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#1

September 5, 1979

TO: Husky/U. S. Geological Survey

RE: Husky/USGS, NPRA
J. W. Dalton #1
Sec. 14, 18N/5W, U.B.M.
North Slope, Alaska

FORAMINIFERA REPORT

The following micropaleontological report is based on the examination and checklisting of 282 washed ditch samples, 26 thin sectioned ditch samples, 4 washed sidewall cores, 2 thin sectioned sidewall cores, 112 washed conventional core samples, and 58 thin sectioned conventional core samples covering the interval 90 to 9365.8 feet. Thin sections were prepared on all samples below 8286 feet. Six sidewall core samples received after the checklists were completed appear in an appendix at the back of this report. Three checklists and a faunal distribution log are enclosed for your convenience.

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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90-210'

Occurrences of Cassidulina cf. norcrossi, Dentalina soluta, Elphidium clavatum, E. cf. acutum and Elphidium spp. suggest a Pliocene to Pleistocene age. The above forms indicate a shallow probable inner neritic depositional environment.

AGE:	Tertiary to Quaternary Pliocene to Pleistocene
ENVIRONMENT:	Probable Inner Neritic

210-1050'

Most of this interval was barren of Foraminifera, but the rare specimens found would suggest a Tertiary age for these strata.

AGE:	Tertiary Undifferentiated
ENVIRONMENT:	Nonmarine to Inner Neritic

1050-2160'

A faunal increase characterizes this unit. It contains such forms as: Haplophragmoides rota, H. bonanzaensis, Saccammina lathrami, Trochammina ribstonensis, T. whittingtoni, T. albertensis, Verneuilinoides fischeri, Vaginulina schraderensis, and silicified radiolaria of the genera Sethocyrtis, Archicorys, Dictyomitra, Theocorys, Cenosphaera, Spongodiscus, and Spongurus. The above association indicates a Senonian (F-5) age.

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1050-2160' (con't.)

AGE: Late Cretaceous
Senonian (F-5)

ENVIRONMENT: Probable Middle to Outer Neritic

2160-2550'

This interval is based on the occurrence of Arenobulimina torula at 2340 feet coupled with correlations to adjacent wells. Most of the Foraminifera found in these strata also occur in the overlying strata. Some of the fauna may indeed be caving from the overlying strata. This interval is believed to represent a Turonian to Coniacian (F-6) age.

AGE: Late Cretaceous
Turonian to Coniacian (F-6)

ENVIRONMENT: Marginal Marine to Inner Neritic

2550-2730'

A top on the "Paper Shale" ("cutinized leaves") was found at 2550 feet. This interval is most likely an equivalent to the Shale Wall Member of the Seabee Fm. It probably represents a Cenomanian to Turonian age. Common occurrences of silicified radiolaria typify these strata suggesting open marine conditions.

AGE: Late Cretaceous
Cenomanian to Turonian (F-7)

ENVIRONMENT: Open Marine (starved basin)

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2730-2820'

This thin interval contains a poor transitional assemblage. The rare occurrence of Haplophragmoides cf. topagorukensis may indicate an Albian age or may represent a reworked specimen.

AGE: Early to Late Cretaceous
Probable Albian to Cenomanian (F-8)

ENVIRONMENT: Probable Marginal Marine

2820-4740'

Haplophragmoides topagorukensis, H. collyra, H. gigas, H. cf. excavatus, Ammobaculites fragmentarius, A. wenonahae, Lenticulina macrodisca, L. erecta, Trochammina umiatensis, T. mcmurrayensis, Miliammina manitobensis, M. awunensis, Psamminopelta bowsheri, P. subcircularis, Saccammina lathrami, Tritaxia manitobensis, Hippocrepina barksdalei, Marginulinopsis collonsi, Bathysiphon vitta, Verneuilinoides borealis, and Ditrupa cornu occur in this interval. The above association is typical of the Verneuilinoides borealis Faunal Zone and is Albian age. Unlike most of the other wells from the NPRA area this well did not contain any of the F-10 zonule markers. Since this may be a facies problem we will assume that some of the lower portion of this interval may be an F-10 equivalent. The environments represented by these moderately diverse assemblages were probably of somewhat turbid inner to outer neritic depths with short periods of lesser turbidity.

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2620-4740' (con't.)

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

ENVIRONMENT: Neritic (fluctuating turbidity)

4740-7380'

A mixed pyritized and silicified radiolarian assemblage characterizes these strata together with rare non-diagnostic agglutinated Foraminifera. Some rare calcareous forms occur such as: Hedbergella cf. aptiana, Praebulimina nanina, and Saracenaria italica. 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. Lithocampe cf. N tops near the base of this interval at 7350 feet. Due to the preservation of this fauna, all that can be said about the environment of deposition is that it was marine and open to oceanic currents. Some of these strata may represent deep marine (below compensation depth) basal slope deposits. This is certainly a possibility since calcareous Foraminifera are very scarce in this interval.

AGE: Early Cretaceous
Aptian to Early Albian (F-11)

ENVIRONMENT: Open Marine (Possible Bathyal)

7380-7730'

Rare occurrences of Haplophragmoides duoflatis, Thurammminoides septagonalis, Gaudryina tailleuri,

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7380-7730' (con't.)

Ammobaculites erectus, Lituotuba gallupi, and Trochammina sp. (small, plano-convex) together with common rounded frosted quartz floaters indicate that these strata are Neocomian (F-12 to F-13) in age.

AGE: Early Cretaceous
Neocomian (F-12 to F-13)

ENVIRONMENT: Probable Middle to Outer Neritic (turbid)

7730-7880'

Based on the presence of Monotis/Halobia fragments and Lingulina borealis at 7730 to 7760 feet in this well we suggest the existence of a hiatus in the section resulting in Neocomian (F-12 to F-13) strata sitting on Triassic (F-19) strata. The sidewall core at 7790 feet contained a good Triassic (F-19) assemblage with such forms as: Astacolus connudatus, Marginulina prisca, Nodosaria larina, Pseudoglandulina simpsonensis, and Vaginulinopsis acrulus. A distinctive dark brown to black calcareous pebbly sandstone similar to that described by Tappan (1951, pp. 5-6) from the basal 25 to 50 feet of the Shublik Fm. in the Sadlerochit River Region occurs in samples from the interval 7820 to 7880 feet in this well.

AGE: Triassic
F-19

ENVIRONMENT: Inner to Middle Neritic

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7880-8317' Core

The top of this interval is based on a lithology change to strata lithologically similar to the Ivishak Fm. A rare agglutinated assemblage similar to the F-20 zonule occurs together with caved specimens from the overlying F-19 zonule. No lithologic evidence for the Echooka Fm. was found, suggesting that it may not be present in this section. For the most part these strata would appear to represent nonmarine to marginal marine deposition, but there is some evidence to indicate that a few of the beds below 8000 feet could represent deposition as deep as middle neritic.

AGE: Permo-Triassic
F-20

ENVIRONMENT: Nonmarine to Middle Neritic

8317'Core 9160'

Generally throughout the North Slope of Alaska the Lisburne Group can be divided into three lithologic units:

1. Upper Limestone Unit
2. Dolomite Unit
3. Lower Limy Unit

The Upper Limestone Unit is 843 feet thick in this well. Occurrences of Eoschubertella yukonensis, Millerella carbonica, Pseudostaffella sp., Zellerina designata, Pseudoendothyra ornata, and Kamaenid algae together with occurrences of Neoarchaediscus spp., Asteroarchaediscus spp., and Stylocodium sp. indicate that the strata between about

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8317'Core-9160'

8317 feet and 8980 feet are Zone 21 in age. A Zone 20 call is made at 8980 feet based on a significant reduction in the occurrence of Kamaenid algae. The Upper Limestone Unit represents a shoaling shelf and subtidal to tidal carbonate platform suite.

The Upper Limestone Unit was the only unit of the Lisburne Group encountered in this well. There are two possible explanations for this:

1. An unconformity exists at 9160 feet between the Lisburne Group and underlying Endicott Group.
2. The clastic facies of the Endicott Group has climbed with respect to age in the section.

AGE:	Early to Middle Pennsylvanian Zone 20 to Zone 21
ENVIRONMENT:	Nonmarine to Outer Shelf (Carbonate Platform Suite)

9160-9250'

This interval is characterized by a change to predominantly red-brown shale and siltstone with frequent caving of limestone from the overlying carbonate section. The age of this unit is considered to be tenuous since it could represent strata as old as Early Mississippian or as young as Early Pennsylvanian.

AGE:	Probable Early Mississippian to Early Pennsylvanian
ENVIRONMENT:	Probable Nonmarine to Inner Shelf

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9250-9365.8'

This last unit is picked on the basis of a lithologic change to argillite. There were no indigenous Foraminifera recovered from this interval.

AGE: Indeterminate
ENVIRONMENT: Indeterminate

Interpreted by:

M. B. Mickey

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Richard E. Anderson

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APPENDIX A

7653'SWC

No Foraminifera found. Pyrite (R), pyrite sticks (R). Reddish-brown shale.

AGE: Indeterminate
ENVIRONMENT: Indeterminate

7714'SWC

No Foraminifera found. Pyrite (C), coal (F), pyrite sticks (F). Dark gray pyritic silty shale.

AGE: Indeterminate
ENVIRONMENT: Indeterminate

7788'SWC

No Foraminifera found. Coal (R). Brownish-gray very fine-grained sandstone or siltstone.

AGE: Indeterminate
ENVIRONMENT: Indeterminate

7790'SWC

Astacolus connudatus (F), Marginulina prisca (R), Nodosaria larina (R), Pseudoglandulina simpsonensis (R), Vaginulinopsis acrulus (R), pyrite (C), coal (F). Reddish-brown silty shale.

AGE: Triassic (F-19)
ENVIRONMENT: Probable Middle Neritic

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APPENDIX A (con't.)

8286'SWC

No Foraminifera found. Brownish-gray very fine-grained microdolomite.

AGE: Indeterminate
ENVIRONMENT: Possible Supratidal

8450'SWC

Miliolella parva (F), Calcisphaera pachysphaerica (R), Endothyra spp. (F), Priscella prisca (R), Pseudoglomospira sp. (F), Trepeilopsis sp. (F), Kamaena sp. (R). Brown palmatozoan-bryozoan-foraminiferal packstone.

AGE: Probable Middle Pennsylvanian (Zone 21)
ENVIRONMENT: Shoaling Shelf