

ANDERSON, WILCOXON & ASSOCIATES, INC.

CONSULTING MICROPALAEONTOLOGY

11526 Sorrento Valley Road Suite G

San Diego, California 92121

(714) 755-1524

Cable: Micropaleo San Diego

May 14, 1975

TO: Tetra Tech, Inc.

RE: Cape Halkett #1
N.P.R. #4 U.S.N.
5, 16N/2W
North Slope, Alaska

PRELIMINARY MICROPALAEONTOLOGY REPORT

Enclosed you will find a 1" to 200' diversity log and a correlation chart relating the Cape Halkett #1 Well micropaleontology to the Fish Creek #1 micropaleontology. There are a number of possible correlation horizons shown on the chart, several of which occur within a single epoch thereby allowing closer control than obtained from epoch correlations alone. We have also sent a 1" to 200' diversity log on the Fish Creek #1 Well that has the correlation horizons numbered for your convenience.

The conclusions presented in this report are based on the examination of 192 ditch samples, generally composited on 30 to 40 foot intervals, and 104 sidewall core samples.

A generalized age summary of the Cape Halkett #1 Well is provided below.

510-1120'

Generally barren of foraminifera. Coaly cherty sandstone with rare to frequent volcanic glass shards. This unit is probably equivalent lithologically to the Kogosukruk Tongue of the Prince Creek Fm.

AGE: Probable Senonian

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1120-2440'

Eoeponidella strombodes (R-F), Anomalinoidea pinguis (R), Nonionella cf. taylorensis (R), Praeulimina venusae (R-F), Lacosteina gouskovi (R), Caucasina vitrea (R), Eoeponidella linki (R), Neobulimina canadensis (R), Vaginulina schraderensis (R), Verneulinoides fisheri (R), Trochammina ribstonensis (R), T. whittingtoni (R), Cenosphaera spp. (R-C), Sethocyrtis spp. (R-F), Archicorys sp. (R-C), Theocorys sp. (R-F), Dictyomitra multicostata (R-F), Spongodiscus spp. (R-C), Rhopalodictyum sp. (R).

The above assemblage is characteristic of the Senonian Schrader Bluff Formation. Faunas obtained throughout this interval are indicative of oscillating middle to outer shelf (non-turbid) depositional environment.

AGE: Senonian (Schrader Bluff Fm.)

2440-3340'

Saccamina lathrami (R), Trochammina ribstonensis (R-F), Zonodiscus sp. A (R-F), Cenosphaera spp. (R-C), Spongodiscus spp. (R-C), Coal (R-C), Pyrite (R-A).

This interval is generally poor in fauna, but it does contain Zonodiscus sp. A which is considered by Berquist (1966, U.S.G.S. P.P. 302-D p. 182) to be a marker for the Seabee Formation. A top on the "Paper Shale" ("cutinized leaves") was found at 2940 feet, this point is at the top of or down in the Shale Wall Member of the Seabee Formation. This interval is generally dominated by shallow starved basin deposition as indicated by the large amounts of pyrite and coal in these samples, and the lack of preserved calcareous foraminifera associated with the few short pulses of open marine radiolarian bursts.

AGE: Turonian-Cenomanian (Seabee Fm.)

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3340-3610' Transition Interval

Haplophragmoides bonanzaensis (R-C), H. rota (R-F), H. topagorukensis (R), Bathysiphon brosgei (R), Verneuilinoides borealis (R), Ammobaculites fragmentarius (R), Ditrupa cornu (R).

While the above fauna seems indicative of the Albian, the frequency of occurrences of the Albian forms is rare enough to make one suspicious of reworking. A similar interval occurred in the Fish Creek #1 Well between 2750 feet and 3130 feet.

AGE: Cenomanian-Albian

3610-5740'

Haplophragmoides topagorukensis (R-A), H. rota (R-F), Ammobaculites fragmentarius (R), A. wenohae (R), Lenticulina macrodisca (R), Trochammina umiatensis (R-C), T. rainwateri (R-F), Miliammina manitobensis (R-F), M. awunensis (R), Bathysiphon brosgei (R), B. vitta (R), Verneuilinoides borealis (R-C), Psamminopelta bowsheri (R), P. subcircularis (R), Ditrupa cornu (R-F), Oolina apiculata (R-F), Gavelinella stictata (R), Eurycheilostoma grandstandensis (R), Valvulinera loetterlei (R).

The above fauna is typical of the Verneuilinoides borealis Faunal Zone of Albian Age. There is slight evidence in the ditch sample from 4790-4820' for the presence of the Textularia topagorukensis Faunal Subzone which may mark the top of the Torok Formation locally. Unfortunately, we were not able to substantiate this in the sidewall core samples below this point, and the ditch samples to 5350' are in the missing box.

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3610-5740' (Con't.)

The environments represented by these assemblages were probably of middle to outer shelf depths characterized by generally clear waters with only occasional short periods of high turbidity

AGE: Albian-Aptian

5740-7320'

Interval characterized by occurrence of pyritized radiolaria (R-C), rare agglutinated forms, megaspores (R-F), Coal (R-C), and Pyrite (F-FL).

Deposition of these strata probably took place in depths varying from marginal marine to middle shelf, and uniformly characterized by reducing (oxygen deficient) bottom conditions. This especially holds true for the lower 600 feet of this interval where high organic concentration ("paper shale") suggests a paucity of available clastic detritus and probably highly reducing bottom conditions.

The lack of any fauna suggestive of the Gaudryina tailleuri Zone provides some negative evidence that this interval is still Aptian to possibly Albian Age. In fact, this poorly fossiliferous pyritized facies could be older Cretaceous.

AGE: Aptian to Albian ?

7320-7540'

Rounded frosted quartz floaters (F-C), Lithocampe cf. "B.C." (R), Trochammina canningensis (R), Gaudryina cf. milleri (R), G. topagorukensis (R), G. tailleuri (R-F), Conorboides "J" (R), Pseudobolivina sp. (R-F).

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7320-7540' (Con't.)

This fauna is indicative of a Latest Jurassic to Earliest Cretaceous (Berriasian) Age. The first evidence for "Pebble Shale" appears in the samples at 7320' (D) and 7326' (SWC).

This assemblage suggests a depositional environment of outer neritic to possibly as deep as upper bathyal turbid waters.

A basal sandstone unit occurs between 7530 feet and 7545 feet that is similar in appearance to the Sag River Ss., but whether the unconformity lies above or below this unit cannot be precisely established. However, in our opinion, it would make a lot of sense if this was a basal transgressive sandstone sitting on top of the unconformity and therefore would not be an age equivalent of the Sag River Ss. which is considered Earliest Jurassic.

AGE: Latest Jurassic to Earliest
Cretaceous (Berriasian)

7540-7860' Present T.D.

Astocolus connudatus (R-F), *Trochamminoides cf. vertens* (R), *Frondicularia lustrata* (R), *Marginulina cf. prima* (R), *Nodosaria pachistika* (R), *N. phobytica* (R), *N. shublikensis* (R), *Tolypammina glareosa* (R), *Monotis* sp. (R-F).

The above listed species are characteristic of the Shublik Fm. of Triassic Age. This faunule is probably representative of a relatively clear water middle neritic to upper bathyal environment.

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7540-7860' Present T.D. (Con't.)

There is some lithologic evidence in sidewall core samples from 7806', 7822' and 7840' to suggest that we may be in the Ivishak Member of the Sadlerochit Formation below 7806 feet.

AGE: Triassic

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Richard E. Anderson