



GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA

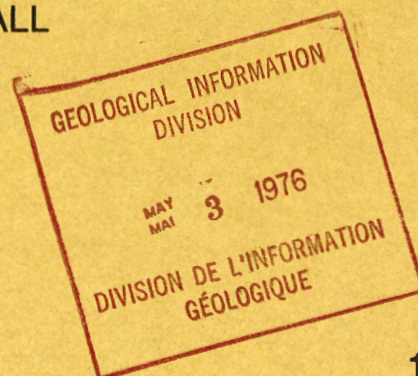
PAPER 75-10

This document was produced
by scanning the original publication.

Ce document est le produit d'une
numérisation par balayage
de la publication originale.

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

W.W. BRIDEAUX, D.R. CLOUSER, M.J. COPELAND, J.A. JELETZKY,
B.S. NORFORD, A.W. NORRIS, A.E.H. PEDDER, A.R. SWEET,
R. THORSTEINSSON, T.T. UYENO AND J. WALL





**GEOLOGICAL SURVEY
PAPER 75-10**

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

W.W. BRIDEAUX, D.R. CLOWSER, M.J. COPELAND, J.A. JELETZKY,
B.S. NORFORD, A.W. NORRIS, A.E.H. PEDDER, A.R. SWEET,
R. THORSTEINSSON, T.T. UYENO AND J. WALL

1976

© Crown Copyrights reserved
Available by mail from *Information Canada*, Ottawa, K1A 0S9

from the Geological Survey of Canada
601 Booth St., Ottawa, K1A 0E8

and

Information Canada bookshops in

HALIFAX — 1683 Barrington Street
MONTREAL — 640 St. Catherine Street W.
OTTAWA — 171 Slater Street
TORONTO — 221 Yonge Street
WINNIPEG — 393 Portage Avenue
VANCOUVER — 800 Granville Street

or through your bookseller

A deposit copy of this publication is also available
for reference in public libraries across Canada

Price - Canada: \$2.00
Other Countries: \$2.40

Catalogue No. M44-75-10

Price subject to change without notice

Information Canada
Ottawa
1976

CONTENTS

	Page
Abstract, Résumé	v
Introduction	1
Wells studied and shown on Figure 1	1
Correlations and identifications of fossils	2
I.O.E. Atkinson H-25	2
Imperial-I.O.E. Kimik D-29	2
Imperial-I.O.E. Pikiolik E-54	2
I.O.E. Tuktu O-19	4
Atlantic <i>et al.</i> Ontaratue K-04	4
Shell Kugpik O-13	4
Columbia <i>et al.</i> Ikkariktok M-64	6
Deminex <i>et al.</i> Orksut I-44	8
Chevron <i>et al.</i> E. Pine Creek Y.T. O-78	10
Gulf-Mobil East Reindeer G-04	10
Gulf-Mobil East Reindeer A-01	10
Chevron <i>et al.</i> Whitefish Y.T. I-05	10
Elf Uminmak H-07	11
Elfex-Texaco Tiritchik M-48	11
I.O.E. Providence K-45	12
Horn River <i>et al.</i> Mink Lake I-38	13
I.O.E.-Triad Ebbutt D-50	13
Dome <i>et al.</i> Weatherall O-10	14
Imperial <i>et al.</i> Devon E-45	14
Sun-Panarctic Russell E-82	15
Panarctic <i>et al.</i> Bent Horn N-72	16
Horn River <i>et al.</i> Willowlake R. I-71	16
Panarctic-Deminex Garnier O-21	16
References	17

Illustrations

Figure 1. Index map showing locations of studied wells	vi
Figure 2. Occurrences of taxa in core from the I.O.E. Atkinson H-25 well	3
Figure 3. Occurrences of taxa in cuttings from the Sun-Panarctic Russell E-82 well	15

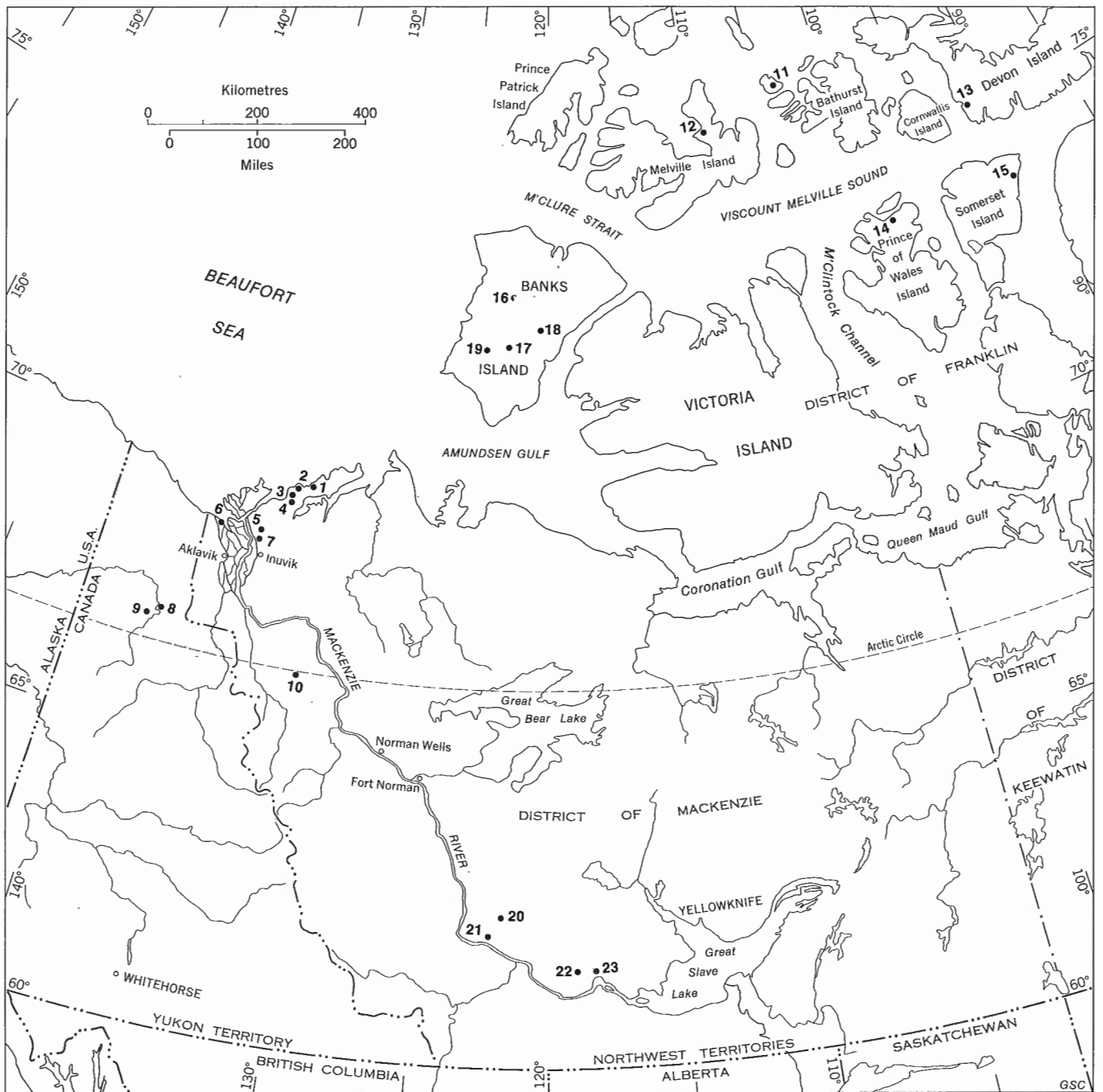


FIGURE 1. Localities of studied wells

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

Abstract

Identifications and age determinations are presented for fossils from 23 wells in the Districts of Franklin and Mackenzie and in the Yukon Territory. Ages range from Ordovician to Tertiary and are based on identifications of spores, pollen, dinoflagellates, acritarchs, conodonts, foraminifers, ostracodes, corals, brachiopods, stromatoporoids, pelecypods and dacryoconarids.

Résumé

Les auteurs donnent les identifications et les âges de fossiles provenant de 23 sondages des districts de Franklin et de Mackenzie et du territoire de Yukon. Les âges des fossiles s'étendent du Ordovicien au Tertiaire 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 stromatoporiés, des pelecypods et des dacryoconarides.

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 outcropping formations. 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, W.S. MacKenzie, 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, except for some samples that are the property of Shell Canada Limited and others belonging to Imperial Oil Enterprises Limited.

The information in this paper has been used by stratigraphers of the Institute of Sedimentary and Petroleum Geology in research on the subsurface geology of northern Canada, part of which has been abstracted to appear in editions of the Schedule of Wells published by the Department of Indian Affairs and Northern Development. The paper includes studies conducted by D.R. Clowser of Robertson Research (North America) Limited. Shell Canada Limited kindly provided samples prepared from sidewall cores for examination by W.W. Brideaux and Imperial Oil Enterprises similarly provided samples prepared from cuttings.

The Paper was compiled by B.S. Norford; similar reports have been published by the Geological Survey of Canada as Papers 70-15, 71-15, 72-38, 74-11 and 74-39.

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	I.O.E. Atkinson H-25	1970	Tertiary, Cretaceous	Brideaux
2	Imperial-I.O.E. Kimik D-29	1972	Jurassic	Brideaux
3	Imperial-I.O.E. Pikiolik E-54	1972	Cretaceous	Brideaux
4	I.O.E. Tuktu O-19	1971	Cretaceous, Jurassic	Brideaux
5	Gulf-Mobil East Reindeer G-04	1971	Cretaceous	Sweet
6	Shell Kugvik O-13	1973	Cretaceous	Brideaux-Jeletzky
7	Gulf-Mobil East Reindeer A-01	1971	Cretaceous	Sweet
8	Chevron <i>et al.</i> Whitefish Y.T. I-05	1972	Cretaceous	Jeletzky-Wall
9	Chevron <i>et al.</i> E. Pine Creek Y.T. O-78	1972	Cretaceous	Wall
10	Atlantic <i>et al.</i> Ontaratue K-04	1964	Cretaceous, Devonian	Brideaux
11	Panarctic <i>et al.</i> Bent Horn N-72	1974	Devonian, Silurian	Thorsteinsson-Uyeno
12	Dome <i>et al.</i> Weatherall O-10	1974	Devonian	Uyeno

Manuscript received: May 29, 1975

Compiler's address: Institute of Sedimentary and Petroleum Geology,
3303 - 33rd Street N.W. Calgary, Alberta T2L 2A7

Locality	Well Name	Year Completed	Ages Reported	Authors
13	Imperial <i>et al.</i> Devon E-45	1972	Silurian	Copeland-Uyeno
14	Sun-Panarctic Russell E-82	1972	Devonian, Silurian	Copeland-Norris- Thorsteinsson-Uyeno
15	Panarctic-Deminex Garnier O-21	1971	Silurian	Uyeno-Norford
16	Elf Uminmak H-07	1972	Ordovician Cretaceous,	Clowser
17	Columbia <i>et al.</i> Ikkariktok M-64	1974	Jurassic Tertiary,	Wall
18	Elfex-Texaco Tiritchik M-48	1974	Cretaceous, Devonian	Clowser-Uyeno-Wall
19	Deminex <i>et al.</i> Orksut I-44	1973	Cretaceous	Wall
20	Horn River <i>et al.</i> Willowlake R. I-71	1971	Silurian	Norford
21	I.O.E.-Triad Ebbutt D-50	1964	Devonian	Pedder
22	Horn River <i>et al.</i> Mink Lake I-38	1971	Devonian	Norris
23	I.O.E. Providence K-45	1968	Devonian	Norris

CORRELATIONS AND IDENTIFICATIONS OF FOSSILS

Jurassic, Cretaceous and Tertiary
Assemblages (palynomorphs)
by W.W. Brideaux

I.O.E. Atkinson H-25

69°44'20"N, 131°50'06"W, Figure 1, loc. 1

Depth 1200-5879 ft, core;
?Beaufort Formation, 1000-?2500 ft;
Upper Cretaceous, ?2500-5540 ft;
Lower Cretaceous, 5540-5915 ft;
GSC locs. C-13832 to C-13847

Figure 2 shows the distribution of taxa for the cored intervals. The following ages have been deduced.

1200-1225 ft; Oligocene(?)
2210-2220 ft; Eocene
3174-5118 ft; Late Cretaceous, Late Campanian to Maastrichtian
5179 ft; Early Cretaceous(?)
5790-5879 ft; indeterminate

Comments: No organic matter was recognized between 5815 and 5879 feet. Between 5805 and 5815 feet, woody fragments and vitrainite particles are common. Interval 5760-5805 feet contains little or no organic matter. Carbonized (light brown) plant fragments are present at 5719 feet and plant fragments between 5107 and 5118 feet.

The rest of the samples between 2210 feet and 4122 feet contain abundant plant fragments and amorphous organic material. The sample at 1200-1225 feet contains only a small amount of plant debris and a relatively impoverished spore and pollen assemblage. The fruiting bodies and mycelia of fungi are common in samples from the Tertiary and Upper Cretaceous (from 1200-5107 ft).

Imperial-I.O.E. Kimik D-29

69°38'05"N, 132°22'10"W, Figure 1, loc. 2
(Note GSC Paper 74-39, p. 6, 7)

Depth 8463-8470 ft, core;
GSC loc. C-39362

derived Devonian spores
derived Carboniferous spores
derived Triassic pollen

bisaccate pollen

Pareodinia borealis Brideaux and Fisher,
in press

Pyxidiella pandora Cookson and Eisenack

Kalyptea monoceras Cookson and Eisenack

Cryptarchaeodinium calcaratum Deflandre
emend. Gitmez

Stephanellytron redaliffense Sarjeant

Gonyaulacysta cladophora (Deflandre)

Dodekova

Tenua sp. ("Hystrichosphaeridiopsis erugata" Warren)

Psaligonyaulax dualis Brideaux and Fisher,
in press

Lanterna saturnalis Brideaux and Fisher,
in press

Serintodinium crystallinum (Deflandre)

Klement

Veryhachium sp.

Cycadopites sp.

Alisporites spp.

Serintodinium sp.

age: Late Jurassic, Late Oxfordian-
Early Kimmeridgian (*Buchia concentrica* sensu lato zone of
Jeletzky)

Imperial-I.O.E. Pikiolik E-54

69°23'15"N, 132°44'35"W, Figure 1, loc. 3
(Note GSC Paper 74-39, p. 12-14)

Depth 8498-8503 ft, core;
basal 2 ft of shale-siltstone
unit, top 3 ft of buff member,
Husky Formation; GSC loc. C-30359

Heliodinium sp.

Cribroperidinium muderongensis (Cookson
and Eisenack) Davey

Serintodinium sp.

Podocarpidites sp.

Cicatricosporites spp.

C. australiensis (Cookson) Potonié

Lycopodiumsporites spp.

bisaccate pollen

Oligosphaeridium complex (White) Davey and
Williams

Cleistosphaeridium polypes subsp. *clavulum*
Davey

Pareodinia sp.

derived Paleozoic spores

derived Permo-Triassic bisaccate pollen

LEGEND	BIOSTRATIGRAPHY		INDETERMINATE													
	GSC LOCALITY NUMBER	Eocene-? OLIGOCENE	UPPER CAMPANIAN TO MAASTRICHTIAN					LOWER? CRETACEOUS								
TAXON	SAMPLE INTERVAL (Feet)	1200-1225	2210-2220	3174-3184	3184-3193	4122-4132	5107-5118	5719	5760-5764	5790	5795-5805	5805-5815	5815-5825	5825-5845	5849-5864	5864-5879
barren of spores and pollen									X	X	X	X	X	X	X	X
barren of dinoflagellates									X	X	X	X	X	X	X	X
<i>Oligosphaeridium</i> spp.					S			S								
<i>Taxodiaceae</i> pollenites spp.		F	O	O	O	O		F	S							
various trilete spores		F	O	O	O	O		O	F							
<i>Deflandrea perlucida</i> Alberti								DR	X							
fungal elements		X	X	X	X	X	X	X	X							
bisaccate pollen, Cretaceous				X	X	X	X	X								
<i>Deflandrea decorosa</i> of McIntyre, 1974				S				X								
<i>Deflandrea</i> sp. 6 of McIntyre, 1974								X								
<i>Sequoiapollenites</i> spp.		R	F					F								
<i>Diconodinium firmum</i> Harland					R			O								
<i>Triporopollenites</i> sp. AA				F	F	F	F	F								
<i>Betulaceoipollenites</i> sp. AA				S	F	F	F	F								
<i>Divisporites</i> sp.								S								
<i>Stereisporites antiquasporites</i> (Wilson and Webster) Dettmann								S								
<i>Laevigatosporites ovatus</i> Wilson and Webster								F								
Lower Cretaceous dinoflagellates		DR	DR	DR	DR	DR	DR									
<i>Rugubivesiculites</i> spp.				S	S	S	S									
<i>Engelhardtioipollenites</i> spp.				S	S	S	S									
<i>Alnipollenites verus</i> Potonié ex Potonié		S	F		S	R										
<i>Radialisporites radialis</i> (Kurtzsch) Kurtzsch						R										
<i>Kurtzipites</i> sp. of McIntyre				O	O	F										
<i>Stereisporites regium</i> (Drozhastich) Dettmann						R										
<i>Paraalnipollenites confusus</i> (Zaklinskaya) Hills and Wallace				F	F	F										
<i>Aquilapollenites formosus</i> Srivastava and Rouse						S										
Paleozoic spores						DR	DR									
Permo-Triassic bisaccate pollen				DR	DR	DR										
<i>Myricipites</i> sp. of McIntyre				F	O											
<i>Ulmoedipites</i> sp.				S	S											
<i>Cleistosphaeridium polytes</i> subsp. <i>clavulum</i> Davey				S												
<i>Cleistosphaeridium?</i> <i>aciculare</i> Davey				S												
<i>Triprojectus magnus</i> (Mchedlishvili) Stanley				S												
<i>Spongodinium delitiense</i> (Ehrenberg) Deflandre				R												
<i>Aquilapollenites trialatus</i> Rouse				S												
<i>Integricarpus venustus</i> (Srivastava) Stanley				S												
<i>Tricolporopollenites</i> sp. 5 of McIntyre, 1974				R												
<i>Wetzelia</i> sp.				F												
bisaccate pollen, mainly pinaceous		O	D													
<i>Bacutricolporites</i> sp.				S												
<i>Tetracolporites</i> sp.				S												
<i>Aquilapollenites</i> spp.				DR												
<i>Malvacearumpollenites?</i> sp.				S												
<i>Tiliaepollenites</i> spp.				F												
<i>Retitricolporites</i> sp.				S												
<i>Periporopollenites</i> sp.				R												
<i>Tricolporopollenites</i> spp.				F												
<i>Pterocaryapollenites</i> spp.				F												
Ericaceae tetrads				F												
<i>Caryapollenites simplex</i> Potonié				F												
<i>Carpinipites</i> sp.				R												
<i>Corylus tripollenites</i> Martin and Rouse				R												
<i>Betulaepollenites</i> sp.				R												
<i>Pistillipollenites mcgregori</i> Rouse				S												
<i>Faguspollenites verus</i> (Raatz) Potonié				S												
<i>Myrica annulites</i> Martin and Rouse				R												
<i>Ulmipollenites</i> sp.				F	S											
<i>Tilia crassipites</i> Wodehouse				R												
<i>Betulaceoipollenites</i> sp.				S	S											

GSC

FIGURE 2. Occurrences of taxa in core from the I.O.E. Atkinson H-25 well

Gleicheniidites senonicus Ross sensu Skarby
Osmundacidites wellmani Couper
Oligosphaeridium irregulare? (Pocock) Davey
and Williams

age: Early Cretaceous, Hauterivian-
Aptian, possibly no younger than
Barremian

I.O.E. Tuktu O-19

69°18'55"N, 132°48'17"W, Figure 1, loc. 4
(Note GSC Paper 74-11, p. 16, 17)

Depth 6810-7050(?) ft, cuttings;
basal 30 ft of Arenaceous unit,
Husky Formation, 6840-7216 ft;
Imperial Oil Enterprises prepar-
ations

Tertiary triporate pollen*
Lower Cretaceous dinoflagellates
Lower Cretaceous spores
Cretaceous dinoflagellates and spores
Upper Cretaceous dinoflagellates*
Albian-Cenomanian tricolpate pollen*
Jurassic-Lower Cretaceous spores and pollen
Upper Jurassic (Kimmeridgian)-Lower Creta-
ceous dinoflagellates
age: Early Cretaceous, probably not
older than Hauterivian, not younger
than Albian

Depth 7050-7110(?) ft, cuttings;
Imperial Oil Enterprises prepar-
ations

Lower Cretaceous dinoflagellates and spores*
Upper Cretaceous dinoflagellates*
Cretaceous dinoflagellates and spores*
Jurassic-Lower Cretaceous spores and pollen
Scriniodinium crystallinum (Deflandre)
Klement
Valensiella? sp.
Canningia "adnata" of Warren, unpubl.
Gonyaulacysta cf. *G. scarburghensis* Sarjeant
age: Late Jurassic, no older than Middle
Kimmeridgian (Early Tithonian)

Comments: Asterisks denote caved assemblages. The
samples are derived from cuttings and can be expected
to contain heterogeneous assemblages. Only the high-
er footage is given on the slide and the lower limit
of the sample interval is assumed to be that of the
footage given on the next lower slide. Palynology
indicates that the top of the Jurassic succession is
at 7050 feet.

Atlantic *et al.* Ontaratue K-04

66°33'37.5"N, 130°46'10.3"W, Figure 1, loc. 10

Depth 90 ft, cuttings;
GSC loc. C-26532

dinoflagellate cysts
Gonyaulacysta sp.
bisaccate pollen
age: Early Cretaceous

Depth 800 ft, cuttings;
Imperial Formation, 48 ft
above base; GSC loc. C-26533

unidentified spores
age: Devonian

Cretaceous Assemblages
(palynomorphs and pelecypods)
by W.W. Brideaux and J.A. Jeletzky

Shell Kugpik O-13

68°52'50"N, 135°18'15"W, Figure 1, loc. 6
(All palynological preparations made by
Shell Canada Limited and presented to GSC)

Depth 6388 ft, sidewall core;
Tent Island Formation, 32 ft
above base; GSC loc. C-28209

abundant organic debris
Deflandrea sp.
unidentifiable bisaccate pollen
Spinidinium sp.
age: Late Cretaceous

Depth 6450 ft, sidewall core;
Boundary Creek Formation,
30 ft below top, GSC loc. C-28207

abundant organic debris
Inaperturopollenites spp.
Deflandrea spp.
Deflandrea cf. *D. cooksonii* Alberti
age: Late Cretaceous, Senonian, possibly
Santonian to Campanian

Depth 6638 ft, sidewall core;
Boundary Creek Formation, 218
ft below top; GSC loc. C-28199

abundant organic debris
Deflandrea acuminata Cookson and Eisenack
age: Late Cretaceous, Cenomanian to
Turonian

Depths 6820 and 6840 ft, sidewall
cores; Boundary Creek Formation,
400-420 ft below top, ?195-?215
ft above base; GSC locs. C-28196
and C-28198

abundant organic debris
Spinidinium vestitum Brideaux
Astrocysta cretacea Pocock ex Davey
Cedripites sp.
Carboniferous spores
various bisaccate pollen
"*Scriniodinium*" sp. (n. sp.)
"*S.*" *eurypylum* Manum and Cookson
Gonyaulacysta orthoceras (Cookson and
Eisenack) Sarjeant
Odontochitina operculata (O. Wetzel)
Deflandre
Pseudoceratium cf. *P. expolitum* Brideaux
Cyclonephelium vannophorum Davey
Coronifera oceanica Cookson and Eisenack
age: Cretaceous, Late Albian or
Cenomanian

Depth 6860 ft, sidewall core;
Boundary Creek Formation, 440
ft below top, ?175 ft above
base; GSC loc. C-28194

abundant organic debris
Gonyaulacysta orthoceras (Cookson and
Eisenack) Sarjeant
Cyclonephelium sp.
Pterospermopsis sp.
age: Early Cretaceous

Depth 7070 ft, sidewall core;
GSC loc. C-28191

abundant plant debris
Gleicheniidites senonicus Ross
Stereisporites antiquasporites (Wilson and
Webster) Dettmann
Alisporites bilateralis Rouse
Vitreisporites pallidus (Riessinger) Nilsson
Odontochitina operculata (O. Wetzel)
Deflandre
unidentifiable dinoflagellate cysts
Oligosphaeridium complex (White) Davey and
Williams
Gonyaulacysta orthoceras (Cookson and
Eisenack) Sarjeant
Spiniferites ramosus (Ehrenberg) Mantell
Pterodinium aliferum Eisenack
Trichodinium sp.
Fromea amphora Cookson and Eisenack
Kalyptea? sp.
age: Early Cretaceous, probably Albian

Depth 7137 ft; sidewall core;
GSC loc. C-28189

abundant plant debris
unidentifiable spores and bisaccate pollen
Neoraistrickia sp.
Carboniferous spores
Gleicheniidites senonicus Ross
age: Early Cretaceous

Depth 7170 ft, sidewall core;
GSC loc. C-28188

abundant plant debris
bisaccate pollen
Carboniferous spores
Cicatricosisporites sp.
age: Early Cretaceous

Depth 7440 ft, sidewall core;
GSC loc. C-28182

Concavissimisporites variverrucosus (Couper)
Pocock
Chomotriletes almegrensis Pocock
age: Early Cretaceous, Albian(?)

Depth 7575 ft, sidewall core;
GSC loc. C-28177

abundant plant debris
Osmundacidites wellmanni Couper
Carboniferous spores
various trilete spores
age: indeterminate

Depth 7610 ft, sidewall core;
GSC loc. C-28175

abundant plant debris
spores and bisaccate pollen
Sestrosporites pseudoalveolatus (Couper)
Dettmann
Polycingulatisporites reduncus (Bolkovitina)
Playford and Dettmann
age: probably Early Cretaceous

Depth 7669 ft, sidewall core;
GSC loc. C-28172

plant debris
bisaccate pollen and rare spores
Cyclonephelium cf. *C. compactum* Deflandre
and Cookson
Cleistosphaeridium sp.
age: indeterminate

Depth 7876 ft, sidewall core;
GSC loc. C-28164

abundant plant debris (golden brown)
bisaccate pollen
Oligosphaeridium cf. *O. complex* (White)
Davey and Williams
Imbatodinium villosum Vozzhennikova
Tenua sp.
unidentifiable dinoflagellates
Oligosphaeridium spp. (common)
O. cf. *O. irregulare* (Pocock) Davey and
Williams
Systematophora sp.
age: Early Cretaceous, Valanginian to
Hauterivian
environment: marine

Depth 8025 ft, sidewall core;
GSC loc. C-28160

carbonized plant debris (abundant)
Cicatricosisporites sp.
C. hughesi Dettmann
Oligosphaeridium sp.
O. complex (White) Davey and Williams
bisaccate pollen
age: Early Cretaceous (Valanginian or
younger, to Albian)

Depth 8160 ft, sidewall core;
GSC loc. C-28156

abundant plant debris (light brown)
Taurocusporites sp.
Stereisporites sp.
bisaccate pollen
unidentifiable dinoflagellate cysts
Lycopodiumsporites sp.
age: probably Late Jurassic to Early
Cretaceous

Depth 8263 ft, sidewall core;
GSC loc. C-28153

carbonized debris
Scriniodium? sp. (very poorly preserved)
age: indeterminate

Depth 8268 ft, sidewall core;
GSC loc. C-28152

Sestrosporites pseudoalveolatus (Couper)
Dettmann
unidentifiable spores and bisaccate pollen
age: Late Jurassic-Early Cretaceous

Depth 8320 ft, sidewall core;
Husky Formation, 25 ft below
top; GSC loc. C-28151

plant debris (medium brown) abundant
unidentifiable spores and bisaccate pollen
Systematophora? sp.
Cicatricosisporites sp.
Alisporites bilateralis Rouse
age: Late Jurassic to Early Cretaceous

Depth 8356, sidewall core;
Husky Formation, 61 ft below
top; GSC loc. C-28149

carbonized debris (dark brown)
unidentifiable bisaccate pollen
age: Mesozoic(?)

Depth 9688 and 9792 ft, sidewall
cores; Husky Formation, 903 and 1007
ft below top of Arenaceous unit;
GSC locs. C-28143, C-28145

abundant carbonized debris
age: indeterminate

Depth 9688, 9692, 9695, 9698 ft,
core; Husky Formation, 903, 907,
910, 913 ft below top of Arena-
ceous unit; GSC loc. 92026-92028,
C-39599

Buchia (Anaucella) concentrica (Sowerby)
sensu lato
age: Late Oxfordian or Early Kimmerid-
gian, *Buchia* (A.) *concentrica* Zone

Depth 10 600 ft, sidewall core;
Bug Creek Formation equivalent,
455 ft below top, 30 ft above
base; GSC loc. C-28127

carbonized fragments (black)
age: indeterminate

Comments (J.A.J.): In the Husky Formation of the
northeastern Richardson Mountains, *Buchia (Anaucella)*
concentrica sensu lato appears to be restricted to
the basal 100 to ?200 feet of the lower member and
GSC locality C-39599 (9698 ft) is correlated with
these basal beds. Better preserved material is
needed to determine the position of the beds (9688-
9698) within the generalized zone of *Buchia (Anau-*
cella) concentrica (see Jeletzky, 1967, p. 36 for
discussion of the zone) but the species at 9692 and
9695 feet appear to be early forms of the species.

Cretaceous and Tertiary Assemblages
(foraminifers and associated microfaunas)
by J.H. Wall

Columbia *et al.* Ikkariktok M-64
72°23'47"N, 121°50'59"W, Figure 1, loc. 17

Depth 1400-1500 ft, cuttings;
Eureka Sound Formation, 370-470
ft above base; shale member, 85-
185 ft below top; GSC loc. C-33726/
1400-1500

Florilus sp. (rare)
algal cysts
age: probably Early Tertiary

Depth 1500-1600 ft, cuttings;
Eureka Sound Formation, 270-370
ft above base; shale member, 185-
285 ft below top; GSC loc. C-33726/
1500-1600

Haplophragmoides sp. (rare)

Depth 1600-1700 ft, cuttings;
Eureka Sound Formation, 170-270
ft above base; shale member, 285-
385 ft below top; GSC loc. C-33726/
1600-1700

Haplophragmoides spp. (two incomplete or
distorted specimens representing two
species)
Verneuilinoides? sp. (rare)

Depth 1700-1800 ft, cuttings;
Eureka Sound Formation, 70-170
ft above base; shale member, 385-
485 ft below top; GSC loc. C-33726/
1700-1800

Haplophragmoides spp. (four incomplete to
complete specimens representing one
large species and one specimen of a
small species)

Florilus sp. (rare)
bone(?) fragment
age: probably Early Tertiary
environment: marine, probably shallow

Depth 1900-2000 ft, cuttings;
Kanguk Formation, 30-130 ft
below top; GSC loc. C-33726/
1900-2000

Saccammina sp. (rare)
Haplophragmoides sp.
age: indeterminate
environment: marine, shallow, perhaps
restricted

Depth 2000-2100 ft, cuttings;
Kanguk Formation, 130-230 ft
below top; GSC loc. C-33726/
2000-2100

Saccammina sp.
Ammodiscus sp. (fragments of a very large
form)

Ammodiscus cretaceus (Reuss)
Haplophragmoides spp.
Verneuilinoides? sp. (fragment of a large form)
age: Late Cretaceous
environment: marine, shallow

Depth 2100-2200 ft, cuttings;
Kanguk Formation, 230-330 ft
below top; GSC loc. C-33726/
2100-2200

Bathysiphon sp.
Saccamina sp.
Ammodiscus cretaceus (Reuss) (rare)
Haplophragmoides spp.
H. bonanzaense Stelck and Wall (rare)
H. aff. H. gigas Cushman
H. cf. H. kirki Stelck and Wall (rare)
Gavelinella? sp., poorly preserved
siliceous sponge spicules
age: Late Cretaceous
environment: marine, neritic

Depth 2200-2300 ft, cuttings;
Kanguk Formation, 330-430 ft
below top; GSC loc. C-33726/
2200-2300

Ammodiscus sp. (fragment of a large form)
A. cretaceus (Reuss)
Reophax or *Ammobaculites* sp. (two chambers only)
Haplophragmoides cf. *H. rota* Nauss
Trochammina albertensis Wickenden
Verneuilinoides bearpawensis (Wickenden)
V.? sp. (partial specimen of a large form)
Anomalinoides sp.
Gavelinella? sp. (rare)
diatom (morphotype A-2 of Wall, 1975; rare)
age: Late Cretaceous, Campanian
environment: marine, neritic

Depth 2300-2400 ft, cuttings;
Kanguk Formation, 430-530 ft
below top; 384-484 ft above
base; GSC loc. C-33726/2300-2400

Bathysiphon sp.
Ammodiscus sp. (fragments of a very large form)
Haplophragmoides spp.
H. aff. H. gigas Cushman
H. hendersonense Stelck and Wall
Trochammina albertensis Wickenden
Verneuilinoides sp. (fragment of a large white form)
V. bearpawensis (Wickenden)
V.? sp.
Dentalina sp. (rare)
Eoeponidella sp. (large form) (rare)
Gavelinella sp. - probably same as
Gavelinella? sp. above
age: Late Cretaceous, Campanian
environment: marine, neritic, perhaps outer

Depth 2400-2500 ft, cuttings;
Kanguk Formation, 530-630 ft below
top; 284-384 ft above base; GSC
loc. C-33726/2400-2500

Bathysiphon sp.
Ammodiscus sp. (rare; large form)
Haplophragmoides spp.
H. aff. H. gigas Cushman
Ammobaculites sp. (rare)
Verneuilinoides sp.
siliceous sponge spicules
age: Late Cretaceous
environment: marine, neritic, probably inner

Depth 2500-2600 ft, cuttings;
Kanguk Formation, 630-730 ft below
top; 184-284 ft above base; GSC
loc. C-33726/2500-2600

Bathysiphon sp. (rare)
Hippocrepina sp. (rare)
Reophax sp. (slender, large form with elongate chambers)
R.? sp. (isolated, compressed chambers with extended aperture)
Haplophragmoides hendersonense Stelck and Wall
H. cf. H. howardense Stelck and Wall
Trochammina albertensis Wickenden
Verneuilinoides bearpawensis (Wickenden)
Quinqueloculina cf. *Q. sphaera* Nauss (rare)
age: Late Cretaceous, Campanian
environment: marine, neritic, probably inner

Depth 2600-2700 ft, cuttings;
Kanguk Formation, 84-184 ft above
base; GSC loc. C-33726/2600-2700

Reophax? sp. (as in above assemblage)
Haplophragmoides spp.
H. bonanzaense Stelck and Wall (rare)
Trochammina albertensis Wickenden
Verneuilinoides bearpawensis (Wickenden)
diatom (morphotype A of Given and Wall, 1971; rare)
age: Late Cretaceous, Campanian
environment: marine, neritic, probably inner

Depth 2700-2800 ft, cuttings;
Kanguk Formation, 0-84 ft above
base, and top 16 ft of Paleozoic
rocks; GSC loc. C-33726/2700-2800

Saccamina sp.
Reophax? sp. (as in above assemblages)
Haplophragmoides spp.
H. aff. H. gigas Cushman (rare)
H. cf. H. hendersonense Stelck and Wall (rare)
H. cf. H. howardense Stelck and Wall (rare)
age: Late Cretaceous
environment: marine, neritic, probably inner

Depth 2800-2900 ft, cuttings;
Paleozoic rocks, 16-166 ft below
base of Kanguk Formation; GSC
loc. C-33726/2800-2900

Bathysiphon sp. (rare)
Reophax? sp. (as above)

Haplophragmoides spp.
H. aff. *H. gigas* Cushman (rare)
Trochammina albertensis Wickenden
Verneuilinoides bearpawensis (Wickenden)
age: Late Cretaceous, Campanian
environment: marine, neritic, probably inner

Comments: The interval between 1000 and 1400 feet appears to be nonmarine; a megaspore and questionable miospores were recovered, but no foraminifers or other marine organisms.

The sporadic occurrence of foraminifers indicates that the interval 1400 to 1800 feet is at least in part marine. The age of this unit (the Lower Shale Member of the Eureka Sound Formation) is considered to be questionable Early Tertiary because the recorded range of the foraminiferal genus *Florilus* does not include strata older than Paleocene. However, as *Florilus* is closely related to *Nonion*, which is questionably reported from the Upper Cretaceous, it is quite possible that the strata in this well containing *Florilus* may be of Late Cretaceous age.

The interval 1900 to 2784 feet is thought to be of Late Cretaceous age, with the entire Mesozoic section below 2300 feet being Campanian. The Campanian assignment is based largely on the abundant occurrence of *Trochammina albertensis* and *Verneuilinoides bearpawensis*, which are common in the upper Campanian Bearpaw Formation of southern Alberta. The sporadic presence of *Haplophragmoides bonanzaense* and *H. hendersonense* could be interpreted as indicating a Turonian age, based on their occurrence in the central part of the Kaskapau Formation in northern Alberta, but it seems more likely that those forms range somewhat higher in the Arctic Islands.

Deminex *et al.* Orksut I-44
72°23'45"N, 122°42'09"W, Figure 1, loc. 19
(Note GSC Paper 74-39, p. 8-10)

Depth 2200-2300 ft, cuttings;
Eureka Sound Formation, 710-810
ft above base; cyclic member, 110-
210 ft above base; GSC loc. C-30109/
2200-2300

Haplophragmoides? sp. (rare)
age: probably Late Cretaceous

Depth 3000-3100 ft, cuttings;
Eureka Sound Formation, basal
10 ft; Kanguk Formation, top
90 ft; GSC loc. C-30109/3000-3100

Haplophragmoides cf. *H. rota* Nauss
Verneuilinoides large species (rare)
Quinqueloculina cf. *Q. sphaera* Nauss
Globulina sp. (rare)
Serovaina sp. (small, poorly preserved)
(rare)
age: Late Cretaceous, probably Campanian
environment: marine, shallow

Depth 3100-3200 ft, cuttings;
Kanguk Formation, 90-190 ft below
top; GSC loc. C-30109/3100-3200

Saccammina sp. (rare)
Haplophragmoides cf. *H. rota* Nauss
Trochammina cf. *T. webbi* Stelck and Wall
(rare)
Paracypris? sp. (rare)
diatom (morphotype A of Given and Wall,
1971; rare)
age: Late Cretaceous
environment: marine, shallow

Depth 3300-3400 ft, cuttings;
Kanguk Formation, 290-390 ft below
top; GSC loc. C-30109/3300-3400

Ammodiscus cretaceus (Reuss) (rare)
Haplophragmoides spp. (large forms)
H. cf. *H. rota* Nauss
Praebulimina venusae (Nauss) (rare)
Quadriformina? sp. (rare)
age: Late Cretaceous, probably Campanian
environment: marine, shallow

Depth 3400-3500 ft, cuttings;
Kanguk Formation, 390-490 ft below
top; GSC loc. C-30109/3400-3500

Bathysiphon sp. (very large)
Ammodiscus sp. (rare)
A. cretaceus (Reuss) (rare)
Haplophragmoides sp. (common)
Trochammina sp.
age: questionable, probably Late Cretaceous
environment: marine, shallow

Depth 3500-3600 ft, cuttings;
Kanguk Formation, 490-590 ft below
top; GSC loc. C-30109/3500-3600

Bathysiphon spp.
Ammodiscus cf. *A. cretaceus* (Reuss)
Haplophragmoides spp.
Verneuilinoides cf. *V. bearpawensis*
(Wickenden)
V. ex gr. *V. fischeri* Tappan
Quinqueloculina sp. (rare)
diatom (morphotype B of Given and Wall,
1971; rare)
siliceous sponge spicules
age: Late Cretaceous, probably Campanian
environment: marine, shallow

Depth 3600-3700 ft, cuttings;
Kanguk Formation, 590-690 ft below
top; GSC loc. C-30109/3600-3700

Bathysiphon spp.
Ammodiscus cretaceus (Reuss)
Haplophragmoides sp.
Cyclammina? sp. (large specimens)
siliceous sponge spicules
age: Late Cretaceous
environment: marine

Depth 3700-3800 ft, cuttings;
Kanguk Formation, 690-790 ft below
top; GSC loc. C-30109/3700-3800

Bathysiphon spp.
Ammodiscus cf. *A. cretaceus* (Reuss)
Haplophragmoides spp.
Verneuilinoides cf. *V. bearpawensis* (Wickenden)
diatom (morphotype A of Given and Wall, 1971)
siliceous sponge spicules
age: Late Cretaceous, probably Campanian
environment: marine, shallow

Depth 3800-3900 ft, cuttings;
Kanguk Formation, 790-890 ft below
top; GSC loc. C-30109/3800-3900

Bathysiphon spp.
Ammodiscus sp. (rare)
Haplophragmoides sp. (common)
Ammobaculites sp. (rare)
Verneuilinoides bearpawensis (Wickenden)
(common)
V. cf. *V. fischeri* Tappan (rare)
age: Late Cretaceous, probably Campanian
environment: marine, shallow

Depth 3902-3912 ft, core; Kanguk
Formation, 892-902 ft below top;
318-328 ft above base; GSC loc.
C-30109/3902-3912

Pseudobolivina sp. (poorly preserved)
siliceous sponge spicules
tooth, probably fish
age: indeterminate
environment: marine

Depth 3900-4000 ft, cuttings;
Kanguk Formation, 890-990 ft below
top; 230-330 ft above base; GSC
loc. C-30109/3900-4000

Bathysiphon spp. (rare)
Ammodiscus cretaceus (Reuss) (rare)
Haplophragmoides sp.
Verneuilinoides sp. (rare)
siliceous sponge spicules
age: questionable, probably Late Creta-
ceous (the sparse assemblage may
be largely caved)
environment: marine

Depth 4000-4200 ft, cuttings;
Kanguk Formation, 990-1190 ft below
top; 30-230 ft above base; GSC loc.
C-30109/4000-4200

Bathysiphon spp.
Saccammina sp.
Ammodiscus cf. *A. cretaceus* (Reuss) (rare)
Haplophragmoides sp.
Trochammina sp.
Verneuilinoides sp.
V. cf. *V. bearpawensis* (Wickenden)
diatom (morphotype A of Given and Wall, 1971)
diatom (morphotype B of Given and Wall, 1971)
age: Late Cretaceous, probably Campanian
environment: marine, shallow

Depth 4200-4300 ft, cuttings;
Kanguk Formation, basal 30 ft;
Christopher(?) Formation, top
70 ft; GSC loc. C-30109/4200-4300

Haplophragmoides spp.
Anomalinoidea pinguis (Jennings) (rare)
manganese spherulitic carbonate of Miall,
1974b
age: Late Cretaceous, probably Campanian
if *A. pinguis* is in place

Depth 4274-4284 ft, core;
Christopher(?) Formation, 44-54 ft
below top, 86-96 ft above base;
GSC loc. C-30109/4274-4284

radiolarian faunule:
nasselarian segments
discoidal spheroidal indeterminate
form
discoidal form with pore (question-
able radiolarian)
siliceous sponge spicules
age: Late Cretaceous, possibly Campanian
(similar forms present in dated
outcrops)
environment: marine, moderate depth

Depth 4284-4294 ft, core;
Christopher(?) Formation, 54-64
ft below top, 76-86 ft above base;
GSC loc. C-30109/4284-4294

Haplophragmoides sp. (poorly preserved)
siliceous sponge spicules (some tetraxons)
age: Cretaceous
environment: marine

Depth 4300-4400 ft, cuttings;
Christopher(?) Formation, basal
70 ft; Isachsen Formation, top
30 ft; GSC loc. C-30109/4300-4400

Saccammina sp. (rare)
Ammodiscus sp. (rare)
Haplophragmoides sp.
Verneuilinoides bearpawensis (Wickenden)
(rare)
age: Cretaceous (assemblage probably
consists mostly of cavings)
environment: marine

Depth 4400-4500 ft, cuttings;
Isachsen Formation, 30-130 ft below
top; GSC loc. C-30109/4400-4500

Haplophragmoides sp.
Verneuilinoides? sp. (rare)
age: probably Cretaceous
environment: marine

Depth 4600-4700 ft, cuttings;
Isachsen Formation, basal 83 ft;
Mould Bay Formation, top 17 ft;
GSC loc. C-30109/4400-4500

Ammodiscus cf. *A. southeyensis* (Wall)
Haplophragmoides cf. *H. barrowensis* Tappan
(rare)

Haplophragmoides cf. *H. canui* Cushman
Trochammina sp.
ostracode indeterminate

age: Cretaceous, probably Early [assemblage shows some similarity to that from 4700-4800 ft in the same well, dated as Early Neocomian by Chamney (*in Brideaux et al.*, 1975)]

Comments: The microfauna between 3000 and 4300 feet does not appear to contain any forms that could be dated as older than Late Cretaceous and probably is Campanian in age. No distinctive Albian species can be identified in these samples and there is some question as to whether the Christopher Formation is present.

The interval between 4300 and 4600 feet cannot be dated. The sparse microfauna seems to consist primarily of caved forms from the Kanguk Formation. Between 4600 and 4700 feet, the microfauna takes on the appearance of that below 4700 feet, which has been dated Early Neocomian by Chamney (*in Brideaux et al.*, 1975).

The manganese spherulitic carbonate bed of Miall (1974b), which forms a marker zone between the Kanguk and Christopher Formations, was observed in microfossil residues from between 4200 and 4300 feet.

Chevron et al. E. Pine Creek Y.T. O-78
66°57'53"N, 137°58'58"W, Figure 1, loc. 9

Depth 2415-2470 ft, core;
GSC loc. C-38248/2415-2470

Anmodiscus sp. (rare)
Haplophragmoides sp.
Verneulinoides borealis Tappan? (small specimen)
Gaudryina tailleuri (Tappan)?
Lenticulina spp. - small forms
radiolaria (pyritized):
Stichocapsa sp.
Lithostrobos (*Lithostrobos*)? sp.
Dietyomitra (*Dietyomitrella*) sp.
age: Early to Middle Albian (the assemblage resembles one in the Loon River Fm. of northern Alberta)

Depth 2535-2550 ft, core;
2-17 ft above base of Cretaceous;
GSC loc. C-38248/2535-2550

Anmodiscus sp.
Haplophragmoides sp.
Trochammina sp.
Gaudryina tailleuri (Tappan)
Gaudryina? sp.
Lenticulina sp. (weathered; rare)
Saracenaria sp. (weathered; rare)
age: Early Albian or older (Paleozoic beds are directly below; residue is sandy and glauconitic)

Cretaceous Assemblages (megaspores)
by A.R. Sweet

Gulf-Mobil East Reindeer G-04
68°53'15.98"N, 133°46'28"W, Figure 1, loc. 5
(Note GSC Paper 74-11, p. 6, 7)

Depth 9580-9611 ft, core;
GSC loc. C-24405

Minerisporites macroreticulatus Singh
common reworked Devonian (Frasnian) and
Carboniferous megaspores
abundant algal cysts (*Leiosphaeridia* sp.)
age: Early Cretaceous, Albian?

Depth 9615-9647 ft, core;
GSC loc. C-24406

Minerisporites macroreticulatus Singh
M. marginatus (Dijkstra) Potonié
Erlansonisporites globosus Singh
Thomsonia sp.
T. fairlightensis Batten
common reworked Upper Devonian megaspores
and rare Carboniferous megaspores
abundant algal cysts (*Leiosphaeridia* sp.)
age: Early Cretaceous, probably Albian

Comments: *Minerisporites macroreticulatus* and *Erlansonisporites globosus* have been reported only from the Mannville Group (Singh, 1964). *Thomsonia fairlightensis* and *Minerisporites marginatus* range throughout the Lower Cretaceous. The relatively large number of megaspores recovered from the interval between 9615 and 9647 feet indicates a non-marine paleoenvironment for this interval.

Gulf-Mobil East Reindeer A-01
68°40'13"N, 134°00'30"W, Figure 1, loc. 7
(Note GSC Paper 74-11, p. 7)

Depth 7544-7579 ft, core;
GSC loc. C-22384

Minerisporites macroreticulatus Singh
Erlansonisporites reticulatus Singh
Arcellites cf. *A. incipiens* Singh
abundant reworked Carboniferous and Upper
Devonian megaspores
age: Early Cretaceous, Albian?

Cretaceous Assemblages
(pelecypods; foraminifers)
by J.A. Jeletzky and J.H. Wall

Chevron et al. Whitefish Y.T. I-05
67°04'37"N, 137°15'25"W, Figure 1, loc. 8

Depth 3986-4036 ft, core;
GSC loc. C-38249/3986-4036

Reophax sp. (rare)
Milicammina? sp. (rare)
Haplophragmoides sp.
Ammobaculites sp. (rare)
Gaudryina sp. (rare)
Lenticulina sp.

Nodosaria sp. (rare)
Anomalina? sp.
indeterminate rotaliid foraminifer
age: uncertain, probably no younger than
Albian

Depth 4456-4476 ft, core; 309-329
ft above base of Cretaceous;
GSC loc. C-38249/4456-4476

Haplophragmoides sp.
Ammobaculites sp. (rare)
Gaudryina tailleuri (Tappan)?
age: indeterminate from microfauna

Depth 4458 ft, core; 327 ft
above base of Cretaceous;
GSC locs. C-38249/4458 and
C-38252

Aucellina caucasica (Abich) sensu lato
?indeterminate pelecypod
age: Early Cretaceous, late Barremian
to Aptian

Comments (J.A.J.): The collection at 4458 feet is
from some part of *Aucellina aptiensis*-*Aucellina*
caucasica Zone of Arctic Canada (see Jeletzky, 1959,
p. 16, 17; 1964, p. 64, Pl. XVIII, figs. 5A, B,
Table 1). *Aucellina caucasica* sensu lato ranges
from the upper part of the Upper member of the Upper
shale-siltstone division to the top of the Upper
sandstone division. This index fossil is equally
common in the predominantly argillaceous "western
facies" of these units throughout the northern Yukon
(see Jeletzky, 1974, p. 17 and unpublished data).
It is impossible to say whether the specimens are
from beds equivalent to the upper part of the Upper
member of the Upper shale-siltstone division (upper
Barremian) or from those equivalent to the Upper
sandstone division (Aptian).

Jurassic and possibly Cretaceous Assemblages
(foraminifers)
by D.R. Clowser [Robertson Research
(North America) Limited]

Elf Uminmak H-07
73°36'29"N, 123°00'30"W, Figure 1, loc. 16
(Note GSC Paper 74-39, p. 17)

Depth 2640-2650 ft, cuttings;
Christopher Formation, 284-294 ft
below top, 208-218 ft above base;
GSC loc. C-39381/2640-2650

Haplophragmoides canui Cushman
H. kingakensis Tappan - *H. barrowensis*
Tappan complex
Reophax suevica Tappan - *R. densa* Tappan
complex
Glomospirella sp. 6
age: probably latest Jurassic, possibly
Early Cretaceous (Barremian or
older)

Depth 2820-2870 ft, cuttings;
Christopher Formation, 38 ft above
base; Melville Island Group, 12 ft
below top; GSC loc. C-39381/2820-2870

Haplophragmoides canui Cushman
H. kingakensis Tappan - *H. barrowensis*
Tappan complex
Reophax suevica Tappan - *R. densa* Tappan
complex
Glomospirella sp. 6
Arenoturrisspirillina cf. *A. waltoni* Chamney
age: Late Jurassic, Kimmeridgian to
Tithonian

Comments: The presence of *Haplophragmoides kinga-*
kensis/*H. barrowensis*, *H. canui*, and *Reophax suevi-*
ca/*R. densa* indicates Barremian or older age while
the occurrence of *Glomospirella* sp. 6 suggests
latest Jurassic age, based on other occurrences of
this informal taxon known to Robertson Research.
Arenoturrisspirillina cf. *A. waltoni* indicates Kim-
meridgian or Tithonian age. Lithologic studies by
Miall (1974a) indicate the top of Devonian rocks
at a depth of 2858 feet.

Devonian and Cretaceous Assemblages
(conodonts, foraminifers and
associated microfossils)
by D.R. Clowser, T.T. Uyeno and J.H. Wall

Elfex-Texaco Tiritchik M-48
72°47'51"N, 120°44'48"W, Figure 1, loc. 18

Depth 2000-2100 ft, cuttings;
Kanguk Formation, 735-835 ft below
top, 410-510 ft above base; GSC
loc. C-33961/2000-2100

Bathysiphon sp.
Saccamina sp. (rare)
Amodiscus cretaceus (Reuss)
Haplophragmoides sp.
H. aff. H. gigas Cushman
Trochammina sp. (small, compressed)
Quinqueloculina sp. (rare)

Depth 2100-2200 ft, cuttings;
Kanguk Formation, 310-410 ft above
base; GSC loc. C-33961/2100-2200

Saccamina sp. (rare)
Haplophragmoides sp.
Spiroplectammina? sp. (rare)
siliceous sponge spicule

Depth 2200-2300 ft, cuttings;
Kanguk Formation, 210-310 ft above
base; GSC loc. C-33961/2200-2300

Bathysiphon sp. (rare)
Amodiscus sp. (small; rare)
Reophax or *Ammobaculites* sp. (rare)
Reophax? (one elongate cylindrical chamber;
rare)
Haplophragmoides aff. *H. gigas* Cushman
Trochammina sp.

Depth 2240 ft, cuttings;
Kanguk Formation, 270 ft above
base; GSC loc. C-33961/2240

Haplophragmoides sp.
Trochammina sp.
Verneuilinooides sp.
Gaudryina sp.

Depth 2300-2400 ft, cuttings;
Kanguk Formation, 110-210 ft above
base; GSC loc. C-33961/2300-2400

Saccammina spp.
Haplophragmoides aff. *H. gigas* Cushman
Gaudryina? sp. (rare)
Gravellina sp. (rare)

Depth 2400-2500 ft, cuttings;
Kanguk Formation, 10-110 ft above
base; GSC loc. C-33961/2400-2500

Saccammina sp. (rare)
Haplophragmoides sp.
Trochammina cf. *T. albertensis* Wickenden
Verneuilinooides sp. (rare)

Depth 2420 ft, cuttings;
Kanguk Formation, 90 ft above
base; GSC loc. C-33961/2420

Bathysiphon vitta Nauss
Saccammina alexanderi (Loeblich and Tappan)
S. lathrami Tappan
Haplophragmoides topagorukensis Tappan
Trochammina ribstonensis Wickenden var.
Verneuilinooides borealis Tappan
Gaudryina sp.
diatoms

Depth 2500-2600 ft, cuttings;
Kanguk Formation, basal 10 ft;
Weatherall Formation, top 90 ft;
GSC loc. C-33961/2500-2600

Bathysiphon sp.
Saccammina spp.
Haplophragmoides spp.
H. cf. *H. hendersonense* Stelck and Wall
Verneuilinooides bearpawensis (Wickenden)
Trochammina cf. *T. albertensis* Wickenden

Depth 4631-4640 ft, core;
Blue Fiord Formation, 16-25
ft below top; GSC loc.
C-33961/4631-4640

Polygnathus perbonus perbonus (Philip)
(late form)
Pandorinellina cf. *P. optima* (Moskalenko)
age: Emsian (informally about mid-Emsian);
P. perbonus perbonus faunal unit of
Klapper (*in Perry et al.*, 1974)

Comments (J.H.W.): The interval between 2000 and 2600 feet was examined to ascertain if the well penetrated Lower Cretaceous strata. Foraminifers recovered indicate that Upper Cretaceous (most probably Campanian) beds overlie the Devonian. Consequently, it appears that Albian rocks are not present in the well.

Comments (D.R.C.): The poorly preserved assemblage of agglutinating foraminifers at 2240 feet has a Late Cretaceous aspect. That at 2420 feet also is Late Cretaceous and probably is Cenomanian.

Comments (T.T.U.): Conodont faunas with the late form of *P. perbonus perbonus* have previously been reported from the Blue Fiord Formation on Devon Island (Klapper, 1969), the upper Stuart Bay Formation on Bathurst Island (Uyeno *in* McGregor and Uyeno, 1972), the Ogilvie Formation on Hart River, northern Yukon Territory (Klapper *in* Ludvigsen, 1972), and the Ogilvie and Prongs Creek Formations in northern Yukon Territory (Klapper *in* Perry *et al.*, 1974). The same faunal unit has been reported from outcrop GSC localities C-30544 (southwestern tip of Princess Royal Island) and C-30547 (near Armstrong Point, Victoria Island). However, the present suite contains several specimens exhibiting a form approaching *Pandorinellina optima*, a species known only from older faunas and, for this reason, it may represent the oldest part of the stratigraphic range of *P. perbonus perbonus* (late form).

Devonian Assemblages
(brachiopods, pelecypods and dacroconarids)
by A.W. Norris

I.O.E. Providence K-45
61°34'36.00", 117°08'47.78"W, Figure 1, loc. 23

Depth 682 ft, core; Horn River
Formation, 29 ft below top, 154
ft above base; GSC loc. C-34848

Roundya? sp.
conodont
age: probably Devonian

Depth 704.5 ft, core; Horn River
Formation, 51.5 ft below top;
131.5 ft above base; GSC loc. C-37182

Styliolina sp.
age: probably Middle Devonian

Depth 779.5 ft, core; Horn River
Formation, 126.5 ft below top,
56.5 ft above base; GSC loc. C-37184

Styliolina sp.
age: probably Middle Devonian

Depth 823 ft, core; Horn River
Formation, 13 ft above base;
GSC loc. C-37185

Emanuella sp.
punctate brachiopod fragments
age: Middle Devonian

Depth 829.5 ft, core; Horn River
Formation, 6.5 ft above base;
GSC loc. C-37186

Styliolina sp.
Tentaculites sp.
Leiorhynchus cf. *L. castanea* (Meek)
age: Middle Devonian, early to middle
Givetian

Depth 838 ft, core; Lonely Bay
Formation, 2 ft below top; GSC
loc. C-37187

Buchiola sp.
Lingula minuta Meek
Emanuelia sp.
Warrenella? sp.
Leiorhynchus awokanak McLaren
L. castanea (Meek)
age: Middle Devonian, early to middle
Givetian

Depth 841 ft, core; Lonely Bay
Formation, 5 ft below top; GSC
loc. C-37188

Nowakia sp.
Lingula sp.
Rhyssochonetes aurora (Hall)
Leiorhynchus cf. *L. awokanak* McLaren
L. cf. L. castanea (Meek)
age: Middle Devonian, early to middle
Givetian

Depth 843 ft, core; Lonely Bay
Formation, 7 ft below top; GSC
loc. C-37189

Rhyssochonetes aurora (Hall)
Leiorhynchus cf. *L. castanea* (Meek)
age: Middle Devonian, early to middle
Givetian

Depth 847 ft, core; Lonely Bay
Formation, 11 ft below top; GSC
loc. C-37190

Lingula sp.
Rhyssochonetes cf. *R. aurora* (Hall)
Leiorhynchus castanea (Meek)
age: Middle Devonian, early to middle
Givetian

Comments: See discussion below the following well.

Horn River *et al.* Mink Lake I-38
61°37'31"N, 117°35'51"W, Figure 1, loc. 22

Depth 880 ft, core; Horn River
Formation, 64 ft above base;
GSC loc. C-34850

Lingula sp.
Nowakia? sp.
Styliolina sp.
age: probably late Middle Devonian

Depth 908 ft, core; Horn River
Formation, 36 ft above base;
GSC loc. C-37191

Lingula
Leiorhynchus cf. *L. castanea* (Meek)
Styliolina sp.
age: late Middle Devonian, early to
middle Givetian

Comments: Fossils present in cores from the I.O.E.
Providence K-45 well between the depths of 823 and
847 feet are typical of the Pine Point and Horn
River Formations of the Great Slave Lake area.
They indicate an early to mid-Givetian age. The
fossils from between 682 and 779.5 feet in the same
well are less diagnostic, but are probably also of
Givetian age. Typical fossils of the Pine Point
and Horn River Formations are present also in the
two samples from the Mink Lake I-38 well.

Devonian Assemblages
(corals and stromatoporoids)
by A.E.H. Pedder

I.O.E.-Triad Ebbutt D-50
62°19'01"N, 122°23'30"W, Figure 1, loc. 21
(Note GSC Paper 70-15, p. 12, 13)

Depth 1580 ft, core; Nahanni
Formation, 49 ft below top, 254
ft above base; GSC loc. C-37924

Mesophyllum? (sensu lato) sp.
age: probably Middle Devonian

Depths 1582-1591 ft, core; Nahanni
Formation, 51-61 ft below top, 243-
252 ft above base; GSC locs. C-37923,
C-37926, C-37927

Amphipora sp.
indeterminate stromatoporoid
age: Late Silurian to Late Devonian

Depth 1600 ft, core; Nahanni Formation,
69 ft below top, 234 ft above base; GSC
loc. C-37928

Stromatopora sp.
Alveolites sp.
age: probably Middle Devonian, Late
Eifelian

Depth about 1629 ft, core; Nahanni
Formation, about 108 ft below top,
about 195 ft above base; GSC loc.
C-37922

Thamnopora sp.
age: probably Late Silurian-Late
Devonian

Depth 1700.5-1702 ft, core; Nahanni
Formation, 169.5-171 ft below top,
132-133.5 ft above base; GSC locs.
C-37925, C-37666

"*Microplasma*" cf. "*M. fongi* Yoh sensu
Lenz, 1961
rugose coral, gen. et sp. nov.
age: Middle Devonian, late Eifelian

Comments: Most of these collections contain only
undetermined, and in some cases possibly new,
species of long-ranging genera. However, C-37925
certainly, and C-37666 and C-37928 probably, are
diagnostic of the Hume Formation and its correla-
tives.

The species of *Amphipora* from between the depths of 1582 and 1591 feet normally lacks an axial canal and, where the canal is present, it is very small. Thus it is not *A. ramosa* (Phillips). Whatever it is, it is known from the Hume Formation but, as most species of the genus are long ranging, this may not be significant. The species of *Alveolites* from a depth of 1600 feet is known from the Hume Formation. The rugose coral genus from between 1700.5 and 1702 feet also occurs in the Hume Formation, although the species are not necessarily identical.

Devonian Assemblages (conodonts)
by T.T. Uyeno

Dome et al. Weatherall O-10 well
75°49'51.9"N, 108°31'50.0"W, Figure 1, loc. 12

Depth 6530-6750 ft, cuttings;
GSC loc. C-30171

Pandorinellina exigua (Philip)
Polygnathus dehiscens Klapper
Belodella sp.
Neopanderodus? sp.
age: Early Devonian, informally mid-
Emsian; Fauna 8 of Klapper et al.
(1971)

Comments: Weight of sample was 1217 gm. Because the sample consisted of cuttings, the above age is the minimum for the interval sampled. Conodonts of this age have been found in the middle part of the Stuart Bay Formation on northeastern Bathurst Island (McGregor and Uyeno, 1972).

Silurian and Devonian Assemblages
(ostracodes, brachiopods, fish, conodonts)
by M.J. Copeland, A.W. Norris,
R. Thorsteinsson and T.T. Uyeno

Imperial et al. Devon E-45
75°04'21"N, 91°48'20"W, Figure 1, loc. 13

Depth 120-129 ft, cuttings (1212 gm);
Read Bay Formation, B Member, 2141-
2150 ft above base; GSC loc. C-33493/
120-129

Ozarkodina confluens (Branson and Mehl), P
element, late form
Pelekysgnathus n. sp.
age: Late Silurian, probably Pridolian

Depth 300-310 ft, cuttings; Read
Bay Formation, B Member, 1960-
1970 ft above base; GSC loc. C-33493/
300-310

Bairdiocypris sp.

Depth 310-330 ft, cuttings; Read
Bay Formation, B Member, 1940-1960
ft above base; GSC loc. C-33493/
310-330

Libumella sp.
Eukloedenella sp.

Depth 390-420 ft, cuttings; Read
Bay Formation, B Member, 1850-1880
ft above base; GSC loc. C-33493/
390-420

craspedobolbine? beyrichiid ostracode
Libumella sp.
Microcheilinella sp.
age: Silurian

Depth 420-440 ft, cuttings; Read
Bay Formation, B Member, 1830-1850
ft above base; GSC loc. C-33493/
420-440

Selebratina? sp.

Depth 720-730 ft, cuttings; Read
Bay Formation, B Member, 1540-1550
ft above base; GSC loc. C-33493/
720-730

Eukloedenella sp.

Depth 770-780 ft, cuttings; Read
Bay Formation, B Member, 1490-1500
ft above base; GSC loc. C-33493/
770-780

craspedobolbine? beyrichiid ostracode
cf. *Bicornella* sp.
age: Silurian

Depth 1300-1400 ft, cuttings; Read
Bay Formation, B Member, 870-970
ft above base; GSC loc. C-33493/
1300-1400

Ozarkodina confluens (Branson and Mehl)
O. eosteinhornensis (Walliser)
age: late Ludlow to Pridolian

Depth 1400-1410 ft, cuttings; Read
Bay Formation, B Member, 860-870
ft above base; GSC loc. C-33493/
1400-1410

Baschkirina sp.

Depth 2300-2400 ft, cuttings (1206 gm);
Read Bay Formation, A Member, 30-130
ft below top, ?1027-?1127 ft above base;
GSC loc. C-33493/2300-2400

Ozarkodina confluens (Branson and Mehl)
Panderodus spp.
"Belodella" spp.
age: Silurian

Depth 2978-3008 ft, core (1586 gm);
Read Bay Formation, A Member, 428-658
ft below top; GSC loc. C-33493/2978-3008

Ozarkodina confluens (Branson and Mehl), P
element, late form
Panderodus spp.
age: Late Silurian, middle Ludlow to
Pridolian

TAXON	SAMPLE WEIGHTS (Grams)	SAMPLE INTERVAL IN FEET (All cuttings)	BIOSTRATIGRAPHY	
			?	GEDINNIAN
			?	PRIDOLIAN-GEDINNIAN
			?	PRIDOLIAN?
				EARLY LUDLOW
indeterminate ostracode spp.		410-420	x ?	
indeterminate monoceratellid		670-700		
indeterminate aparchitid		770-790		
indeterminate beyrichiid spp.		880-890		
indeterminate leperditiid spp.		950-960		
"Aparchites"? sp.		1040-1080		
Ellesmeria sp.		1230-1250		
E. ovata Tolmachoff		1360-1380	x	
E. cf. E. cylindrica Tolmachoff		1390-1420	x x	
Kloedenella? sp.		1450-1480		
Bairdiocypris sp.		1480-1490		
Bairdiocypris sp.		1490-1510		
Hypotetragona? sp.		1590-1610		
Libumella? sp.		1650-1680		
Beyrichia? sp.		1680-1710		
B. aff. B. arctigena Martinsson		1720-1750		
Selebratina sp.		1750-1770		
Welleria? sp.		1780-1790		
Alaskabolbina? sp.		1830-1860		
Præpilatina? sp.		1860-1870		
Eukoederella sp.		1920-2040		
Ozarkodina sp.		1960-1980		
O. remscheidensis (Ziegler)		2090-2120		
O. cf. O. easteinhornensis (Walliser)		2160-2260		
O. excavata (Branson and Mehl)		2230-2250		
Panderodus spp.		2250-2280		
Anceradella? sp.		2280-2320		
A. ploeckensis Walliser		2320-2330		
cf. Coelospira sp.		2320-2360		
cf. Atrypa sp.		2330-2360		
cf. Metaplasia sp.		2360-2400		
Howellia cf. H. cycloptera (Hall)		2400-2500		
Cyathaspidae n. gen. et sp. [aff. Anglaspis (Jackel)]		4160-4200		

GSC

FIGURE 3. Occurrences of taxa in cuttings from the Sun-Panarctic Russell E-82 well

Comments (M.J.C.): The presence of craspedobolbine ostracodes at 390 and 770 feet indicates that the strata at these horizons are most probably of Silurian age. In Europe, craspedobolbine species are not known to occur in strata younger than Silurian, and in the Appalachian Province of North America, they are typically Middle Silurian.

Sun-Panarctic Russell E-82
73°51'29.45"N, 98°56'48.92"W, Figure 1, loc. 14

Depth 410-4880 ft, cuttings; 410-?4376 ft, Peel Sound Formation equivalent, ?4376-?4980 ft, Read Bay Formation; GSC loc. C-30870/410-4880

Figure 3 shows the distribution of ostracodes, conodonts, brachiopods and fish in the well and a summary of suggested ages.

Comments (M.J.C.): Only strata to a depth of 2360 feet bear ostracodes of biostratigraphic value. Beyrichiid ostracodes (*Beyrichia* aff. *B. arctigena* Martinsson, *Welleria?* sp., *Alaskabolbina?* sp.) would appear to indicate an Early Devonian age; *B. arctigena* originally was described from strata of the Sutherland River Formation and the genus *Alaskabolbina* presently is known only in beds of Emsian age from Yukon Territory and Alaska. If the ostracode sequence of Prince of Wales Island is similar to that of the Yukon Territory and Alaska, the absence of hollinid ostracodes would appear to indicate an

age no younger than early Emsian. At present, ostracodes of Gedinnian and Siegenian ages from Yukon Territory have not been studied so the composition of these faunas is unknown.

Comments (T.T.U.): *Ozarkodina remscheidensis* at 1920-2040 ft is represented by P and O₁ elements and at 2160-2260 and 2320-2360 ft solely by juvenile P elements. *Ancoradella ploeckensis* is an indicator of the A. *ploeckensis* Zone, which (Walliser, 1971) correlates with the *Monograptus chimaera* Zone. The zone is known also in the upper part of the type section of Member A of the Read Bay Formation, Cornwallis Island.

Comments (A.W.N.): The determinations are not certain because of the tiny and fragmentary nature of the megafossils. The most diagnostic element is a spiriferid fragment from between the depths of 2280 and 2320 feet, suggestive of *Howellella cycloptera*. This species occurs in the *Spinoplasia* Zone of Nevada which would now be dated as early Siegenian. The presence of the ambocoeliid brachiopod, cf. *Metaplasia* sp., in the same sample, is also suggestive of an Early Devonian age. In the sample from between 1230 and 1240 feet is a tiny fragment suggestive of the brachiopod genus *Coelospira* sp. The recorded range of the genus is from Ludlow to Eifelian, but the form present is suggestive of an Early Devonian age.

Comments (R.T.): The single specimen of fish from between 880 and 890 feet is a dorsolateral scale from the trunk of a member of the Cyathaspididae which is similar in all respects to the dorsolateral scales of a new genus and species of cyathaspid from Prince of Wales Island (GSC loc. C-8225). The latter occurrence is associated with conodonts that are dated as late Gedinnian (T.T. Uyeno, pers. com.); a similar age is indicated for the beds in the Russell E-82 well.

Panarctic et al. Bent Horn N-72
76°21'50.7"N, 103°58'11.9"W, Figure 1, loc. 11

Depth 14 349-14 379 ft, core (816 gm);
GSC loc. C-30172

Panderodus sp.
fish scale of an acanthodian or thelodont
age: probably Late Silurian to early
Early Devonian

Comments (R.T. and T.T.U.): *Panderodus* ranges from Middle Ordovician to Middle Devonian. Fish scales of the type present are not known in rocks older than Late Llandovery; on the basis of the scale the beds are probably Ludlow to Gedinnian.

Silurian Assemblages (corals)
by B.S. Norford

Horn River et al. Willowlake R. I-71
62°40'44"N, 121°43'18"W, Figure 1, loc. 20

Depth 2463 ft, core; Mount Kindle Formation,
129 ft below top, 370 ft above base; GSC
loc. C-34854/2463

stromatoporoid
undetermined tabulate coral
Catenipora sp.
Cystihalysites sp.
Favosites? sp.
indeterminate brachiopods
age: Silurian

Ordovician and Silurian Assemblages
(brachiopods; conodonts)
by T.T. Uyeno and B.S. Norford

Panarctic-Deminex Garnier O-21
73°49'52.19"N, 90°36'45.17"W, Figure 1, loc. 15

Depth 970-1030 ft, cuttings (845 gm);
GSC loc. C-30875/970-1030

Panderodus spp.
Delotaxis? sp. [B₃ element resembling that
of *Delotaxis excavata novoexcavata*
(Jeppsson)]
age: probably Silurian

Depth 1680-1770 ft, cuttings (943 gm);
GSC loc. C-30875/1680-1770

Panderodus spp.
age: Middle Ordovician to Middle Devonian

Depth 1970-2050 ft, cuttings (643 gm);
GSC loc. C-30875/1970-2050

Panderodus spp.
indeterminate fragments
age: Middle Ordovician to Middle Devonian

Depth 2180-2200 ft, cuttings (418 gm);
GSC loc. C-30875/2180-2200

Delotaxis? sp. [B₃ element approaching
Lonchodina detorta Walliser, s.f.]
Panderodus spp.
age: Silurian, probably Ludlovian

Depth 4100-4200 ft, cuttings (826 gm);
Baillarge Formation, Member B, 715-815
ft below top, 405-505 ft above base;
GSC loc. C-30875/4100-4200

Panderodus cf. *P. panderi* Stauffer
indeterminate fragments
age: probably late Middle to Late Ordovician

Depth 4330-4340 ft, cuttings; Baillarge
Formation, Member B, 945-955 ft below
top, 265-275 ft above base; GSC loc.
C-30875/4330-4340

Thaerodonta sp.
age: Late Ordovician, late Caradoc to
Ashgill

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

undetermined conodonts
age: Early Ordovician

REFERENCES

- Barnes, C.R., Brideaux, W.W., Chamney, T.P., Clowser, D.R., Dunay, R.E., Fisher, M.J., Fritz, W.H., Hopkins, William S., Jr., Jeletzky, J.A., McGregor, D.C., Norford, B.S., Norris, A.W., Pedder, A.E.H., Rauwerda, P.J., Sherrington, P.F., Tozer, E.T., Uyeno, T.T. and Waterhouse, J.B.
 1975: Biostratigraphic determinations of fossils from the subsurface of the Northwest and Yukon Territories; Geol. Surv. Can., Paper 74-11.
- Brideaux, W.W., Chamney, T.P., Dunay, R.E., Fritz, W.H., Hopkins, William S., Jr., Jeletzky, J.A., McGregor, D.C., Norford, B.S., Norris, A.W., Pedder, A.E.H., Sherrington, P.J., Sliter, W.V., Sweet, A.R., Uyeno, T.T. and Waterhouse, J.B.
 1975: Biostratigraphic determinations of fossils from the subsurface of the Districts of Franklin and Mackenzie; Geol. Surv. Can., Paper 74-39.
- Canada, Department of Indian Affairs and Northern Development
 1973: Schedule of Wells 1921-1971, Northwest Territories and Yukon Territory; Indian Affairs and Northern Development, Publication QS-1214-000-EE-A-1.
- 1974: Schedule of Wells 1970-1972, Northwest Territories and Yukon Territory; Indian Affairs and Northern Development, Publication QS-1509-000-EE-A-1 (dated 1973).
- 1974: Schedule of Wells 1971-1973, Northwest Territories and Yukon Territory; Indian and Northern Affairs, Publication QS-1509-00-EE-A.
- Fåhræus, L.E.
 1971: Lower Devonian conodonts from the Michelle and Prongs Creek Formations, Yukon Territory; J. Paleontol., v. 45, p. 665-683.
- Given, M.M. and Wall, J.H.
 1971: Microfauna from the Upper Cretaceous Bearpaw Formation of south-central Alberta; Bull. Can. Petrol. Geol., v. 19, p. 502-544.
- Jeletzky, J.A.
 1959: Uppermost Jurassic and Cretaceous rocks, east flank of Richardson Mountains between Stony Creek and lower Donna River, Northwest Territories. 106M and 107B (parts of); Geol. Surv. Can., Paper 59-14.
- 1964: Illustrations of Canadian fossils. Lower Cretaceous marine index fossils of the sedimentary basins of western and arctic Canada; Geol. Surv. Can., Paper 64-11.
- 1967: Jurassic and (?) Triassic rocks of the eastern slopes of Richardson Mountains, north-western District of Mackenzie. 106M and 107B (parts of); Geol. Surv. Can., Paper 66-50.
- Jeletzky, J.A.
 1974: Contribution to the Jurassic and Cretaceous geology of northern Yukon Territory and District of Mackenzie, Northwest Territories; Geol. Surv. Can., Paper 74-10.
- Klapper, G.
 1969: Lower Devonian conodont sequence, Royal Creek, Yukon Territory, and Devon Island, Canada; J. Paleontol., v. 43, p. 1-27.
- Klapper, G., Sandberg, C.A., Collinson, C., Huddle, J.W., Orr, R.W., Rickard, L.V., Schumacher, D., Seddon, G., Uyeno, T.T.
 1971: North American Devonian conodont biostratigraphy; Geol. Soc. Am., Mem. 127, p. 285-316.
- Lenz, A.C.
 1961: Devonian rugose corals of the Lower Mackenzie Valley, Northwest Territories; Geology of Arctic, v. 1, p. 500-514; Macmillan, Toronto.
- Ludvigsen, R.
 1972: Late Early Devonian dacryoconarid tentaculites, northern Yukon Territory; Can. J. Earth Sci., v. 9, p. 297-318.
- McGregor, D.C. and Uyeno, T.T.
 1972: Devonian spores and conodonts of Melville and Bathurst Islands, District of Franklin; Geol. Surv. Can., Paper 71-13.
- Miall, A.D.
 1974a: Subsurface geology of western Banks Island; Geol. Surv. Can., Paper 74-1, Part B, p. 278-281.
- 1974b: Manganese spherulites at an intra-Cretaceous disconformity, Banks Island, Northwest Territories; Can. J. Earth Sci., v. 11, p. 1704-1716.
- Norford, B.S., Barss, M.S., Brideaux, W.W., Chamney, T.P., Fritz, W.H., Hopkins, William S., Jr., Jeletzky, J.A., Pedder, A.E.H., and Uyeno, T.T.
 1972: Biostratigraphic determinations of fossils from the subsurface of the Yukon Territory and the District of Mackenzie; Geol. Surv. Can., Paper 71-15.
- Norford, B.S., Braun, W.K., Chamney, T.P., Fritz, W.H., McGregor, D.C., Norris, A.W., Pedder, A.E.H., and Uyeno, T.T.
 1970: Biostratigraphic determinations of fossils from the subsurface of the Yukon Territory and the Districts of Mackenzie and Franklin; Geol. Surv. Can., Paper 70-15.
- Norford, B.S., Brideaux, W.W., Chamney, T.P., Copeland, M.J., Frebold, Hans, Hopkins, William S., Jr., Jeletzky, J.A., Johnson, B., McGregor, D.C., Norris, A.W., Pedder, A.E.H., Tozer, E.T., and Uyeno, T.T.
 1973: Biostratigraphic determinations of fossils from the subsurface of the Yukon Territory and the Districts of Franklin, Keewatin and Mackenzie; Geol. Surv. Can., Paper 72-38.

- Perry, D.G., Klapper, G. and Lenz, A.C.
1974: Age of the Ogilvie Formation (Devonian), northern Yukon: based primarily on the occurrence of brachiopods and conodonts; Can. J. Earth Sci., v. 11, p. 1055-1097.
- Singh, C.
1964: Microflora of the Lower Cretaceous Mannville Group, east-central Alberta; Res. Council Alberta, Bull. 15.
- Stelck, C.R. and Wall, J.H.
1954: Kaskapau Foraminifera from the Peace River area of Western Canada; Res. Council Alberta, Rept. 68.
- Wickenden, R.T.D.
1932: New species of Foraminifera from the Upper Cretaceous of the Prairie Provinces; Trans. Roy. Soc. Can., ser. 3, v. 26, sec. 4, p. 85-91.
- Wall, J.H.
1975: Diatoms and radiolarians from the Cretaceous of Alberta - a preliminary report *in* The Cretaceous System in the Western Interior of North America - Selected Aspects, W.G.E. Caldwell, ed.; Geol. Assoc. Can., Spec. Paper 13, p. 391-410.
- Walliser, O.H.
1971: Conodont biostratigraphy of the Silurian of Europe; Geol. Soc. Am., Mem. 127, p. 195-206.

