosariid chambers
Depth 2200-2300 feet, Awingak Formation, 754-854 feet below top;
Haplophragmoides sp., as above - dominant
Lenticulina sp., slightly asymmetrical
?*Saracenaria* sp., incomplete - one
Depth 2300-2400 feet, Awingak Formation, 854-954 feet below top;
reduction in faunal population:
Haplophragmoides sp.
Recurvrides sp. - one
Trochammina sp. - one
T. cf. T. canningensis Tappan - one
?*Ammosphaerodina* sp.
Stratigraphic equivalent (depth 2000-2400 ft): Ringnes Formation
(Balkwill et al., in press).
age: Late Jurassic, possibly Kimmeridgian
environment: marine, neritic, probably inner but could be deeper. Assemblage from 2100 to 2200 feet is the most diverse in this well and has greater representation of calcareous foraminifers than elsewhere in the section.
Depth 2400-2470 feet, Awingak Formation, 954-1024 feet below top;
Diabase sill with one 10-foot shale interval
Depth 2470-2520 feet, Awingak Formation, 1024-1074 feet below top;
Haplophragmoides sp.
Depth 2520-2720 feet, Awingak Formation, 1074-1274 feet below top;
Diabase sill with interbeds of siltstone near base
Depth 2600-2700 feet, Awingak Formation, 1154-1254 feet below top;
Haplophragmoides sp.
Astacolus sp., large, wide - one
These forms probably are derived from cavings
Depth 2700-2800 feet, Awingak Formation, 1254-1354 feet below top;
Haplophragmoides sp. - sparse
Depth 2800-2900 feet, Awingak Formation, 1354-1454 feet below top;
Haplophragmoides sp. - sparse
Depth 2900-3000 feet, Awingak Formation, 1454-1554 feet below top;
Ammcdiscus sp. - one
Haplophragmoides sp. - one
These occurrences may be due to cavings
Depth 3000-3100 feet Awingak Formation, 1554-1654 feet below top;
Haplophragmoides sp.
Vermiculinoidea sp.
Lenticulina spp. - two small species represented by one specimen each.

Depth 3100-3200 feet, Awingak Formation, 1654-1754 feet below top;
Haplophragmoides sp. - sparse

Depth 3200-3620 feet, Awingak Formation, 1754-2174 feet below top;
Diabase sill
Depth 3620-3700 feet, Awingak Formation, 2174-2254 feet below top;
Haplophragmoides sp. - one, possibly from cavings

Depth 3700-3800 feet, Awingak Formation, 2254-2354 feet below top;
fairly sparse agglutinated foraminiferal fauna:
Haplophragmoides spp.
Trochammina aff. *T. kosyrevae* Levina - one

Depth 3800-3880 feet, Awingak Formation, basal 28 feet and uppermost
52 feet of Savik Formation.
Haplophragmoides spp.
Vaginulinopsis rjavkinensis Kosyreva - one incomplete
specimen possibly from cavings.

Depth 3880-3910 feet, Savik Formation, 52-82 feet below top;
Diabase sill
Stratigraphic equivalent (depth 2400-3800 ft): probably lower
part of the Ringnes Formation (Balkwill *et al.*, in press).
The species of *Verneuilinoides* from 3000-3100 feet is present
in the lower part of the Ringnes Formation in the Panarctic-
Gulf West Amund I-44 well at 1750 feet and extends down into
the Savik Formation.
age: Late Jurassic, possibly late Oxfordian to early
Kimmeridgian.
environment: marine, inner neritic.

Depth 3910-4000 feet, Savik Formation, 82-172 feet below top;
sparse agglutinated foraminiferal fauna:
Ammodiscus sp. - one incomplete specimen
Haplophragmoides spp.

Depth 4000-4100 feet, Savik Formation, 172-272 feet below top;
Ammodiscus sp. - rare
A. cheradospirus Loeblich and Tappan - rare
Haplophragmoides sp., poorly preserved - rare

Depth 4100-4200 feet, Savik Formation, 272-372 feet below top;
Haplophragmoides sp. - sparse

Depth 4200-4300 feet, Savik Formation, 372-472 feet below top;
Ammodiscus cheradospirus Loeblich and Tappan - one large
specimen
Haplophragmoides sp. - rare
Trochammina aff. *T. kosyrevae* Levina - one

Depth 4300-4400 feet, Savik Formation, 472-572 feet below top;
sparse agglutinated foraminiferal fauna:
Ammodiscus sp. - one pyritized specimen
A. cheradospirus Loeblich and Tappan - one incomplete
specimen
Haplophragmoides sp.

Depth 4400-4500 feet, Savik Formation, 572-672 feet below top;
Ammodiscus sp. - one
Haplophragmoides sp. - rare
This interval is depicted as siltstone.

Depth 4500-4530 feet, Savik Formation, 672-702 feet below top;
Ammodiscus sp. cf. *Involutina silicea* Terquem - one large specimen with constrictions visible

A. sp., small poorly preserved - one

Depth 4530-4560 feet, Savik Formation, 702-732 feet below top;
Ammodiscus sp.

A. *cheradospirus* Loeblich and Tappan

Depth 4560-4590 feet, Savik Formation, 732-762 feet below top;
rather sparse agglutinated foraminiferal fauna:

Ammodiscus cheradospirus Loeblich and Tappan

Haplophragmoides sp. - rare

?*Ammobaculites* sp., distorted coil - one

Trochammina sp., flat, with elongate last chamber - one

Depth 4590-4620 feet, Savik Formation, 762-792 feet below top;

Ammodiscus sp. - one

A. *cheradospirus* Loeblich and Tappan

Depth 4620-4650 feet, Savik Formation, 792-822 feet? below top;

Ammodiscus sp. - one

Haplophragmoides sp. - one

Depth 4650-4680 feet, Savik Formation, U. & L. Savik, 822 feet below top, 28 feet above base;

nondescript agglutinated foraminiferal fauna:

Haplophragmoides sp.

Ammobaculites sp.

Trochammina spp. including a flat, siliceous form

Depth 4680-4710 feet, Savik Formation, basal 28 feet and ?Borden Island Formation, 2 feet below top;

no microfossils obtained

Depth 4710-4800 feet, Borden Island Formation, 2-92 feet below top;

sparse agglutinated foraminiferal fauna:

Ammodiscus sp.

Trochammina sp.

This interval is depicted as predominantly sandstone.

Stratigraphic equivalent (depth 3910-4700): Savik Formation,
based largely on the limited agglutinated fauna characterized

by *Ammodiscus cheradospirus*.

age: late Middle to early Late Jurassic, Callovian indicated.

environment: marine, shallow, inner neritic to near shore.

Comments: The microfaunas from this isolated well in the northwest part of the Axel Heiberg Island are rather poorly developed and thus it has not been possible to date and correlate this sequence with the same degree of confidence as one might expect to do in the more central parts of the basin. The situation is rendered more difficult by the occurrence of many sills which seem to be in part responsible for the paucity of fauna or at least for the dark preservation of many of the microfossils near the intrusives. Despite these complications, it is thought that from the shale sections the biostratigraphic equivalents of the upper and lower parts of the Deer Bay Formation, the Ringnes Formation and the Savik Formation can be delineated, using mainly the general character of the microfaunal assemblages.

Panarctic et al., Kristoffer Bay B-06

78°15'18.22"N, 102°32'00.25"W, Figure 1, loc. 19,

Depth 6200-6300 feet, cuttings;

GSC loc. C-48846/6200-12 700

Blaa Mountain Formation, 3-103 feet below top;

Ammodiscus cf. *A. orbis* Lalicker

Ammobaculites sp. - slender, indistinct

Trochammina sp. - compressed, indistinct

Lenticulina sp. - small (one)

age: indeterminate from assemblage, but assumed to be
Late Triassic.

environment: marine, probably shallow.

Depth 7000-7100 feet, cuttings, Blaa Mountain Formation, 803-903 feet
below top;

Ammodiscus cf. *A. orbis* Lalicker

Ammobaculites spp.

Astacolus sp. cf. *A. connudatus* Tappan

Geinitzinita sp. - (one, may be caving from Deer Bay Fm.)

?*Hungarella* sp. (one carapace)

age: Late Triassic

environment: marine, neritic, probably inner.

Depth 7100-7300 feet, cuttings, Blaa Mountain Formation, 903-1103
feet below top;

Ammodiscus cf. *A. orbis* Lalicker

Haplophragmoides sp.

Ammobaculites sp.

Astacolus connudatus Tappan

A. cf. A. connudatus Tappan

Lenticulina spp.

Lingulina alaskensis Tappan (one)

L. cf. L. alaskensis Tappan (one)

Marginulina sp. (one)

?*Pseudonodosaria* sp., tiny (one)

age: Late Triassic

environment: marine, neritic

Depth 7300-7400 feet, Blaa Mountain Formation, 1103-1203 feet below top;

Ammodiscus cf. *A. orbis* Lalicker

Ammobaculites spp.

Astacolus cf. *A. connudatus* Tappan

Lingulina cf. *L. alaskensis* Tappan

Pseudoglandulina simpsonensis Tappan (one)

?*Hungarella* sp. (one pyritized carapace)

age: Late Triassic

environment: marine, neritic

Depth 7750-7850 feet, Blaa Mountain Formation, 1553-1653 feet below top;

Ammodiscus cf. *A. orbis* Lalicker

Ammobaculites spp.

Trochammina sp. - compressed

Nodosaria sp. - 2 chambered fragment with 8 strong costae.

Lingulina alaskensis Tappan (one)

Lenticulina spp. - fragments

Vaginulinopsis sp. (one)

age: Late Triassic

environment: marine, neritic.

- Depth 8200-8300 feet, Blaa Mountain Formation, 2003-2103 feet below top;
Ammodiscus cf. *A. orbis* Lalicker
Ammobaculites sp.
Saracenaria sp., small (one)
Lingulina alaskensis Tappan (one, poorly preserved)
age: Triassic, possibly Late
environment: marine
- Depth 9700-9900 feet, Blaa Mountain Formation, 3503-3703 feet below top;
Ammodiscus cf. *A. orbis* Lalicker
Trochammina sp., compressed, indistinct
Astacolus cf. *A. connudatus* Tappan (one)
Lenticulina spp.
Lingulina shublikensis Tappan (one terminal fragment)
nodosariid chambers
?*Hungarella* (one partial carapace)
?*Cytherella* (one carapace)
age: Triassic
environment: marine, neritic
- Depth 10 700-10 900 feet, Blaa Mountain Formation, 4503-4703 feet below top;
Trochammina sp., compressed
Astacolus or *Lenticulina* spp.
nodosariid chambers
pyritized casts of low to medium-spired gastropods
age: Triassic?
environment: marine, neritic
- Depth 11 000-11 200 feet, Blaa Mountain Formation, 4803-5003 feet below top;
Ammodiscus cf. *A. orbis* Lalicker
Trochammina sp., compressed
Verneuilinoides sp., compressed
Astacolus cf. *A. connudatus* Tappan (one)
nodosariid chambers
?*Hungarella* sp. (one carapace)
relatively high-spired pyritized gastropods, some with reticulate
ornamentation
age: Triassic?
environment: marine, neritic
- Depth 11 600-11 700 feet, Blaa Mountain Formation, 5403-5503 feet below top;
Ammodiscus cf. *A. orbis* Lalicker
Trochaminoides sp., 14-chambered (one)
age: Triassic or Permian, based on a sparse foraminaliferal
assemblage. A single specimen of the same *Trochaminoides*
is present in the Panarctic-Tenneco King Christian N-06
well from 7310-7340 feet.
- Depth 11 700-11 800 feet, Blaa Mountain Formation, 5503-5603 feet below top;
Ammodiscus cf. *A. orbis* Lalicker
Ammobaculites sp.
Lenticulina spp.
nodosariid chamber
?*Hungarella* spp. (three carapaces)
age: Triassic or Permian. The microfossils are sparse and
possibly are caved.
environment: marine, neritic
- Depth 11 800-11 900 feet, Blaa Mountain Formation, 5603-5703 feet below top;
Bathysiphon sp., wide, siliceous (one)
Ammodiscus cf. *A. orbis* Lalicker
Lenticulina spp.

nodosariid chamber

?Hungarella sp. (one carapace)

one incomplete medium-spired gastropod with reticulate ornamentation.

age: Triassic or Permian. The same species of *Bathysiphon* was recorded in the Panarctic Tenneco King Christian N-06 well from the interval 7250-7280 feet and below.

This species was also observed in GSC outcrop collections of both Triassic and Permian age from the van Hauen Pass area on northern Ellesmere Island.

environment: marine

Depth 12 000-12 100 feet, Blaa Mountain Formation 5803-5903 feet below top;

Bathysiphon sp., as in 11 800-11 900 feet

Darbyella sp. (one)

Nodosaria sp. (2-chambered fragment)

nodosariid chambers

?Hungarella sp. (one carapace)

age: Triassic or Permian

Depth 12 400-12 500 feet, Blaa Mountain Formation, 6203-6303 feet below top;

Trochamminoides sp., as in 11 600-11 700 feet

nodosariid chambers

age: Triassic or Permian

Depth 12 500-12 600 feet, Blaa Mountain Formation, 6303-6403 feet below top;

Ammodiscus cf. *A. orbis* Lalicker

Bathysiphon sp.

Lenticulina sp. (one) - cavings?

Lingulina alaskensis Tappan (one) - cavings?

nodosariid chambers

age: Triassic or Permian

environment: marine

Depth 12 600-12 700 feet, Blaa Mountain Formation 6403-6503 feet below top;

Ammodiscus cf. *A. orbis* Lalicker

Ammobaculites sp.

Trochammina sp., compressed

Vaginulinopsis cf. *V. acrulus* Tappan (one)

Pseudoglandulina cf. *P. lata* Tappan (one)

Frondicularia or *Lingulina* sp. (one incomplete specimen)

nodosariid chambers

?*Bairdiocypris* sp. (one carapace)

?*Hungarella* sp. (one carapace)

indeterminate, small, subtriangular ostracode (one carapace)

age: Triassic or Permian. Much of the foraminiferal

assemblage is suspected to be cavings.

environment: marine

Comments: On the basis of Foraminifera, the beds between 11 600 and 12 700 feet may be dated either Triassic or Permian. A large proportion of the generally sparse microfauna from this interval consists of Triassic forms which probably are derived from cavings. The few new elements encountered, including *Bathysiphon* sp. and *Trochamminoides* sp., are of limited use because of their long range or occurrence in beds whose age is questionable.

Triassic Assemblages

(palynomorphs)

by W.W. Bridgeaux

Panarctic-Union-Arco Taleman J-34

79°53'41"N, 85°46'53"W, Figure 1, loc. 21,

GSC loc. C-39239/6205-9835

Depth 6205 feet, core; Heiberg Formation 835 feet below top;

Camarozonosporites rufus (Leschik) Klaus

Triancoraesporites ancorae (Reinhardt) Schulz

Deltoidospora sp.

Ovalipollis sp.

Apiculatisporis sp.

age: Late Triassic

Depth 9834-9835 feet, core; Bjorne Formation 148-149 feet below top;

Taeniaesporites noviaulensis Leschik

T. cf. T. novimundi Jansonius

T. spp.

Striatobieites spp.

Rhizomaspora sp.

Striatisaccus sp.

Alisporites cf. *A. opii* Daughtery

Polycingulatisporites spp.

Cycadopites sp.

Limbosporites lundbladii Nilsson

age: Early Triassic

Triassic Assemblages

(brachiopods)

by E.T. Tozer

Panarctic et al., Collingwood K-33

76°32'44.7"N, 108°43'27.5"W, Figure 1, loc. 14,

GSC loc. C-38997/6290-6320

Depth 6230-6290 feet, core; Schei Point Formation, 46-106 feet above base;

Spiriferina sp. undetermined.

age: Triassic

Comments: At outcrop in the Sverdrup Basin, *Spiriferina* is commonly encountered in the Lower and Upper Calcareous Members of the Blaa Mountain Formation and in the equivalent beds of the Schei Point Formation. These beds range in age from Late Ladinian to Late Carnian. The specimens are probably from beds that fall within this interval. *Spiriferina* ranges throughout the Triassic but to my knowledge none has ever been found in the Lower Triassic of the Sverdrup Basin, nor is known from the Heiberg Formation. From the work of Logan (1967),

Spiriferina canadensis Logan is known only in the Carnian; *Spiriferina ellesmerensis* Logan is known only from lower levels, from beds of Ladinian and (or) Carnian age. However, the specimens from C-38997 are probably not conspecific with either species.

Devonian Assemblages

(conodonts)

by T.T. Uyeno

Gulf Mobil Caribou N-25

66°14'46"N, 134°50'04"W, Figure 1, loc. 11,

GSC loc. C-30408/760-1000

Depth 760-800 feet, cuttings; Imperial Formation, 83-123 feet below top;
a single conodont fragment, possibly of A₁ element
age: indeterminate

Depth 810-850 feet, cuttings; Imperial Formation, 133-173 feet below top;
Polygnathus cf. *P. nodocostatus* *nodocostatus* Branson and Mehl

(single P element fragmentary)

age: Late Devonian, Famennian, probably Lower *P. crepida*
Zone to Lower *S. velifer* Zone

Depth 860-900 feet, cuttings; Imperial Formation, 183-223 feet below top;
two conodont fragments, possibly P and A₁
elements of *Polygnathus*
age: indeterminate

Depth 910-950 feet, cuttings; Imperial Formation, 233-273 feet below top;
Palmatodella sp. (a single fragment of P element; possibly
referable to *Palmatodella gracilis* (Branson and Mehl)

age: Late Devonian

Depth 960-1000 feet, cuttings; Imperial Formation, 283-323 feet below top,
3557-3517 feet above base;

Palmatodella gracilis (Branson and Mehl) (P element)

P. cf. P. distorta (Branson and Mehl) (3 fragmentary P elements)

age: Late Devonian, Famennian, probably restricted to the

range of Lower *P. quadratinodosa* Zone to Middle
S. velifer Zone

Comments: Conodonts listed above were received already picked and mounted on slides. As these conodonts were derived from ditch cuttings, the age given for each stratigraphic interval should be considered as the youngest possible age for that interval.

Except for a single specimen from the 960-1000 feet interval, all the conodonts are highly fragmented. Unfortunately, the stratigraphic range of the species represented by that single well-preserved specimen is relatively long (*Palmatodella gracilis* ranges from *P. rhomboidea* Zone through Upper *S. costatus*), although it is still restricted to the Famennian.

Panarctic et al., Bent Horn N-72

76°21'50.7"N, 103°58'11.9"W, Figure 1, loc. 15,
(Note GSC Paper 75-10, p. 16)

GSC loc. C-30172/10 521-10 531.4

Depth 10 521 feet, core; Weatherall Formation, 23 feet below top;

Belodella triangularis (Stauffer)

Icriodus cf. *I. angustus* Stewart and Sweet (of Bultynck, 1972) (I)

Polygnathus parawebbi Chatterton (P, O₁, N, A₁, A₂, A₃)

P. cf. P. angustipennatus Bischoff and Ziegler (P)

age: Middle Devonian, Eifelian/Couvinian [probably mid- to
late Eifelian; *Icriodus* cf. *I. angustus* is a late
Emsian-early Eifelian/Couvinian form (Em 3 to Colc,
according to Bultynck, 1972) but there is a form
approaching *Polygnathus angustipennatus*, which
suggests that the age of the fauna is at the upper
end of the range of *I. aff. I. angustus*, and possibly
even slightly younger].

Depth 10 534.8 feet, core; Weatherall Formation, 36.8 feet below top;

Icriodus sp. (fragmentary) (I)

Polygnathus cf. *P. parawebbi* Chatterton

age: probably Middle Devonian, Eifelian

Comments: Weights of samples etched: 10 521 feet = 137 g
10 534.8 feet = 136 g

Colour alteration index (CAI) = 2

Devonian Assemblages

(corals, bryozoans, brachiopods, pelecypods and dacryoconarids)

by A.W. Norris

I.O.E. Triad Ebbutt J-70

(Note GSC Paper 70-15, p. 11, 12)

62°19'31"N, 121°57'03"W, Figure 1, loc. 3,

Depth 1032.5 feet, core; Nahanni Formation, 2.5 feet below top,
409.5 feet above base, GSC loc C-51506;

Aulopora sp.

Fistulipora sp.

age: Silurian to Permian

(identified by A.E.H. Pedder)

Depth 1044 feet, core; Nahanni Formation, 14 feet below top,
396 feet above base, GSC loc. C-51502;

Lingula minuta Meek

Atrypa? sp. - fragment

Leiorhynchus cf. *L. awakanak* McLaren

echinoderm ossicle with single axial canal

age: late Middle Devonian, mid-Givetian

Depth 1046 feet, core; Nahanni Formation, 16 feet below top,
394 feet above base, GSC loc. C-51501;

Leiorhynchus awakanak McLaren
age: late Middle Devonian, mid-Givetian

Comments: *Leiorhynchus awakanak* occurs typically in the middle part of the Pine Point Formation of the Great Slave Lake region, and indicates a mid-Givetian age.

Sun-King Resources-Panarctic Allison River N-12

75°11'52.405"N, 98°35'42.632"W, Figure 1, loc. 16,

(Note GSC Paper 74-11, p. 27)

GSC loc. C-18157/700-1000

Depth 700-710 feet, cuttings; Stuart Bay Formation, 690-700 feet above base;

undetermined brachiopods - tiny fragments, coarsely costate, impunctate, suggestive of an atrypid and spiriferid

age: Devonian

Depth 810-900 feet, cuttings; Stuart Bay Formation, 500-590 feet above base;

Turkestanella acuaria (Richter)

age: Early Devonian, late Lochkovian to early Pragian

Depth 900-1000 feet, cuttings; Stuart Bay Formation, 400-500 feet above base;

Nowakia sp.

Styliolina cf. *S. elongata* Péneau

age: Pragian, Early Devonian

Comments: The sample from 900-1000 feet containing *Nowakia* sp. and *Styliolina* cf. *S. elongata* is of Pragian or younger age because the genus *Styliolina* first appears in the lower Pragian according to Lardeaux (1969).

Turkestanella acuaria, present in the sample from 810-900 feet occurs rarely in the upper Lochkovian and ranges up into the lower Pragian of the Lower Devonian. The combined evidence from the lower two samples suggest an early Pragian age for these two samples.

The fragmentary brachiopods in the uppermost sample from 700-710 feet cannot be dated. Atrypids disappeared near the end of the Frasnian.

Devonian Assemblages

(palynomorphs)

by D.C. McGregor

Dome et al., Weatherall 0-10

75°49'51.9"N, 108°31'50.0"W, Figure 1, loc. 13,

(Note GSC Paper 75-10, p. 14)

Depth 3950-3960 feet, cuttings; Weatherall Formation, 60-70 feet below top, 250-240 feet above base; GSC loc. C-51503/3950-4180

Ancyrospora sp.
Auroraspora macromanifestus (Hacquebard) Richardson
Calyptosporites proteus (Naumova) Allen
?*Corystisporites multispinosus* Richardson
Densosporites devonicus (Richardson)
Emphanioporites rotatus McGregor
cf. *Hymenozonotriletes albus* Arkhangelskaya
Hystricosporites sp.
Pero trilites bifurcatus Richardson
Retusotriletes dubiosus McGregor
Rhabdosporites langii (Eisenack) Richardson
Samarisporites concinnus Owens
Verrucosporites spp.

Comments: The spore assemblage is either late Eifelian or early Givetian. The latter is preferred but should not be regarded as conclusive. The spores are corroded, and dark brown prior to oxidation. Well preserved yellow-brown Permian miospores are also present, as cavings.
Depth 4010-4020 feet, cuttings; Weatherall Formation, 120-130 feet below top, 190-180 feet above base;

cf. *Ancyrospora nettersheimensis* Riegel
Apiculatisporis microechinatus Owens
cf. *Apiculiretusispora brandtii* Strel, of Riegel 1973
Corystisporites multispinosus Richardson
Densosporites orcadensis Richardson
Grandispora mammillata Owens
G. velata (Eisenack) McGregor
?*G. diaphida* Allen
?*Pero trilites bifurcatus* Richardson
Retusotriletes rugulatus Riegel
Rhabdosporites langii (Eisenack) Richardson

Comments: This assemblage contains several species that range from Eifelian to Givetian. However, based on cf. *Ancyrospora nettersheimensis*, cf. *Apiculiretusispora brandtii*, and ?*Grandispora diaphida* the preferred age assignment is late Eifelian.

Depth 4060-4070 feet, cuttings; Weatherall Formation, 170-180 feet below top, 140-130 feet above base;

?*Ancyrospora eurypterota* Riegel
?*A. nettersheimensis* Riegel
Apiculatisporis microechinatus Owens
Auroraspora macromanifestus (Hacquebard) Richardson
Dibolisporites echinaceus (Eisenack) Richardson, gibberosus type
Grandispora velata (Eisenack) McGregor
?*G. douglas townense* McGregor
?*G. naumovii* (Kedo) McGregor
G. mammillata Owens
?*Hymenozonotriletes kedoae* Riegel
Pero trilites bifurcatus Richardson
Rhabdosporites langii (Eisenack) Richardson
R. scannus Allen

Comments: Although many of the species are not identified with certainty, the assemblage is distinctly Eifelian in appearance. A mid to late Eifelian age is suggested. The spores are abundant and somewhat corroded. They are dark brown prior to oxidation, indicating a pronounced but not extreme degree of thermal alteration.

Depth 4110-4120 feet, cuttings; Weatherall Formation, 220-230 feet below top, 90-80 feet above base;

Anapiculatisporites petilus Richardson

?*Ancyrospora eurypterota* Riegel

Apiculiretusispora brandtii Streel, of Riegel 1973

?*Corystisporites multispinosus* Richardson

?*Densosporites devonicus* Richardson

Dibolischporites echinaceus (Eisenack) Richardson *gibberosus* type

Grandispora velata (Eisenack) McGregor

Hymenozonotriletes kedoae Riegel

?*H. selectus* Arkhangelskaya

Retusotriletes dubiosus McGregor

R. rugulatus Riegel

Rhabdosporites langii (Eisenack) Richardson

cf. *Spinozonotriletes rugosus* Owens

Comments: This assemblage is similar to the previous one and is probably mid to late Eifelian.

Depth 4170-4180 feet, cuttings; Weatherall Formation, 30-20 feet above base;

Acinosporites macrospinosis Richardson

?*A. lindlarensis* Riegel

Ancyrospora eurypterota Riegel

Densosporites devonicus Richardson

Dibolischporites echinaceus (Eisenack) Richardson, *gibberosus* type

Grandispora velata (Eisenack) McGregor

?*Perotrilites bifurcatus* Richardson

?*P. eximus* Allen

Rhabdosporites langii (Eisenack) Richardson

R. scannus Allen

?*Samarisporites rhenanus* Riegel

Comments: This sample contains abundant, corroded, dark brown spores of Eifelian, probably about mid-Eifelian, age, and well-preserved Permian contaminants.

Devonian Assemblages
(corals and stromatoporoids)

by A.E.H. Pedder

Husky et al., Willow Lake O-27A

62°16'48"N, 121°04'21"W, Figure 1, loc. 2,

(Note GSC Paper 74-11, p. 27)
Depth 1203 feet, core; Lonely Bay Formation, 7 feet below top,
282 feet above base; GSC loc. C-51542

Stachyodes sp. undet.

Syringopora sp.

age: Devonian

Depth 1207 feet, core; Lonely Bay Formation, 11 feet below top,
278 feet above base; GSC loc. C-51543

Thamnopora sp.

age: probably Devonian

Depth 1221 feet, core; Lonely Bay Formation, 25 feet below top,
264 feet above base; GSC loc. C-51540

Amphipora sp.

Dendrostella trigemme (Quenstedt)

age: Middle Devonian, probably late Eifelian

Depth 1230.5 feet, core; Lonely Bay Formation, 34.5 feet below top,
254.5 feet above base; GSC loc. C-51544

Amphipora sp.

Alveolites sp.

Dendrostella trigemme (Quenstedt)

age: Middle Devonian probably late Eifelian

Depth 1232 feet, core; Lonely Bay Formation, 36 feet below top,
253 feet above base; GSC loc. C-51539

Sociophyllum glomerulatum (Crickmay)

Atelophyllum or *Digonophyllum* sp. nov.

age: Middle Devonian, probably late Eifelian

Husky et al., Willow Lake G-32

62°21'22"N, 120°51'13"W, Figure 1, loc. 1,

(Note GSC Paper 74-11, p. 27)

Depth 1115 feet, core; Lonely Bay Formation, 30 feet below top,
175 feet above base; GSC loc. C-51545

Dendrostella trigemme (Quenstedt)

age: Middle Devonian, probably late Eifelian

Depth 1139 feet, core; Lonely Bay Formation, 54 feet below top,
151 feet above base; GSC loc. C-51541

Amphipora sp.

Dendrostella trigemme (Quenstedt)

age: Middle Devonian, probably late Eifelian

Husky et al., Willow Lake H-10

62°49'16"N, 121°45'01"W, Figure 1, loc. 4,

Depth 535 feet, core; Nahanni Formation, 50 feet below top, 352 feet above base; GSC loc. C-51546

Favosites sp.

age: Silurian to Middle Devonian

Depth 542.5 feet, core; Nahanni Formation, 57.5 feet below top, 344.5 feet above base; GSC loc. C-51547

Sociophyllum glomerulatum (Crickmay)

Cystiphyllloides? sp.

age: Middle Devonian, probably late Eifelian

Depth 547 feet, core; Nahanni Formation, 62 feet below top, 340 feet above base; GSC loc. C-51548

auloporid coral, gen. indet.

age: Ordovician-Permian

Depth 547.5 feet, core; Nahanni Formation 62.5 feet below top, 339 feet above base; GSC loc. C-51549

Aulopora sp.

Thamnopora sp.

Exilifrons sp. nov.

Disphyllum sp.

age: Middle Devonian, probably late Eifelian

Comments: C-51539, C-51540, C-51541, C-51544, C-51545, C-51547 contain forms indicating correlation with the *Carinatrypa dysmorphostrota* Zone of the Hume Formation (Pedder, 1975, p. 572), which is now considered to be late Eifelian.

Ordovician Assemblages

(conodonts)

by C.R. Barnes

Panarctic-Deminex Garnier O-21

73°40'52.19"N, 90°36'45.17"W, Figure 1, loc. 18,

(Note GSC Paper 75-10, p. 16)

Depth 4582-4609 feet, core; Baillarge Formation, Member B, basal 23 feet and underlying top 4 feet of Member A, GSC loc. C-29864

<i>Panderodus gracilis</i> (Branson and Mehl)	(20)
<i>P. cf. P. panderi</i> Stauffer	(1)
<i>Drepanoistodus subrectus</i> (Lindstrom)	(3)
<i>Polyplacognathus ramosus</i> Stauffer	(1)
<i>Appalachignathus delicatulus</i> Bergström et al.	(2)
<i>Belodina</i> sp.	(1)
<i>B. compressa</i> (Branson and Mehl)	(3)
<i>Belodella</i> n. sp. of Barnes, 1974	(1)

hyaline elements
age: Middle Ordovician

Comments: The number of specimens recovered of each taxon are listed in parenthesis. *Appalachianathus delicatulus* has a recorded range of mid-Chazy to mid-Black River (Bergström et al., 1974). *Polyplacognathus ramosus* also first occurs in the Chazy but ranges into the Barneveld (Sweet et al., 1971). The age of the sample therefore is late Porterfield to early Wilderness representing Faunas 6 to 7 of Sweet et al. (1971).

Depth 6060-6120 feet, cuttings (1016 gm), Ship Point Formation,
831-891 feet below top; GSC loc. C-30875/6060-6120

<i>Acodus oneotensis</i> Furnish s.f.	(6)
<i>Acontiodus iowensis</i> Furnish s.f.	(1)
<i>A. cf. A. staufferi</i> Furnish s.f.	(1)
<i>Oneotodus variabilis</i> Lindstrom s.f.	(4)

age: Early Ordovician, late Tremadocian

Comments: The few condonts are small and largely fragmentary. This small fauna consists of simple cone taxa whose stratigraphic ranges are not yet fully determined. They are certainly of Early Ordovician age and probably represent Fauna C of Ethington and Clark (1971). These authors (*ibid.* Fig. 2) restrict *Acodus oneotensis* Furnish to Fauna C whereas *Acontiodus staufferi* ranges into younger strata. The age of Fauna C is late Tremadocian and Fauna C recently has been found (in undescribed collections) from the uppermost Copes Bay Formation of Grinnell Peninsula, Devon Island.

Panarctic-Deminex Cornwallis Central Dome K-40

75°09'40.27"N, 94°43'13.70"W, Figure 1, loc. 17,
(Note GSC Paper 74-39, p. 18)

Depth 2810-2970 feet, cuttings (1210 gm); Cape Phillips Formation,
1794-1954 feet below top, 3227-3067 feet above base;
GSC loc. C-33198/2810-2970

Cordylodus angulatus Pander s.f.

Acontiodus iowensis Furnish s.f.

Comments: *Cordylodus angulatus* is representative of Fauna B of Ethington and Clark (1971) although it ranges slightly into Faunas A and C. The presence of *A. iowensis* suggests Faunas B and C. The age of Fauna B and lower part of Fauna C is mid-Tremadocian (approximately equivalent to shelly zones B through E of Utah-Nevada and the southern Rocky Mountains of Alberta-British Columbia). The sample yielded fourteen specimens.

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Fig. 5. Occurrences of taxa in cuttings from the
Candell et al. Arctic Red F-47 well.

EXPLANATION OF SYMBOLS

- X Present
- Single spec.
- R Dominant
- F Derived
- GSC Prep No.
- Loc. No.
- Sample Interval

Sample Interval	GSC Loc. No.	GSC Loc. No.	Sample Interval
C-33952/0-60	C-33952/0-60	0-60 ft.	
C-33952/320-400		320-400 ft.	
C-33952/420-500		420-500 ft.	
C-33952/510-600		510-600 ft.	
C-33952/610-800		610-800 ft.	
C-33952/900		900 ft.	

TAXON

Alisporites bilobatus Rose	X	X	X
Tetraliptes sphaeroides N. Morris	X	X	X
Allisporites bilobatus Rose	X	X	X
Polydoropollenites multiseratus Bolkhovitina	X	X	X
Micrhyspidium sp.	X	X	X
Oligosporesporites allompsonii (Cookson and Eisele) (Simpson) Gradel	X	X	X
Forams n.sp. = Gyttja? Forams of Gradel	X	X	X
Spiriferidines ramosus (Ehrberg) Miall	X	X	X
Histerichonetes terebrans (Deblieck) (Vane)	X	X	X
Leptostegopeltis sp.	X	X	X
Deltoidella sp.	X	X	X
derived Traversite diatom shells	X	X	X
Vitriscopulites parallelus (Reissinger) Nilsson	X	X	X
Eucrinoidalites frondosum Edelman	X	X	X
Spiriferidines and Vitriscopulites (Wilson and Webster) (Hoffman)	X	X	X
Osmanidites wellmanni Cooper	X	X	X
Clypeophragmids sp. AE of Gradel & McElroy	X	X	X
Retrichonetes vulgaris Forrester	X	X	X
derived Cardioides spirals	X	X	X
Platyostrea reticulata single	X	X	X
Calymene dentata Gradel	X	X	X
wide-angle diatoms	X	X	X
Palaeophacopsidinae dimictina Gradel	X	X	X
Exosiphonites hamatus Gradel	X	X	X

comes at 2pm - call me from the
car and I'll Taz J-5 well.

100

3

SAMPLE NUMBER OF SPECIMENS				
#	Specimen	Prep No.	GSC Loc. No.	Sample No.
1	Single spec.	A	25-	
2	2-3	D	Dominant	
3	3-10	R	Derived	
4		C-52553	400	400 ft. (123)
5		C-52553	700	105 ft. (23)
6		C-52553	1200	no ft. (34)
7		C-52553	1400	600 ft. (48)
student				