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#8

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TO: Husky/U. S. Geological Survey

RE: Husky/USGS
E. Simpson #2
Sec. 23, 19N/11W, U.B.M.
North Slope, Alaska

FORAMINIFERA REPORT

The following micropaleontological report is based on the examination and checklisting of 247 washed ditch samples, 55 washed conventional core samples, 22 washed sidewall cores, 24 thin sectioned ditch samples, and 51 thin sectioned conventional core samples covering the interval 90 to 7504 feet (total depth). Thin sections were prepared on samples below 6810 feet. Three checklists and a faunal distribution log are enclosed for your convenience. The 22 sidewall cores appear in an appendix at the end of this report.

Standard techniques were employed in processing the material. All samples were boiled in Quaternary-O and washed over 20 and 200 mesh screens.

Frequency symbols used in this report correspond to the following numerical values: R = rare (1-5); F = frequent (6-32); C = common (33-99); A = abundant (100-199); and FL = flood (200+).

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90-1050'

Samples from throughout this interval are barren of Foraminifera and, therefore, are of indeterminate age. The common occurrence of coal suggests a probable nonmarine or very marginal marine depositional environment.

AGE: Indeterminate
ENVIRONMENT: Probable Nonmarine to Marginal Marine

1050-2640'

Rare to frequent occurrences of Haplophragmoides kirki, H. excavatus, H. topagorukensis, H. gigas, Miliammina manitobensis, M. bisobscura, Verneuilinoides borealis, Quadrimorphina ruckerae, Conorboides umiatensis, Eurycheilostoma grandstandensis, Gavelinella stictata, G. awunensis, Psammonopelta bowsheri, Ammobaculites wenonahae and Ditrupa cornu indicate that these strata are Middle to Late Albian (F-9) age. Depositional environments associates with these strata were probably inner to middle neritic.

AGE: Early Cretaceous
Middle to Late Albian (F-9)
ENVIRONMENT: Inner to Middle Neritic

2640-3510'

This interval is characterized by occurrences of the following: Gaudryina nanushukensis, Lenticulina macrodisca, Verneuilinoides borealis, Bathysiphon vitta, Marginulinopsis collonsi, Eurycheilostoma robinsonae, E. grandstandensis, Glomospirella gaultina, Ammobaculites fragmentarius,

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2640-3510' (con't.)

Ammobaculites wenonahae, Psamminopelta subcircularis, P. bowsheri, Textularia topagorukensis, Ammodiscus rotalarius, Pseudobolivina rayi, Valvulineria loetterlei, Gavelinella stictata, Miliammina manitobensis, M. awunensis, Haplophragmoides topagorukensis, H. excavatus, H. kirki, H. gigas, Vaginulina exilis, and Saracenaria dutroi. The above fauna indicates a Late Aptian to Early Albian (F-10) age. The paleodepths represented by these moderately diverse assemblages were probably middle to outer neritic.

AGE: Early Cretaceous
Late Aptian to Early Albian (F-10)

ENVIRONMENT: Middle to Outer Neritic

3510-6340'Core

A pyritized radiolarian fauna characterizes these strata together with occurrences of; Bathysiphon vitta, Gaudryina cf. tailleuri, G. subcretacea, Haplophragmoides topagorukensis, H. excavatus, and H. gigas. Pyritized radiolaria of the following genera occur: Cenosphaera spp., Spongodiscus spp., Lithocampe spp., and Dictyomitra spp. According to Ramsey (1970) this zone of pyritized radiolaria separates the Verneuilinoides borealis Zone from the Gaudryina tailleuri Zone, and is probably Aptian to early Albian in age. We feel that it is probably Aptian in age, in this area, but our data is tentative at this time. Due to the preservation of this fauna, all that can be said about the

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3510-6340'Core (con't.)

environment of deposition is that it was marine and open to oceanic currents. These strata may represent deep marine (below compensation depth) basal slope deposits. This is a possibility since calcareous Foraminifera are very scarce in this interval and could represent caved specimens when they do occur.

AGE: Early Cretaceous
Aptian (F-11)

ENVIRONMENT: Open Marine

6340Core-6600'

Occurrences of Glomospira corona, Haplophragmoides coronis, Bathysiphon scintillata, Thuramminoides sp., arenaceous spp. (large, coarse), Cenosphaera spp. (pyritized), Lithocampe spp. (pyritized), and common to abundant rounded frosted quartz floaters suggest a Neocomian (F-12 to F-13) age for these rocks. The poor diversity agglutinated fauna suggests shallow turbid conditions, while the presence of radiolaria (especially nasselarian forms) suggest access to open ocean currents. These rocks were probably deposited in middle to outer neritic paleodepths in an area characterized by fluctuating turbidity.

AGE: Early Cretaceous
Hauterivian to Barremian (F-12 to F-13)

ENVIRONMENT: Middle to Outer Neritic
(fluctuating turbidity)

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6600-6705'Core

There is no faunal evidence for the age of this unit. No newly occurring species were found. A possible Early Jurassic F-18 age is suggested for these strata based on a lithologic change to buff tan glauconitic very fine-grained sandstone or siltstone, and the palynological data. Frequent glauconite in the top sample 6600-6630 feet indicates a shallow marine (inner neritic?) paleodepth for that sample, but the other two samples from this interval are environmentally indeterminate since any forms found could be sloughed from the overlying strata.

AGE: Early Jurassic?
Possible F-18

ENVIRONMENT: Possible Inner Neritic (in part)

6705Core-7167'Core

This interval, like the overlying one, is faunally very poor. The top of this unit is based on palynological data in Core 4 (6705-6736'). One specimen of Astacolus connudatus at 6900 feet (ditch), rare medium to large, smooth ostracods at 6870 feet (ditch), and rare to frequent questionable Monotis/Halobia fragments occurring in the ditch between 6660 and 7190 feet is all the evidence we have for a Triassic (F-19) age. The presence of Astacolus connudatus, Citharinella sp. and Monotis?/Halobia? fragments indicates that these strata probably represent sediment diluted deposition in inner neritic to middle neritic paleodepths.

AGE: Triassic
F-19

ENVIRONMENT: Inner to Middle Neritic

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7167Core-7504'T.D.

Most of the samples in this interval are barren of indigenous fauna. The only newly occurring forms found are Haplophragmoides sp., and Endothyra? sp. This unit is characterized by a lithologic change to light gray to white quartzitic sandstones and siltstone interbedded with coal seams. This lithology coupled with the palynological data suggests that these rocks represent the Kekiktuk Fm. The abundance of coal throughout cores from this interval suggests that these strata represent nonmarine and marginal marine deposition. A lithologic change to dark gray quartzitic and argillitic shale at 7460 feet may represent the "argillite" basement, but it is more likely it just represents some argillitic shale interbeds in the Kekiktuk Fm.

AGE: Indeterminate
ENVIRONMENT: Probable Nonmarine to Marginal Marine

In summary, we would like to point out that faunal data in the ditch below 6600 feet becomes very sparse and Cores 4 through 8 were all barren of Foraminifera. This makes the biostratigraphic data based on Foraminifera very tenuous below 6600 feet. This should be kept in mind by the geologist and geophysicist when using this data.

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APPENDIX A

540'SWC

No Foraminifera found. Coal (F). Gray sandy shale.

AGE: Indeterminate
ENVIRONMENT: Possible Nonmarine

810'SWC

No Foraminifera found. Coal (F). Gray shale.

AGE: Indeterminate
ENVIRONMENT: Possible Nonmarine

930'SWC

No Foraminifera found. Coal (R). Gray shale.

AGE: Indeterminate
ENVIRONMENT: Possible Nonmarine

1078'SWC

Haplophragmoides excavatus (R), H. sp.(R), coal (R). Brownish-gray sandy shale.

AGE: Indeterminate
ENVIRONMENT: Marginal Marine to Inner Neritic

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1088'SWC

No Foraminifera found. Coal (F). Light gray muddy siltstone.

AGE: Indeterminate
ENVIRONMENT: Possible Nonmarine

1230'SWC

No Foraminifera found. Spongodiscus sp. (R), coal (F). Light gray siltstone.

AGE: Indeterminate
ENVIRONMENT: Possible Marine

1240'SWC

Haplophragmoides excavatus (R), Hippocrepina barksdalei (R), Quadrimorphina ruckerae (R), megaspores (R), coal (C), plant debris (F). Dark gray coaly shale.

AGE: Early Cretaceous
Middle to Late Albian (F-9)
ENVIRONMENT: Inner to Middle Neritic

1980'SWC

Eurycheilostoma grandstandensis (R), Haplophragmoides escavatus (R), Verneuilinoides borealis (F), coal (C), plant deris (C). Brownish-gray coaly shale.

AGE: Early Cretaceous
Middle to Late Albian (F-9)
ENVIRONMENT: Inner to Middle Neritic

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2238'SWC

Haplophragmoides excavatus (R), H. topagorukensis (R), Miliammina manitobensis (R), coal (C), plant debris (F). Gray coaly shale.

AGE: Early Cretaceous
Probable Middle to Late Albian (F-9)

ENVIRONMENT: Inner Neritic

2430'SWC

Arenaceous sp. (R), coal (R). Brownish-gray silty shale.

AGE: Indeterminate

ENVIRONMENT: Marginal Marine

2490'SWC

Saccammina lathrami (R), coal (C), plant debris (F). Gray coaly shale.

AGE: Indeterminate

ENVIRONMENT: Marginal Marine

2496'SWC

Haplophragmoides excavatus (F), H. topagorukensis (R), Verneuilinoides borealis (R). Gray fine-grained muddy sandstone.

AGE: Early Cretaceous
Probable Middle to Late Albian (F-9)

ENVIRONMENT: Inner Neritic

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2542'SWC

Ammobaculites wenonahae (R), Ammodiscus sp. (very small) (R), Bathysiphon vitta (F), Gaudryina irregularis (R), Haplophragmoides excavatus (F), Psamminopelta bowsheri (R), Saccammina lathrami (R), Verneuilinoides borealis (F), coal (C), plant debris (F). Gray silty coaly shale.

AGE: Early Cretaceous
Probable Middle to Late Albian (F-9)

ENVIRONMENT: Inner to Middle Neritic

2900'SWC

Ammodiscus rotalarius (R), Eurycheilostoma grandstandensis (R), Gavelinella stictata (C), Haplophragmoides excavatus (C), H. topagorukensis (R), Hippocrepina barksdalei (R), Miliammina manitobensis (R), Verneuilinoides borealis (R), coal (C). Gray shale.

AGE: Early Cretaceous
Albian (F-9 to F-10)

ENVIRONMENT: Middle Neritic

4006'SWC

No Foraminifera found. Brownish-gray fine-grained sandstone.

AGE: Indeterminate

ENVIRONMENT: Indeterminate

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5120'SWC

No Foraminifera found. Brownish-gray siltstone.

AGE: Indeterminate
ENVIRONMENT: Indeterminate

5730'SWC

No Foraminifera found. Megaspores (R), coal (F). Brownish-gray sandy shale.

AGE: Indeterminate
ENVIRONMENT: Indeterminate

6300'SWC

No Foraminifera found. Megaspores (R), pyrite (R), coal (F). Brownish-gray fine-grained sandstone.

AGE: Indeterminate
ENVIRONMENT: Indeterminate

6330'SWC

No Foraminifera found. Fishbone fragments (C), paper shale (C). Dark gray to black bentonitic fishbone shale.

AGE: Indeterminate
ENVIRONMENT: Starved Basin?

6340'SWC

Arenaceous spp. (F), fishbone fragments (F), pyrite (F), paper shale (C). Dark gray to black shale.

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6340'SWC (con't.)

AGE: Indeterminate

ENVIRONMENT: Starved Basin?

6360'SWC

No Foraminifera found. Brownish-gray siltstone.

AGE: Indeterminate

ENVIRONMENT: Indeterminate

6400'SWC

Verneuilinoides borealis (R), rounded frosted quartz floaters (A). Dark gray to black sandy shale.

AGE: Early Cretaceous
Probable Neocomian

ENVIRONMENT: Possible Marine

Interpreted by:

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