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CENOZOIC FORAMINIFERAL INTERVAL ZONES AND SEQUENCE TOPS IN 66 EXPLORATION WELLS, BEAUFORT-MACKENZIE BASIN

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INTRODUCTION

This file contains biostratigraphic and depositional sequence boundaries for 66 exploration wells in the Beaufort-Mackenzie Basin. The biostratigraphic zonation corresponds to the interval zonation scheme proposed by McNeil (1989). Interval zones are defined as bodies of strata occurring between two biostratigraphic datums. The datums utilized are the last appearance datums (LADs) of benthic foraminifers and all data was derived from well cuttings. The zonation utilizes LADs that come as close as possible to isochronous horizons and are regionally recognizable. Details of the zonal scheme are to be found in McNeil (1989). The twelve interval zones for the Cenozoic of the Beaufort-Mackenzie Basin are as follows:

INTERVAL ZONE	ESTIMATED MINIMUM AGE (Ma)
Cassidulina reniforme	0.0
Cribroelphidium ustulatum	1.6
Cibicides grossus	2.4
Cibicidoides sp. 800	5.3
Asterigerina staeschei	10.4
Turrilina alsatica	23.7
Cancris subconicus	30.0
Haplophragmoides sp. 2000	36.6
Portatrochammina sp. 2850	45.0
Portatrochammina sp. 2849	57.8
Reticulophragmium borealis	60.0
Vernueilinoides sp. 3495	62.3

Interval zones are objective units and can be identified reliably from well cutting samples. It is important to note that they are not necessarily isochronous, although they were chosen as being as close as possible to isochronous units given the limitations of the high latitude benthic foraminifer data set. The absolute age given for each last appearance datum is provided solely to give an indication of the minimum possible age for that datum (time scale from Berggren **et al.**, 1985 and Snelling, 1985).

In a few cases, zones are inferred, even though the zonal species is absent at that particular horizon, by relying on the LAD of an alternative species that is known to have an extinction event more or less coincident with that of the zonal species listed above. If zones are inferred, it is clearly indicated as such in the accompanying files.

Depositional sequence boundaries for each of the 66 wells are also provided. The sequence boundaries are taken largely from Dixon and Peach (1988) which contains sequence boundary data for most existing Beaufort-Mackenzie Basin wells. Sequence boundaries in some of the wells have been emended to include recent revisions provided by J. Dixon and J.R. Dietrich (pers. comm., 1989). It is obvious from the data provided in this report that the biostratigraphic and depositional sequence boundaries do not always coincide, nor should

they, and the reasons are many. Not all sections are fossiliferous, the biostratigraphic data is confined to marine strata only, LADs might occur within sequences (i.e. at the top of a condensed section), etc. The two sets of information however must lay within certain constraints. For example, the boundary of an interval zone will not cross a sequence boundary. The LAD which most closely coincides with a sequence boundary is that of **Asterigerina staeschei** which is invariably terminated at the upper boundary of the Mackenzie Bay sequence. On the other hand, the LAD for **Cibicides grossus** occurs well within the Iperk sequence in a conformable succession.

In general, the LAD horizons for the calcareous benthic foraminifers are closer to isochronous datums than are those of the agglutinated foraminifers which typify the Paleocene and Eocene part of the zonal sequence. The LADs for the agglutinated indices probably conform more to facies changes, but species that were markedly diachronous or irregular in stratigraphic distribution were omitted from the zonation.

In some wells, fossiliferous sections lacked the specific indices for interval zonation, and in these cases the microfaunas are referred to assemblage zones (Fig. 1). This is particularly true for the uphole sections involving the **Cassidulina reniforme** and **Cribroelphidium ustulatum** zones that are associated with the **Cribroelphidium** Assemblage Zone.

In addition to the foraminiferal zones, the distribution of the **Stellarima** Zone is also provided. This zone, distinguished by an assemblage of pyrite diatom steinkerns, is an important regional marker occurring within the lower Richards sequence (McNeil, in press).

REFERENCES

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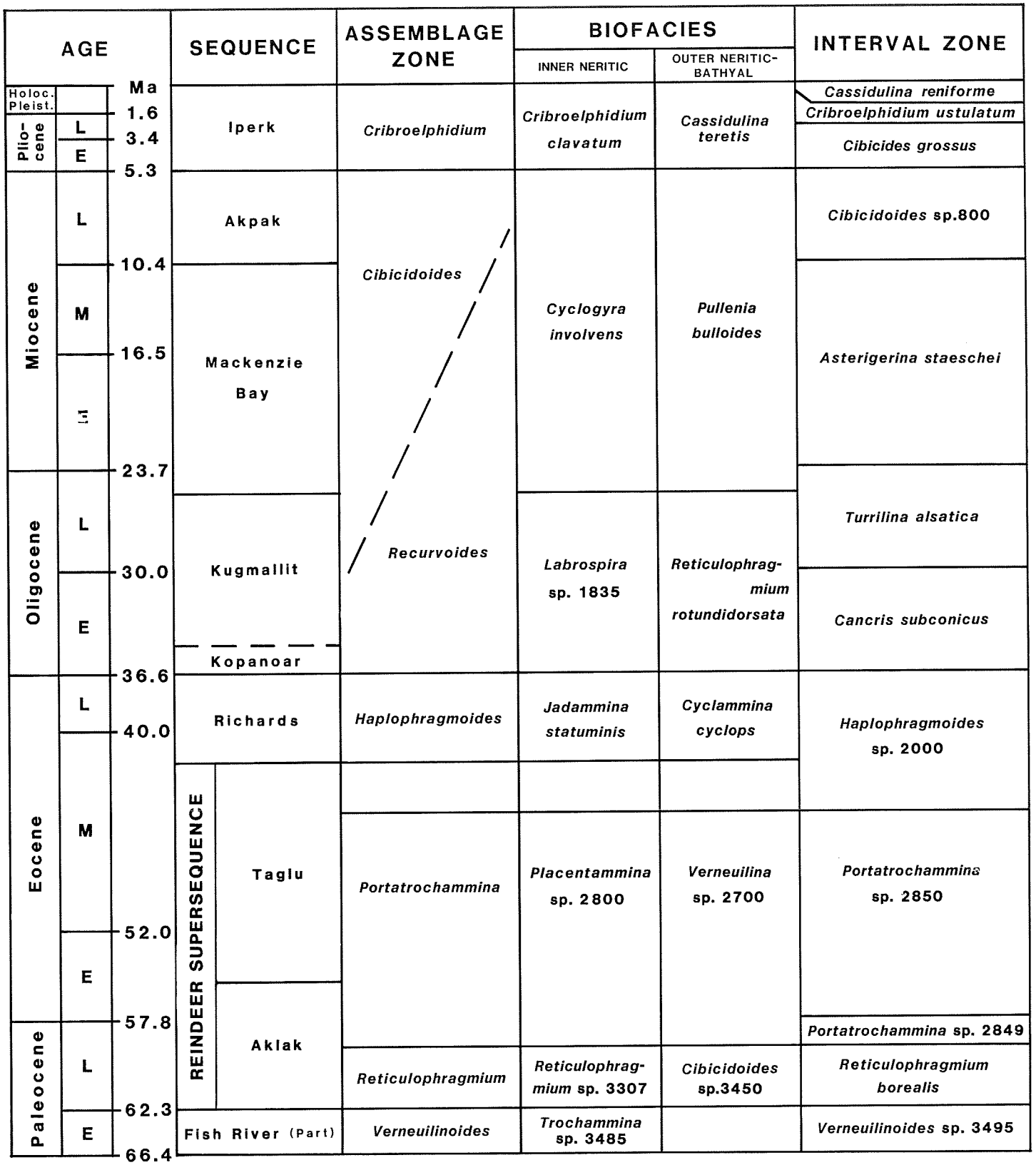

Figure 1. Foraminiferal zonation for the Cenozoic of the Beaufort-Mackenzie Basin (McNeil, 1989). *Stellarima* (diatom) zone occurs in the lower part of the Richards sequence.

AAGNERK E-56 (Lat. 69°45'35"N; Long. 137°00'45"W)

INTERVAL ZONES (Sampled section: 240 m to T.D.)

Cribroelphidium ustulatum	360 metres (m)
Cibicides grossus	420 m
Asterigerina staeschei	570 m
Turrilina alsatica	720 m

SEQUENCE TOPS

Iperk	53 m
Mackenzie Bay	560 m
Kugmallit	875 m

(Total depth (T.D.) 1100 m)

ADGO F-28 (Lat. 69°27'17"N; Long. 135°51'16"W)

INTERVAL ZONES (Sampled section: 90 ft to T.D.)

Cribroelphidium ustulatum	690 feet (ft)
Cibicides grossus	1620 ft
Asterigerina staeschei	1710 ft
Turrilina alsatica	1950 ft
Portatrochammina sp. 2450	8500 ft

SEQUENCE TOPS

Iperk	24 ft
Mackenzie Bay-?Kugmallit	1690 ft
Taglu	3365 ft
Aklak	9250 ft

(Total depth 10,528 ft)

ADLARTOK P-09 (Lat. 69°38'52"N; Long. 137°45'28"W)

INTERVAL ZONES (Sampled section: 200 m to T.D.)

Cassidulina reniforme	200 m
Turrilina alsatica	410 m
* **Haplophragmoides** sp. 2000	1145 m
* - zone inferred by presence of **Jadammina statuminis**	
Reticulophragmium borealis	1505 m

Note: **Stellarima** (diatom) Zone at 1046 m.

SEQUENCE TOPS

Shallow Bay	93 m
Kugmallit	400 m
Richards	1189 m
Aklak	1498 m

(Total depth 2647 m)

AKPAK P-35 (Lat. 70°14'52"N; Long. 134°09'22"W)

INTERVAL ZONES (Sampled section: 220 m to T.D.)

Cribroelphidium ustulatum	220 m
Turrilina alsatica	2815 m

Note: 1. Long-ranging agglutinated foraminifers of the **Recurvoides** Assemblage Zone occur from 2480 m to approximately T.D.
2. **Cassidulina teretis** very abundant from 1390 to 1570 m.

SEQUENCE TOPS

Iperk	60 m
Akpak	2370 m
Mackenzie Bay	2730 m
Kugmallit	2938 m

(Total depth 3673 m)

ALERK P-23 (Lat. 69°52'57"N; Long. 132°55'22"W)

INTERVAL ZONES (Sampled section: 80 m to T.D.)

Cribroelphidium ustulatum	800 m
Cibicides grossus	800 m
Cibicidoides sp. 800	875 m
Asterigerina staeschei	875 m
Turrilina alsatica	1155 m
* **Haplophragmoides** sp. 2000	2875 m

* - zone inferred from occurrence of 1 specimen of **Jadammina statuminis**

Note: a low diversity assemblage of agglutinated foraminifers occurs from 3085 to 3223 m, considered to be diagnostic of the Taglu sequence.

SEQUENCE TOPS

Iperk	11 m
Mackenzie Bay	865 m
Kugmallit	1200 m
Richards	2815 m

Note: possible Taglu below 3085 m.

(Total depth 3223 m)

AMAULIGAK I-65 (Lat. 70°04'39"N; Long. 133°48'16"W)

INTERVAL ZONES (Sampled section: 230 m to T.D.)

Cassidulina reniforme	230 m
Cribroelphidium ustulatum	230 m
Asterigerina staeschei	1710 m
Turrilina alsatica	3100 m

SEQUENCE TOPS

Iperk	55 m
Mackenzie Bay	1900 m
Kugmallit	2608 m

(Total depth 4126 m)

AMAULIGAK J-44 (Lat. 70°03'31"N; Long. 133°42'45"W)

INTERVAL ZONES (Sampled section: 210 m to T.D.)

Cassidulina reniforme	210 m
Asterigerina staeschei	1910 m
Turrilina alsatica	2648 m

SEQUENCE TOPS

Iperk	42 m
Akpak?	1620 m
Mackenzie Bay	1881 m
Kugmallit	2519 m

(Total depth 4002 m)

AMERK O-09 (Lat. 69°58'56"N; Long. 133°30'50"W)

INTERVAL ZONES (Sampled section: 30 m to T.D.)

Cassidulina reniforme	50 m
Cibicides grossus	1130 m
Asterigerina staeschei	1160 m
Turrilina alsatica	1280 m
Haplophragmoides sp. 2000	2990 m

SEQUENCE TOPS

Iperk	25 m
Mackenzie Bay	1100 m (approximately)
Kugmallit	1277 m
Richards	2855 m
Reindeer	3835 m

(Total depth 5000 m)

ARNAK L-30 (Lat. 69°49'54"N; Long. 133°52'14"W)

INTERVAL ZONES (Sampled section: 150 ft to T.D.)

Asterigerina staeschei	3210 ft
Turrilina alsatica	3810 ft
Haplophragmoides sp. 2000	12,000 ft

SEQUENCE TOPS

Iperk	75 ft
Mackenzie Bay	3100 ft
Kugmallit	4020 ft
Kopanoar	9780 ft
Richards	11,310 ft
Reindeer	14,800 ft

(Total depth 14,840 ft)

ATKINSON M-33 (Lat. 69°42'48"N; Long. 131°54'43"W)

INTERVAL ZONES (Sampled section: 50 ft to T.D.)

Reticulophragmium borealis	3840 ft
Upper Cretaceous	5070 ft

SEQUENCE TOPS

Tertiary	17 ft
Reindeer	1242 ft
Upper Cretaceous	4680 ft

(Total depth 6327 ft)

EAST TARSIUT **N-44** (Lat. 69°53'49"N; Long. 136°11'39"W)

INTERVAL ZONES (Sampled section: 220 m to T.D.)

Cribroelphidium ustulatum	220 m
Cibicides grossus	815 m
Asterigerina staeschei	1290 m
Turrilina alsatica	1315 m
Haplophragmoides sp. 2000	2545 m

Note: **Stellarima** Zone at 2895 m.

SEQUENCE TOPS

Iperk	40 m
Akpak	824 m
Mackenzie Bay	973 m
Kugmallit	1400 m
Richards	2425 m
Taglu	3670 m

(Total depth 4531 m)

EDLOK **N-56** (Lat. 69°45'50"N; Long. 140°14'22"W)

INTERVAL ZONES (Sampled section: 162 m to T.D.)

Cibicides grossus	56 m
Turrilina alsatica	162 m
Cancris subconicus	432 m
* **Haplophragmoides** sp. 2000	1404 m
Portatrochammina sp. 2500	2358 m

SEQUENCE TOPS

Quaternary	56 m
Kugmallit	215 m
Richards	1115 m
Taglu	1595 m

(Total depth 2530 m)

ELLICE O-14 (Lat. 69°03'56"N; Long. 135°48'16"W)

INTERVAL ZONES (Sampled section: 190 ft to T.D.)

(**Cribroelphidium** assemblage	190 ft)
Portatrochammina sp. 2450	6500 ft

SEQUENCE TOPS

Nuktak	100 ft
Iperk	100 ft
Taglu	750 ft
Aklak	6650 ft

(Total depth 9531 ft)

FISH RIVER B-60 (Lat. 68°39'03"N; Long. 136°13'39"W)

INTERVAL ZONES (Sampled section: 90 ft to T.D.)

Reticulophragmium borealis	90 ft
Upper Cretaceous	3800 ft

SEQUENCE TOPS

Reindeer	50 ft
Moose Channel Fm	1050 ft
Ministicoog Mbr	1050 ft
Upper Cretaceous	1632 ft

(Total depth 11,490 ft)

HAVIK B-41 (Lat. 70°21'11"N; Long. 132°13'05"W)

INTERVAL ZONES (Sampled section: 230 m to T.D.)

Cribroelphidium ustulatum	290 m
Cibicides grossus	2170 m
* **Turrilina alsatica**	3070 m

* - inferred from occurrence of **Nuttallides** sp.

Note: pyrite diatom steinkerns and fish bones suggest occurrence of **Stellarima** Zone at 4531 m.

SEQUENCE TOPS

Iperk	48 m
Mackenzie Bay	2900 m
Kugmallit	3000 m
Richards	3458 m
undefined	4249 m

(Total depth 4750 m)

IKATTOK J-17 (Lat. 69°16'41"N; Long. 136°18'13"W)

INTERVAL ZONES (Sampled section: 90 ft to T.D.)

(**Cribroelphidium** assemblage 47 ft)

Note: agglutinated microfauna typical of the Taglu sequence abundant from 5100 to 9400 ft, rare occurrences of **Placentammina** from 1100 to 5100 ft.

SEQUENCE TOPS

Iperk	47 ft
Taglu	650 ft
Aklak	3530 ft

(Total depth 12,500 ft)

ISSERK E-27 (Lat. 69°56'20"N; Long. 134°22'11"W)

INTERVAL ZONES (Sampled section: 90 ft to T.D.)

Cribroelphidium ustulatum	720 ft
Cibicidoides sp. 800	4250 ft
Asterigerina staeschei	4300 ft
Turrilina alsatica	6250 ft
Reticulophragmium borealis	10,700 ft

Note: **Reticulophragmium** assemblage abundant below 11,200 ft.

SEQUENCE TOPS

Iperk	79 ft
Akpak	3105 ft
Mackenzie Bay	4080 ft
Kugmallit	6062 ft

(Total depth 13,519 ft)

ISSUNGNAK O-61 (Lat. 70°01'00"N; Long. 134°18'48"W)

INTERVAL ZONES (Sampled section: 40 ft to T.D.)

Cribroelphidium ustulatum	280 m
Cibicides grossus	1305 m
Cibicidoides sp. 800	1355 m
Asterigerina staeschei	1455 m
Turrilina alsatica	2730 m

SEQUENCE TOPS

Iperk	30 m
Akpak	1340 m
Mackenzie Bay	1428 m
Kugmallit	2254 m

(Total depth 3583 m)

ITIYOK I-27 (Lat. 69°56'40"N; Long. 134°05'19"W)

INTERVAL ZONES (Sampled section: 20 m to T.D.)

(**Cribroelphidium** assemblage	20 m)
Cibicides grossus	1115 m
Asterigerina staeschei	1135 m
Turrilina alsatica	1670 m
Reticulophragmium borealis	3335 m

SEQUENCE TOPS

Iperk	30 m
Mackenzie Bay	1185 m
Kugmallit	1460 m

(Total depth 3955 m)

IVIK C-52 (Lat. 69°31'10"N; Long. 134°28'52"W)

INTERVAL ZONES (Sampled section: 142 ft to T.D.)

* **Haplophragmoides** sp. 2000 8600 ft
* - inferred from **Jadammina statuminis**

SEQUENCE TOPS

Iperk	27 ft
Kugmallit	1363 ft
Richards seq.	5530 ft
Richards Fm.	6480 ft

(Total depth 10,000 ft)

IVIK J-26 (Lat. 69°35'42"N; Long. 134°20'38"W)

INTERVAL ZONES (Sampled section: 120 ft to T.D.)

(**Cribroelphidium** assemblage	120 ft)
Asterigerina staeschei	1920 ft
* **Haplophragmoides** sp. 2000	8530 ft

* - inferred by **Cyclammina cyclops**

SEQUENCE TOPS

Iperk	24 ft
Kugmallit	1700 ft
Richards	6960 ft
Richards	9550 ft

(Total depth 11,969 ft)

KADLUK O-07 (Lat. 69°46'48"N; Long. 136°01'14"W)

INTERVAL ZONES (Sampled section: 40 m to T.D.)

Cassidulina reniforme	70 m
Cribroelphidium ustulatum	130 m
Cibicides grossus	640 m
Asterigerina staeschei	640 m
Turrilina alsatica	970 m
Haplophragmoides sp. 2000	2680 m

Note: **Stellarima** Zone at 3460 m to T.D.

SEQUENCE TOPS

Iperk	30 m
Mackenzie Bay	676 m
Kugmallit	1126 m
Richards	2584 m

(Total depth 3896 m)

KANNERK G-42 (Lat. 70°01'23"N; Long. 131°12'56"W)

INTERVAL ZONES (Sampled section: 3000 ft to T.D.)

Reticulophragmium borealis	5300 ft
Cretaceous	6300 ft

SEQUENCE TOPS

Iperk	68 ft
Reindeer	1088 ft
Cretaceous	5570 ft

(Total depth 8138 ft)

KENALOOAK J-94 (Lat. 70°43'44"N; Long. 133°58'28"W)

INTERVAL ZONES (Sampled section: 205 m to T.D.)

Cassidulina reniforme	205 m
Cribroelphidium ustulatum	585 m
Turrilina alsatica	4225 m

Note: deep water agglutinated foraminifers of the **Recurvoides** assemblage are dominant from 3965 m to T.D.

SEQUENCE TOPS

Iperk	80 m
Kugmallit	3824 m
Kopanoar	4345 m

(Total depth 4568.5 m)

KOAKOAK O-22 (Lat. 70°21'55"N; Long. 134°06'48"W)

INTERVAL ZONES (Sampled section: 815 m to T.D.)

Cribroelphidium ustulatum	375 m
Turrilina alsatica	3123 m

SEQUENCE TOPS

Iperk	59 m
Akpak	2814 m
Kugmallit	3053 m
Kopanoar	3595 m

(Total depth 4363.8 m)

KOGYUK N-67 (Lat. 70°06'50"N; Long. 133°19'47"W)

INTERVAL ZONES (Sampled section: 230 m to T.D.)

(**Cribroelphidium** assemblage at 230 m)	
Asterigerina staeschei	2090 m
Turrilina alsatica	3200 m

SEQUENCE TOPS

Iperk	56 m
Akpak	1600 m (approximately)
Mackenzie Bay	2095 m
Kugmallit	3076 m

(Total depth 4795 m)

KOPANOAR M-13 (Lat. 70°22'55"N; Long. 135°05'34"W)

INTERVAL ZONES (Sampled section: 1590 ft to T.D.)

Cribroelphidium ustulatum	1600 ft
Cibicides grossus	4500 ft
Asterigerina staeschei	8650 ft
Turrilina alsatica	8700 ft

Note: **Stellarima** Zone at 14,070 ft.

SEQUENCE TOPS

Iperk	232 ft
Akpak	8390 ft
Mackenzie Bay	8800 ft
Kugmallit	9138 ft
Kopanoar	10,956 ft
Eocene	14,070 ft

(Total depth 14,174 ft)

KUGMALLIT H-59 (Lat. 69°38'21"N; Long. 133°27'48"W)

INTERVAL ZONES (Sampled section: 150 ft to T.D.)

(**Cribroelphidium** assemblage at 150 ft)	
Asterigerina staeschei	1860 ft

SEQUENCE TOPS

Iperk	56 ft
Mackenzie Bay	1760 ft
Kugmallit	2035 ft
Richards	5770 ft

(Total depth 7139 ft)

KUGPIK L-24 (Lat. 68°53'32"N; Long. 135°22'13"W)

INTERVAL ZONES (Sampled section: 0 ft to T.D.)

Reticulophragmium borealis	2800 ft
Cretaceous	4400 ft

SEQUENCE TOPS

Iperk	30 ft
Reindeer	500 ft
Moose Channel Fm	3270 ft
Ministicoog Mbr	3270 ft
Cretaceous	4075 ft

(Total depth 9242 ft)

KUMAK C-58 (Lat. 69°17'06"N; Long. 135°13'54"W)

INTERVAL ZONES (Sampled section: 150 ft to T.D.)

(**Cribroelphidium** assemblage at	120 ft)
Cibicides grossus	810 ft
* **Haplophragmoides** sp. 2000	1410 ft
* - zone inferred from **Jadammina statuminis**	
Portatrochammina sp. 2450	9120 ft

SEQUENCE TOPS

Iperk	28 ft
Richards	830 ft
Taglu	3030 ft
Aklak	8750 ft

(Total depth 11,582 ft)

KUMAK E-58 (Lat. 69°17'29"N; Long. 135°14'55"W)

INTERVAL ZONES (Sampled section: 120 ft to T.D.)

(**Cribroelphidium** assemblage at 120 ft)

SEQUENCE TOPS

Iperk	28 ft
Richards	830 ft
Reindeer	3452 ft

(Total depth 5100 ft)

MALLIK A-06 (Lat. 69°25'01"N; Long. 134°30'16"W)

INTERVAL ZONES (Sampled section: 90 ft to T.D.)

(**Cribroelphidium** assemblage at 90 ft)
* **Haplophragmoides** sp. 2000 5040 ft
  * - zone inferred from **Jadammina statuminis**

SEQUENCE TOPS

Iperk	27 ft
Kugmallit	2108 ft
Richards	4288 ft
Reindeer	10,230 ft

(Total depth 13,572 ft)

MALLIK L-38 (Lat. 69°27'44"N; Long. 134°39'25"W)

INTERVAL ZONES (Sampled section: 90 ft to T.D.)

* **Haplophragmoides** sp. 2000 7548 ft
* - zone inferred from **Jadammina statuminis**

SEQUENCE TOPS

Iperk	29 ft
Kugmallit	1145 ft
Richards	6345 ft

(Total depth 8307 ft)

MINUK I-53 (Lat. 69°42'35"N; Long. 136°27'32"W)

INTERVAL ZONES (Sampled section: 30 m to T.D.)

Cribroelphidium ustulatum	110 m
Cibicides grossus	550 m
Asterigerina staeschei	610 m
Turrilina alsatica	750 m
* **Haplophragmoides** sp. 2000	1705 m

* - zone inferred from **Jadammina statuminis** and **Cyclammina cyclops.**

Note: **Stellarima** Zone at 2045 m.

SEQUENCE TOPS

Iperk	20 m
Mackenzie Bay	607 m
Kugmallit	1105 m
Richards	1800 m
Taglu	2185 m

(Total depth 3367 m)

NATIAK O-44 (Lat. 70°03'57"N; Long. 137°13'06"W)

INTERVAL ZONES (Sampled section: 210 m to T.D.)

Cribroelphidium ustulatum	260 m
Cibicides grossus	435 m
Cibicidoides sp. 800	943 m
Asterigerina staeschei	1216 m
Turrilina alsatica	1867 m
Haplophragmoides sp. 2000	2560 m
* **Portatrochammina** sp. 2450	3265 m

* - zone inferred by **Verneuilina** sp. 2700

Reticulophragmium borealis	3445 m

Note: **Stellarima** Zone at 2785 m

SEQUENCE TOPS

Iperk	55 m
Akpak	960 m
Mackenzie Bay	1222 m
Kugmallit	2026 m
Richards	2630 m
Taglu	2990 m
Aklak	3400 m

(Total depth 4650 m)

NATSEK E-56 (Lat. 69°45'22"N; Long. 139°44'39"W)

INTERVAL ZONES (Sampled section: 5200 ft to T.D.)

Cribroelphidium ustulatum	152 m
Portatrochammina sp. 2450	1250 m
* **Reticulophragmium borealis**	2012 m

* - may be reworked

Portatrochammmina sp. 2449	2560 m

SEQUENCE TOPS

Iperk	46 m
Taglu	216 m
Aklak	1951 m
Fish River?	2644 m

(Total depth 3520 m)

NEKTORALIK K-59 (Lat. 70°28'34"N; Long. 136°16'50"W)

INTERVAL ZONES (Sampled section: 1070 ft to T.D.)

Cribroelphidium ustulatum	1120 ft
Cibicides grossus	4870 ft
Cibicidoides sp. 800	5920 ft
Asterigerina staeschei	8620 ft

SEQUENCE TOPS

Iperk	249 ft
Akpak	7410 ft
Mackenzie Bay	8660 ft

(Total depth 9154 ft)

NERLERK M-98 (Lat. 70°27'49"N; Long. 133°29'46"W)

INTERVAL ZONES (Sampled section: 550 ft to T.D.)

Cribroelphidium ustulatum	570 m
Turrilina alsatica	3370 m

Note: **Stellarima** Zone at 4470 m.

SEQUENCE TOPS

Iperk	64 m
Akpak	2843 m
Kugmallit	3130 m
Kopanoar	3910 m
Eocene	4420 m

(Total depth 4890 m)

NETSERK B-44 (Lat. 69°33'03"N; Long. 135°55'56"W)

INTERVAL ZONES (Sampled section: 260 ft to T.D.)

Cribroelphidium ustulatum	600 ft
Cibicides grossus	1710 ft
Asterigerina staeschei	1920 ft
Turrilina alsatica	3000 ft
* **Haplophragmoides** sp. 2000	5800 ft

* - zone inferred from **Cyclammina cyclops**

Note: **Stellarima** Zone at 6100 ft.

SEQUENCE TOPS

Iperk	31 ft
Akpak	1295 ft
Mackenzie Bay	1900 ft
Kugmallit	3088 ft
Richards	6400 ft
Reindeer	8920 ft

(Total depth 11,576 ft)

NETSERK F-40 (Lat. 69°39'23"N; Long. 135°54'21"W)

INTERVAL ZONES (Sampled section: 90 ft to T.D.)

Cribroelphidium ustulatum	90 ft
Cibicides grossus	1800 ft
Asterigerina staeschei	2500 ft
Turrilina alsatica	3300 ft
Haplophragmoides sp. 2000	8100 ft

Note: **Stellarima** Zone at 10,700 ft.

SEQUENCE TOPS

Iperk	67 ft
Akpak	2360 ft
Mackenzie Bay	2680 ft
Kugmallit	4668 ft
Richards	7960 ft
Reindeer	12,378 ft

(Total depth 14,338 ft)

NIGLINTGAK H-30 (Lat. 69°19'21"N; Long. 135°20'35"W)

INTERVAL ZONES (Sampled section: 120 ft to T.D.)

(**Cribroelphidium** assemblage at 120 ft)
Portatrochammina sp. 2450 6920 ft

Note: fish fragment/algal cyst association typical of **Stellarima** Zone at 1650 ft.

SEQUENCE TOPS

Iperk	27 ft
Richards	1100 ft
Reindeer	2502 ft

(Total depth 7817 ft)

NIPTERK L-19 (Lat. 69°48'38"N; Long. 135°17'53"W)

INTERVAL ZONES (Sampled section: 40 m to T.D.)

Cribroelphidium ustulatum	100 m
Cibicides grossus	850 m
Asterigerina staeschei	880 m
Turrilina alsatica	1180 m
Haplophragmoides sp. 2000	3610 m

SEQUENCE TOPS

Iperk	26 m
Mackenzie Bay	942 m
Kugmallit	1304 m
Richards	2940 m

(Total depth 3879 m)

NORTH ISSUNGNAK L-86 (Lat. 70°05'33"N; Long. 134°26'45"W)

INTERVAL ZONES (Sampled section: 210 m to T.D.)

Cribroelphidium ustulatum	250 m
Cibicides grossus	1385 m
Cibicidoides sp. 800	1545 m
Asterigerina staeschei	2225 m
Turrilina alsatica	3225 m

SEQUENCE TOPS

Iperk	38 m
Akpak	1615 m
Mackenzie Bay	2392 m
Kugmallit	3390 m

(Total depth 4771 m)

NUKTAK C-22 (Lat. 69°41'07"N; Long. 134°51'30"W)

INTERVAL ZONES (Sampled section: 0 ft to T.D.)

(**Cribroelphidium** assemblage at 100 ft)	
Haplophragmoides sp. 2000	6900 ft

Note: **Stellarima** Zone at 11,000 ft.

SEQUENCE TOPS

Iperk	31 ft
Kugmallit	1818 ft
Richards	6920 ft
Reindeer	11,400 ft

(Total depth 12,653 ft)

OGRUKNANG M-31 (Lat. 68°50'52"N; Long. 134°24'50"W)

INTERVAL ZONES (Sampled section: 7000 ft to T.D.)

Reticulophragmium borealis	7800 ft
Lower Cretaceous	9400 ft

SEQUENCE TOPS

Kugmallit	17 ft
Reindeer	2460 ft
Lower Cretaceous	9400 ft

(Total depth 14,532 ft)

ORVILRUK O-03 (Lat. 70°22'48"N; Long. 136°30'53"W)

INTERVAL ZONES (Sampled section: 205 ft to T.D.)

Cribroelphidium ustulatum	245 m
Cibicides grossus	1085 m
Asterigerina staeschei	2790 m
* **Turrilina alsatica**	2965 m

* - zone inferred from **Nuttallides** sp. 1414

SEQUENCE TOPS

Iperk	72 m
Akpak	2085 m
Mackenzie Bay	2790 m
Kugmallit	3030 m
Undefined	3375 m

(Total depth 3893 m)

PARSONS F-09 (Lat. 68°58'28"N; Long. 133°31'46"W)

INTERVAL ZONES (Sampled section: 600 ft to T.D.)

Reticulophragmium borealis	3900 ft
Upper Cretaceous	4800 ft

SEQUENCE TOPS

Kugmallit	18 ft
Aklak	600 ft
Upper Cretaceous	4983 ft

(Total depth 11,638 ft)

PARSONS N-10 (Lat. 68°59'50"N; Long. 133°31'40"W)

INTERVAL ZONES (Sampled section: 3900 ft to T.D.)

Reticulophragmium borealis	4100 ft
Upper Cretaceous	5130 ft

SEQUENCE TOPS

Kugmallit	20 ft
Reindeer	600 ft
Cretaceous	5046 ft

(Total depth 10,515 ft)

PELLY B-35 (Lat. 69°34'11"N; Long. 135°23'27"W)

INTERVAL ZONES (Sampled section: 120 ft to T.D.)

(**Cribroelphidium** assemblage at 120 ft)	
Asterigerina staeschei	2200 ft
Turrilina alsatica	2600 ft
Haplophragmoides sp. 2000	8200 ft

SEQUENCE TOPS

Iperk	27 ft
Mackenzie Bay	2140 ft
Kugmallit	3660 ft
Richards	8130 ft

(Total depth 10,919 ft)

REINDEER D-27 (Lat. 69°06'05"N; Long. 134°36'54"W)

INTERVAL ZONES (Sampled section: 0 ft to T.D.)

Portatrochammina sp. 2850	4800 ft
Reticulophragmium borealis	9000 ft
Cretaceous	11,400 ft

SEQUENCE TOPS

Iperk	16 ft
Kugmallit	440 ft
Richards	1040 ft
Aklak-?Taglu	1740 ft
Cretaceous	9546 ft

(Total depth 12,668 ft)

SARPIK B-35 (Lat. 69°24'07"N; 135°23'10"W)

INTERVAL ZONES (Sampled section: 160 ft to T.D.)

(**Cribroelphidium** assemblage at 160 ft)
Portatrochammina sp. 2850 5630 ft

SEQUENCE TOPS

Iperk	45 ft
Taglu	150 ft
Aklak	5850 ft

(Total depth 10,796 ft)

TAGLU C-42 (Lat. 69°21'05"N; Long. 134°56'50"W)

INTERVAL ZONES (Sampled section: 9497 ft to T.D.)

Asterigerina staeschei 1600 ft
* **Haplophragmoides** sp. 2000 6100 ft
Portatrochammina sp. 2850 14,500 ft

Note: **Stellarima** Zone at 5800 ft.

SEQUENCE TOPS

Quaternary	34 ft
Iperk	230 ft
Kugmallit	1160 ft
Richards	5342 ft
Taglu	9302 ft

(Total depth 16,060 ft)

TAGLU G-33 (Lat. 69°22'18"N; Long. 134°53'37"W)

INTERVAL ZONES (Sampled section: 170 ft to T.D.)

(**Cribroelphidium** assemblage at 230 ft)
* **Haplophragmoides** sp. 2000 6200 ft
  * - zone inferred from **Jadammina statuminis.**

Note: **Stellarima** Zone at 7000 ft.

SEQUENCE TOPS

Iperk	20 ft
Kugmallit	655 ft
Richards	5228 ft
Taglu	8143 ft

(Total depth 9822 ft)

TAGLU WEST P-03 (Lat. 69°22'55"N; Long. 135°00'24"W)

INTERVAL ZONES (Sampled section: 150 ft to T.D.)

Asterigerina staeschei 2830 ft
* **Haplophragmoides** sp. 2000 6270 ft
  * - zone inferred from **Jadammina statuminis**

Note: **Stellarima** Zone at 5600 ft.

SEQUENCE TOPS

Iperk	24 ft
Kugmallit	700 ft
Richards	5270 ft
Taglu	8460 ft

(Total depth 10,860 ft)

TARSIUT A-25 (Lat. 69°54'10"N; Long. 136°20'20"W)

INTERVAL ZONES (Sampled section: 440 m to T.D.)

Cribroelphidium ustulatum	470 m
Cibicides grossus	590 m
Cibicidoides sp. 800	750 m
Asterigerina staeschei	810 m
Turrilina alsatica	1090 m
Haplophragmoides sp. 2000	2210 m

Note: **Stellarima** Zone at 2445 m.

SEQUENCE TOPS

Iperk	36 m
Akpak	749 m
Mackenzie Bay	900 m
Kugmallit	1325 m
Richards	2270 m
Reindeer	3143 m

(Total depth 4434 m)

TINGMIARK K-91 (Lat. 70°10'36"N; Long. 132°58'52"W)

INTERVAL ZONES (Sampled section: 450 ft to T.D.)

Asterigerina staeschei	7100 ft

SEQUENCE TOPS

Iperk	131 ft
Akpak	6840 ft
Mackenzie Bay	7170 ft
Kugmallit	9950 ft

(Total depth 10,010 ft)

TOAPOLUK O-54 (Lat. 69°13'57"N; Long. 134°58'31"W)

INTERVAL ZONES (Sampled section: 150 ft to T.D.)

Portatrochammina sp. 2850(?) 6350 ft

SEQUENCE TOPS

Iperk	28 ft
Kugmallit	690 ft
Richards	1642 ft
Taglu	2812 ft
Aklak	8970 ft

(Total depth 9140 ft)

TUK F-18 (Lat. 69°17'29"N; Long. 133°04'01"W)

INTERVAL ZONES (Sampled section: 600 ft to T.D.)

Reticulophragmium borealis	4920 ft
Upper Cretaceous	7100 ft

SEQUENCE TOPS

Iperk	16 ft
Reindeer	730 ft
Upper Cretaceous	5200 ft

(Total depth 10,322 ft)

TUNUNUK F-30 (Lat. 68°59'22"N; Long. 134°36'43"W)

INTERVAL ZONES (Sampled section: 4000 ft to T.D.)

Reticulophragmium borealis	5900 ft
Upper Cretaceous	7000 ft

SEQUENCE TOPS

Iperk	20 ft
Reindeer	790 ft
Upper Cretaceous	7260 ft

(Total depth 11,950 ft)

TUNUNUK K-10 (Lat. 68°59'44"; Long. 134°46'34"W)

INTERVAL ZONES (Sampled section: 210 ft to T.D.)

Reticulophragmium borealis	2100 ft
Upper Cretaceous	3200 ft

SEQUENCE TOPS

Iperk	18 ft
Reindeer	320 ft
Cretaceous	3235 ft

(Total depth 12,326 ft)

UKALERK C-50, 2C-50 (Lat. 70°09'08"N; Long. 132°43'53"W)

INTERVAL ZONES (Sampled section: 500 ft to T.D.)

Cibicides grossus	5100 ft
Asterigerina staeschei	5300 ft
Turrilina alsatica	6700 ft

SEQUENCE TOPS

Iperk	174 ft
Mackenzie Bay	5156 ft
Kugmallit	6300 ft

(Total depth 16,246 ft)

UVILUK P-66 (Lat. 70°15'48"N; Long. 132°18'44"W)

INTERVAL ZONES (Sampled section: 210 m to T.D.)

Cribroelphidium ustulatum	300 m
Cibicides grossus	1855 m
Asterigerina staeschei	2700 m
Turrilina alsatica	3375 m
Haplophragmoides sp. 2000	3573 m

Note: 1) **Stellarima** Zone at 3633 m.
2) agglutinated foraminifers typical of Taglu sequence occur at 4155 m.

SEQUENCE TOPS

Iperk	60 m
Mackenzie Bay	2208 m
Kugmallit	2905 m
Kopanoar	3175 m
Richards	3610 m
Taglu	4115 m

(Total depth 4756 m)

WAGNARK G-12 (Lat. 69°11'21"N; Long. 133°18'14"W)

INTERVAL ZONES (Sampled section: 2000 ft to T.D.)

Reticulophragmium borealis	5700 ft
Upper Cretaceous	6700 ft

SEQUENCE TOPS

Iperk	26 ft
Taglu	1025 ft
Aklak	2600 ft
Cretaceous	6745 ft

(Total depth 11,718 ft)

WEST ATKINSON L-17 (Lat. 69°46'34"N; Long. 132°04'32"W)

INTERVAL ZONES (Sampled section: 600 ft to T.D.)

Reticulophragmium borealis	2000 m
Upper Cretaceous	2200 m

SEQUENCE TOPS

Iperk	11 m
Reindeer	405 m
Upper Cretaceous	1995 m

(Total depth 2480 m)

YA YA A-28 (Lat. 69°17'11"N; Long. 134°35'27"W)

INTERVAL ZONES (Sampled section: 90 ft to T.D.)

(**Cribroelphidium** assemblage at 150 ft)
* **Haplophragmoides** sp. 2000 7100 ft
* - zone inferred from **Jadammina statuminis**
Portatrochammina sp. 2850 (?) 12,350 ft

SEQUENCE TOPS

Iperk	30 ft
Kugmallit	560 ft
Richards	6065 ft
Taglu	10,000 ft
Aklak	10,805 ft

(Total depth 12,940 ft)

YA YA P-53 (Lat. 69°12'50"N; Long. 134°42'45"W)

INTERVAL ZONES (Sampled section: 760 ft to T.D.)

Portatrochammina sp. 2850 (?) 9800 ft

SEQUENCE TOPS

Iperk	18 ft
Kugmallit	600 ft
Richards	2710 ft
Taglu	5178 ft
Aklak	5792 ft

(Total depth 9950 ft)
