

CONSULTING MICROPALAEONTOLOGY

11526 Sorrento Valley Road Suite G

San Diego, California 92121

(714) 755-1524

Cable: Micropaleo San Diego

May 16, 1977

see also: S.W. Cores (1978)

TO: Tetra Tech, Inc.

RE: Husky/U.S.N.
West Fish Creek #1
Sec. 11, 11N/1W, U.B.M.
North Slope, Alaska

FINAL MICROPALAEONTOLOGY REPORT

Enclosed you will find a 1" to 100' faunal distribution log and four faunal checklists on the West Fish Creek #1 well. The conclusions presented in this report are based on the processing, picking and examination of 313 ditch samples, generally composited on 30 to 40 foot intervals. Thirty-four (34) thin sections were prepared on 30 foot ditch intervals below 10,410 feet. A generalized age summary of the well is provided below.

500-1550'

Textularia cf. gravenori, Verneuilincides cf. fischeri,
Trochammina ribstonensis, T. whittingtoni, Cenosphaera
spp., Spongurus spp., Sethocyrtis sp., Archicorys sp.,
Theocorys sp., Dictyomitra spp., D. multicostata, Spongo-
discus spp., S. cf. renillaeformis, Stylospongia sp., Rho-
palodictyum sp., Spongostaurus sp., and Xiphosphaera sp.

The above assemblage is characteristic of the Senonian Schrader Bluff Formation. Faunas obtained throughout this

RE: Husky/USN - W. Fish Creek #1

500-1550'

interval are indicative of oscillating middle neritic to upper bathyal (non-turbid) deposition.

AGE: Late Cretaceous (Senonian)
Schrader Bluff Fm.

ENVIRONMENT: Middle Neritic to Upper Bathyal
(non-turbid)

1550-2510'

Trochammina whittingtoni, Pseudoclavulina hastata, Vaginulina schraderensis, Zonodiscus sp. A, Cenosphaera spp., Spongurus spp., Spongodiscus spp., and S. cf. renillaeformis characterize this interval. Two single specimen occurrences of Pseudoclavulina hastata above 1550 feet are considered reworked or facies occurrences in this report.

A ~~top-on-the~~ "Paper Shale" ("cutinized leaves") was found at 2090 feet. The Shale Wall Member is generally siltier than it is in surrounding wells. This interval is generally dominated by starved basin deposition as indicated by the high organic content and the lack of preserved calcareous foraminifera associated with the few pulses of open marine radiolarian bursts.

AGE: Late Cretaceous (Cenomanian to Turonian)
Seabee Fm.

ENVIRONMENT: Open Marine (starved basin)

RE: Husky/USN - W. Fish Creek #1

2510-2630'

This fauna contains Trochammina rainwateri, Verneuili-
noides cf. borealis, and Haplophragmoides cf. topagoru-
kensis. This association appears to be a transitional
fauna which could be either Albian or Cenomanian in age.
These strata probably represent turbid inner to middle
neritic deposition.

AGE: Early to Late Cretaceous (Albian
to Cenomanian)
Probable Nanushuk Group

ENVIRONMENT: Probable Inner to Middle Neritic
(turbid)

2630-4800'

Hyperamminoides barksdalei, Ammodiscus rotalarius, Haplo-
phragmoides topagorukensis, H. cf. linki, H. gigas, H. cf.
excavata, Ammobaculites fragmentarius, A. wenonahae,
Lenticulina macrodisca, L. bayrocki, Trochammina umiaten-
sis, T. mcmurrayensis, Miliammina manitobensis, Psammino-
pelta bowsheri, Saccamina lathrami, Globorotalites
alaskensis, Valvulineria loetterlei, Bathysiphon vitta,
Verneuilioides borealis and Ditrupa cornu occur in this
interval. The above association is typical of the Verneu-
linoides borealis Faunal Zone and is Albian age. The en-
vironments represented by these moderately diverse assem-
blages were probably of relatively clear water middle to
outer neritic depths with some short periods of turbidity.

RE: Husky/USN - W. Fish Creek #1

2630-4800' (con't.)

AGE: Early Cretaceous (Albian)
Nanushuk Group

ENVIRONMENT: Middle to Outer Neritic
(relatively clear water)

4800-7250'

A pyritized radiolarian assemblage characterizes these strata together with rare non-diagnostic agglutinated foraminifera. Lithocampe cf. sp. N occurs in the bottom of this interval, but preservation makes the identification uncertain. According to Ramsey (1970)*, this zone of pyritized radiolaria separates the Verneuulinoides borealis zone from the Gaudryina tailleuri zone, and is probably Aptian to early Albian in age. 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. It was recently brought to our attention that 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 and could represent caved specimens when they do occur. We also know that faunal diversity decreases in both directions from the shelf edge in northern latitudes.

*Ramsey, W. V., 1970, "Geological Age of Gaudryina tailleuri in Northern Alaska", Nature, vol. 227, p. 598.

RE: Husky/USN - W. Fish Creek #1

4800-7250' (con't.)

AGE: Early Cretaceous (Aptian to
Early Albian)
Torok Fm. or Fortress Mountain Fm.

ENVIRONMENT: Open Marine (possibly Lower Bathyal
to Abyssal)

7250-7280'

This very thin interval contains Ammobaculites reophacoides, Ammodiscus mackenziensis, Gaudryina tailleuri, Gravellina sp., Glomospirella arctica, Haplophragmoides duoflatis, Thuramminoides septagonalis, Trochammina cf. sablei, and common rounded frosted quartz floaters (Pebble Shale), suggesting a Neocomian age for these strata. A turbid middle neritic to upper bathyal depositional environment is suggested by this association.

AGE: Probable Neocomian
Probable Okpikruak Fm.

ENVIRONMENT: Probable Middle Neritic to Upper
Bathyal (turbid)

7280-7870'

Occurrences of Ammobaculites alaskensis, arenaceous spp. (large, coarse), Gaudryina milleri, G. leffingwelli, G. topagorukensis, G. dyscrita, Glomospira pattoni, Glomospirella sp. B, Haplophragmoides canui, Marginulinopsis phragmites, Pseudobolivina sp., Trochammina canningensis, T. topagorukensis, T. gryci, Lenticulina audax, L. prima, L. toarcense, Conorboides hofkeri, Thuramminoides sp.,

RE: Husky/U.S.N. - W. Fish Creek #1

7280-7870' (con't.)

Involutina cheradospira, Recurvoides turbinatus and Textularia areoplecta indicate that these strata are Late Jurassic (Kimmeridgian to Tithonian) in age. These strata were probably deposited in clear water outer neritic to bathyal depths.

AGE: Late Jurassic (Kimmeridgian to Tithonian)
Kingak Fm.

ENVIRONMENT: Outer Neritic to Bathyal
(clear water)

7870-8910'

In addition to continuing occurrences of some of the above species, the following species occur for the first time in this interval: Saracenaria topagorukensis, Astacolus pediacus, A. cf. dubius, A. calliopsis, A. daintreei, Citharina fallax, Frondicularia lustrata, Lenticulina quentstedti, Trochammina instowensis, and Vaginulina sherborni. This fauna would indicate an early Late Jurassic (Oxfordian) age. The abundant and diverse faunas of this interval probably represent an outer neritic to upper bathyal environment of deposition associated with fluctuating amounts of turbidity.

AGE: Late Jurassic (Oxfordian)
Kingak Fm.

ENVIRONMENT: Outer Neritic to Upper Bathyal

RE: Husky/U.S.N. - W. Fish Creek #1

8910-9270'

Ammobaculites alaskensis, Bathysiphon anomalocoelia, Trochamminoides spp., T. cf. proteus, Lingulina micida, and frequent to common pyritized radiolaria of the genera Cyrtocapsa, Stichomitra, Cenosphaera, Lithocampe, Spongodiscus and Dictyomitra occur in these strata. Also diagnostic of this unit is a burst of Tasmanites spp. which appears to be characteristic in this area. These strata are Early to Middle Jurassic in age. They probably represent deposition in middle neritic to upper bathyal depths characterized by fluctuating turbidity. A sandstone occurs at the base of this unit which may be an equivalent to the Sag River Sandstone.

AGE: Early to Middle Jurassic
Kingak Fm.

ENVIRONMENT: Middle Neritic to Upper Bathyal

9270-9660'

Marginulina prisca, Astacolus connudatus, Vaginulinopsis acrus, Nodosaria larina, N. shublikensis, Pseudoglandulina simpsonensis, and Monotis fragments among others, occur throughout these beds. The Triassic age of these strata is firmly established on the basis of the above fauna. These faunas represent fluctuating marginal marine to middle neritic deposition.

AGE: Triassic
Shublik Fm.

ENVIRONMENT: Marginal Marine to Middle Neritic

RE: Husky/U.S.N. - W. Fish Creek #1

9660-10,470'

Occurrences of Ammodiscus sp. P, and Ammobaculites sp. (small, nodose) mark this interval. These strata would appear to represent nonmarine to marginal marine deposition. Two samples at the bottom of this unit (10,410-10,470') contain a heavily glauconitic sandstone suggestive of the Echooka Member of the Sadlerochit Formation.

AGE: Permo-Triassic
Sadlerochit Fm.

ENVIRONMENT: Nonmarine to Marginal Marine

10,470-10,500'

This very thin interval is characterized by occurrences of micritic coated pelmatozoan-bryozoan-foraminiferel-algal grainstone. The presence of a single specimen of Protonodosaria sp. and rare Paleoaplysina sp. suggests that this unit is probably early Permian in age. These strata probably represent deposition in the shoaling shelf portion of a carbonate platform suite. Two fragments of grainstone found in the sample at 10,440-10,470 feet are here regarded as reworked but may mean that the top of this interval is slightly higher (less than 30 feet) than we have reported.

AGE: Probable Early Permian

ENVIRONMENT: Shoaling Shelf (carbonate platform suite)

RE: Husky/U.S.N. - W. Fish Creek #1

10,500-11,310'

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

1. Upper Limestone Unit 10,500 - 11,160
2. Dolomite Unit 11,160 - 11,310
3. Lower Limy Unit

The Upper Limestone Unit is 660 feet thick in this well. Strata between 10,500 feet and about 10,620 feet contain rare Biseriella parva, rare Pseudostaffella sp., and frequent Stylocodium sp. These rocks conspicuously lack occurrences of Asteroarchaediscus spp., Neoarchaediscus spp., and Archaediscus spp. These rocks are certainly no older than Zone 21 but could easily be as young as Zone 22 (see Mamet, 1971, pages 203 and 204)*. These strata probably correlate in part with strata between 10,275 feet and 10,720 feet in the S. Harrison Bay #1 well. Bursts of Eoschubertella yukonensis, Pseudostaffella sp., and Kamaenid algae together with occurrences of Neoarchaediscus spp., Asteroarchaediscus spp., and frequent Stylocodium sp. indicate that the strata between about 10,620 feet and 10,950 feet are definitely Zone 21 in age. A Zone 20 call is made at 10,950 feet based on a significant reduction in the

*Mamet, B. L., and Ross, C. A., 1971, in Bamber & Waterhouse, "Carboniferous and Permian Stratigraphy and Paleontology, Northern Yukon Territory, Canada"; Bull. of Can. Petr. Geol., vol. 19, no. 1, pp. 196-205.

RE: Husky/U.S.N. - W. Fish Creek #1

10,500-11,310' (con't.)

occurrence of Kamaenid algae. Evidence for ~~Zone 18~~ ~~Zone 19~~ was lacking. Based on the possible occurrence of section equivalent to the Zone 17-Zone 18 Dolomite Unit below this interval, a scarcity of Globovalvulina bulloides, and a lower questionable occurrence of Eosigmoilina rugosus? which may have caved from this interval, we suggest the possibility that section between ~~11,100 feet to 11,160~~ feet may be Zone ~~18 to Zone 19~~ in age. The Upper Limestone Unit represents shoaling shelf and subtidal facies of a carbonate platform suite.

The Dolomite Unit is questionably placed between ~~11,160~~ feet and 11,310 feet based on a lithologic change to microcrystalline dolomite and microcrystalline dolomitic limestone. This unit is poorly fossiliferous. The only newly occurring species in this interval is a questionable specimen of Eosigmoilina rugosus? at 11,250-11,280 feet which occurs in a rare piece of packstone which as mentioned above is probably caved from somewhere around 11,100-11,160 feet. This unit probably represents a supratidal depositional environment.

AGE:	Late Mississippian? to Middle Pennsylvanian or Younger Lisburne Group
ENVIRONMENT:	Supratidal to Shoaling Shelf (carbonate platform suite)

RE: Husky/USN - W. Fish Creek #1

11,310-11,420' T.D.

This interval is characterized by a change to unfossiliferous ~~orange-brown shale and siltstone~~. These strata probably represent nonmarine deposition.


AGE: Probable Mississippian
(Endicott Group)

ENVIRONMENT: Probable Nonmarine

Interpreted by:


M. B. Mickey

ANDERSON, WARREN & ASSOCIATES, INC.


Richard E. Anderson

