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May 10, 1977

See also : S.W. Coles (1978)

TO: Tetra Tech, Inc.

RE: Husky/U.S.N.
W. T. Foran #1
Sec. 13, 17N/2W, U.B.M.
North Slope, Alaska

FINAL MICROPALEONTOLOGY REPORT

Enclosed you will find a 1" to 100' faunal distribution log and three faunal checklists on the W. T. Foran #1 well. The conclusions presented in this report are based on the processing, picking and examination of 249 ditch samples, generally composited on 30 to 40 foot intervals and two (2) sidewall core samples. Twenty-seven (27) thin sections were prepared on 30 foot ditch intervals below 8080 feet. A generalized age summary of the well is provided below, along with a sample-by-sample faunal listing of the sidewall cores in an appendix at the end of the report.

500-1010'

This interval contains several long ranging Tertiary forms. Some of these forms are recorded from Miocene or younger strata in northern Alaska, and may represent caved occurrences from the upper 500 feet of this well.

AGE: Tertiary (Undifferentiated)
Probable Sagavanirktok Fm.

ENVIRONMENT: Probable Inner to Middle Neritic

RE: Husky/USN - W. T. Foran #1

1010-1580'

Although generally barren of Foraminifera, this interval does contain rare Cenosphaera spp. and Spongodiscus sp. This interval is probably Latest Cretaceous to Tertiary in age. These strata probably represent marginal marine and nonmarine deposition.

AGE:	Probable Latest Cretaceous to Tertiary
ENVIRONMENT:	Probable Nonmarine to Marginal Marine

1580-2450'

Haplophragmoides rota, H. bonanzaensis, Saccammina lathrami, Eoeponidella strombodes, Praebulimina venusae, Textularia gravenori, Verneuilinoides fischeri, Trochammina ribstonensis, T. albertensis, T. whittingtoni, Cenosphaera spp., Spongurus spp., Sethocyrtis sp., Archicorys sp., Theocorys sp., Dictyomitra spp., D. multicostata, Spongodiscus spp., S. cf. renillaeformis, Rhopalodictyum sp., Spongostaurus sp., Stylospongia sp., and Xiphosphaera sp.

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

RE: Husky/U.S.N. - W. T. Foran #1

2450-2840'

This interval is characterized by a significant reduction of fauna brought about by either a regression to poorer marine conditions or an increased sediment accumulation rate resulting in dilution of the above fauna. Due to the poor nature of the faunas in this interval, it is hard to establish its exact age. The Prince Creek Fm.-Seabee Fm. boundary probably lies within this interval. A single specimen of Hedbergella loetterlei, if not reworked, suggests that the Seabee Fm. top could be as high as 2570 feet.

AGE: Turonian to Coniacian
Seabee Fm. or Prince Crk. Fm.

ENVIRONMENT: Probable sediment diluted shallow Marine

2840-3650'

Hedbergella loetterlei, Saccammina lathrami, Haplophragmoides rota, Trochammina ribstonensis, Zonodiscus sp. A, Cenosphaera spp., Archicorys sp., Spongurus spp., and Spongodiscus spp. characterize this interval.

A top on the "Paper Shale" ("cutinized leaves") was found at 3410 feet. This point is probably at the top of or down in the Shale Wall Member of the Seabee Formation. This lower 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 short pulses of open marine radiolarian bursts.

RE: Husky/U.S.N. - W. T. Foran #1

2840-3650' (con't.)

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

ENVIRONMENT: Open Marine (starved basin)

3650-3770'

This fauna contains rare, possibly reworked, occurrences of Gaudryina canadensis, Trochammina umiatensis, Verneuilinoides borealis, and Haplophragmoides topagorukensis, along with continued occurrences of Haplophragmoides rota and Trochammina ribstonensis. 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)

3770-5950'

Haplophragmoides topagorukensis, H. cf. linki, H. gigas, H. cf. excavata, Ammobaculites fragmentarius, A. wenonahae, Marginulinopsis jonesi, Globulina prisca, Lenticulina macrodisca, L. topagorukensis, L. erecta, Trochammina umiatensis, T. mcmurrayensis, Miliammina manitobensis, Psamminopelta bowsheri, Saccammina lathrami, Praebulimina nanina, Vaginulina exilis, Globorotalites alaskensis,

RE: Husky/U.S.N. - W. T. Foran #1

3770-5950' (con't.)

Valvulineria loetterlei, Saracenaria dutroi, Dentalina? dettermani, Pseudobolivina rayi, Bathysiphon vitta, Verneuilinoides borealis, astrorhizids and Ditrupa cornu occur in this interval. The above association is typical of the Verneuilinoides borealis Faunal Zone and is Albian age. The environments represented by these moderately diverse assemblages were probably of relatively clear water middle to outer neritic depths.

AGE: Early Cretaceous (Albian)
Nanushuk Grp.-Upper Torok Fm.

ENVIRONMENT: Middle to Outer Neritic

5950-7380'

A pyritized radiolarian assemblage characterizes these strata together with continued occurrences of the above fauna. 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 Verneuilinoides borealis zone from the Gaudryina tailleuri zone, and is probably Aptian to early Albian in age. Due to the apparent large amount of cavings in this interval, an environmental interpretation is difficult. All that can be said about the environment of deposition is that it was marine and open to oceanic currents.

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

ENVIRONMENT: Open Marine

RE: Husky/U.S.N. - W. T. Foran #1

7380-7530'

Occurrences of Haplophragmoides goodenoughensis, H. cf. coronis, Ammobaculites erectus, Gaudryina milleri, G. leffingwelli, G. tappanae, Trochammina conicominuta, T. squamata, Pseudobolivina sp., Glomospirella arctica, Lithocampe cf. sp. N, arenaceous spp. (large, coarse) and abundant rounded frosted quartz floaters (Pebble Shale) suggest a Neocomian age for these strata. The sidewall core sample from 7510 feet suggests an earliest Neocomian (Berriasian) age for the strata at that point. A turbid middle to outer neritic depositional environment is suggested by this association.

AGE: Probable Neocomian
Probable Okpikruak Fm.

ENVIRONMENT: Probable Middle to Outer Neritic (turbid)

7530-7590'

The age of this interval is indeterminate. A lithologic change to a brown fine to medium-grained sandstone distinguishes this unit for the overlying sandy shale interval. Foraminifers are rare and probably represent caved specimens from the previous unit.

AGE: Indeterminate

ENVIRONMENT: Indeterminate

RE: Husky/U.S.N. _ W. T. Foran #1

7590-7650'

This very thin interval is distinguished on the basis of a couple of rare questionable occurrences of Monotis fragments. The lithology is somewhat obscured by well cement making its exact nature uncertain. Whether this interval belongs with the overlying indeterminate unit and contains some reworked Monotis fragments, or is a Triassic equivalent of the Shublik Fm., or else is Triassic and equivalent to the uppermost Sadlerochit Fm. occurring below it, is not certain. Since other occurrences of Monotis fragments in this area of NPR-4 have been within the Shublik Fm., we will suggest the possibility for a thin interval of Shublik Fm. in this well.

AGE: Possible Triassic
Possible Shublik Fm.

ENVIRONMENT: Indeterminate

7650-8200'

Faunal occurrences below 7650 feet are nearly nonexistent suggesting that these strata are predominantly nonmarine. Frequent glauconite and very rare agglutinated foraminifera in the bottom sample (8170-8200') indicate that the lowermost portion of this interval may be marginal marine. There was no lithologic evidence observed to substantiate the occurrence of any Echooka Member in this well.

AGE: Probable Permo-Triassic

ENVIRONMENT: Nonmarine to Marginal Marine

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8200-8590'

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 390 feet thick in this 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 8200 feet and 8500 feet are definitely Zone 21 in age. A Zone 20 call is made at 8500 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 8590' 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 Lisburne Group

ENVIRONMENT: Tidal to Outer Shelf (Carbonate Platform Suite)

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8590-8770'

This interval is characterized by a change to unfossiliferous brown and red-brown shale and siltstone with frequent caving of limestone from the overlying Lisburne Group. The age of this unit is here considered to be indeterminate since it could represent strata as old as early Mississippian or as young as early Pennsylvanian.

AGE: Indeterminate
(Probable Endicott Group)

ENVIRONMENT: Probable Nonmarine to Inner Shelf

8770-8864' T.D.

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

AGE: Indeterminate

ENVIRONMENT: Indeterminate

Interpreted by:

Michael B Mickey
M. B. Mickey

ANDERSON, WARREN & ASSOCIATES, INC.

Richard E Anderson
Richard E. Anderson

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APPENDIX

(Faunal lists and washed lithology descriptions for 2 sidewall core samples)

7510' SWC

Arenaceous spp. (lrg., crs.)(A), Gaudryina milleri (F), G. leffingwelli (F), G. tailleuri (C), G. tappanae (C), Gaudryinella irregularis (R), Glomospirella arctica (R), Thuramminoides sp. (F), Trochammina squamata (F), T. conicominuta (R), T. cf. topagorukensis (R), Cenosphaera sp. (R), glauconitic; C. spp. (F), pyritized; round frosted quartz floaters (A), pyrite (F).

AGE: Probable Neocomian (Berriasian)

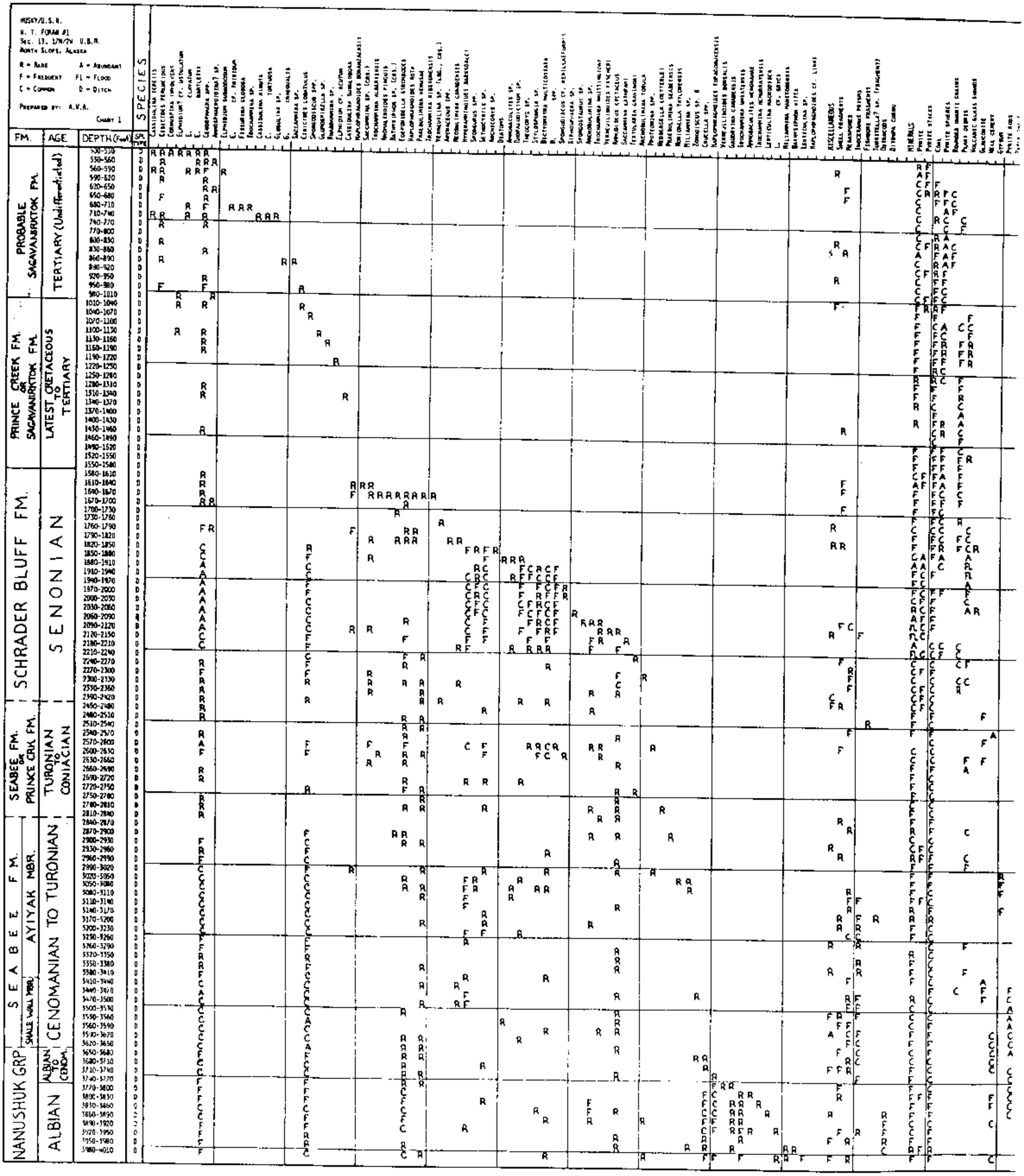
WASHED LITH: Dark brown sandy mudstone

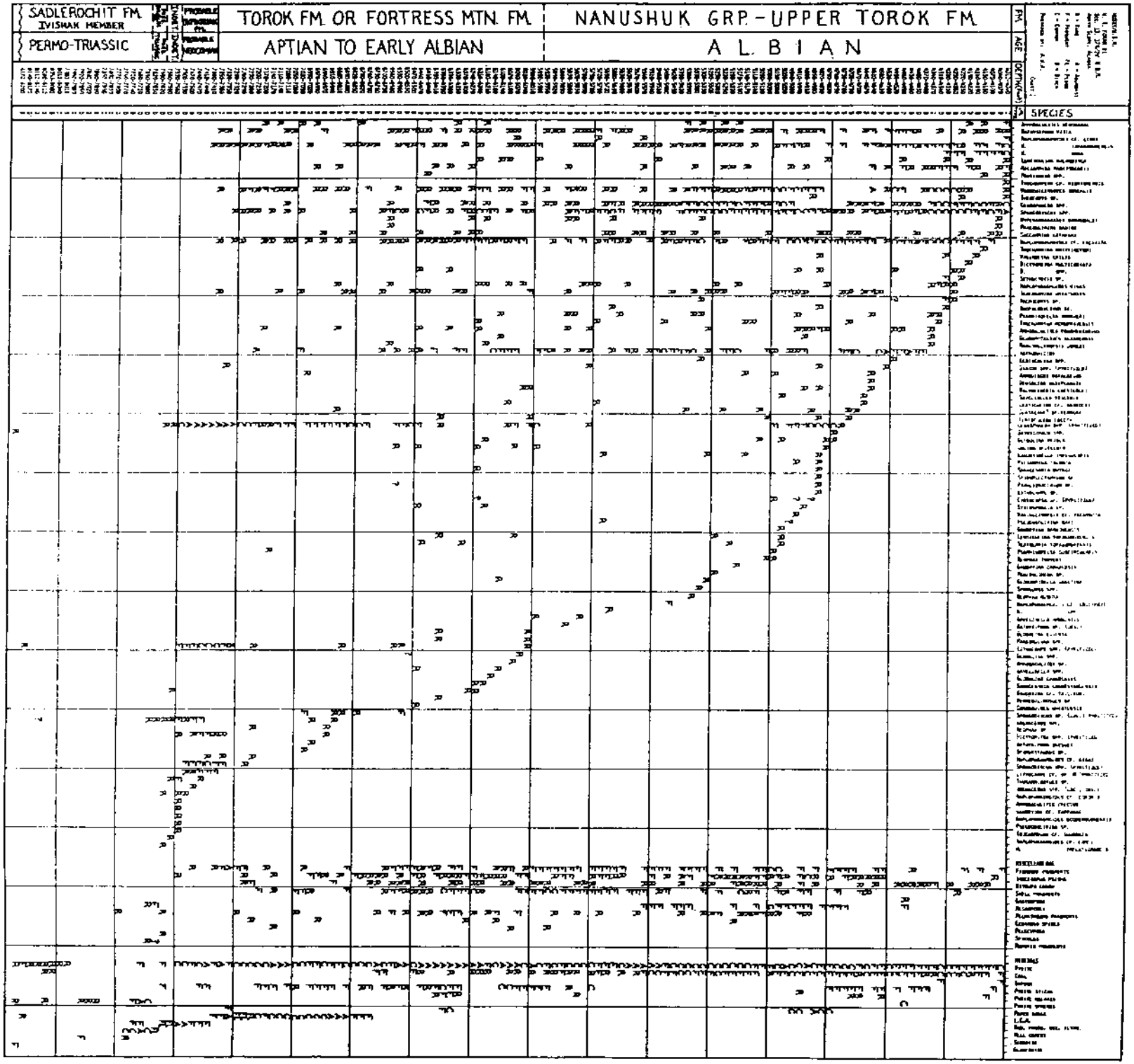
7551' SWC

Cenosphaera? sp. (R), glauconitic; Lithocampe sp. (R), pyritized; Inoceramus prisms? (R), glauconite (F), pyrite (C).

AGE: Indeterminate

WASHED LITH: Dark brown silty organic mudstone


HUSKY/U.S.N.
N. T. FORAN #1
Sec. 13, 17N/2W U.B.M.
North Slope, Alaska
R = Rare A = Abundant
F = Frequent FL = Flood
C = Common D = Ditch
Prepared by: A.K.A.
Chart 1
SPECIES
FM.
AGE
DEPTH (Feet)
SPL TYPE
PROBABLE SAGAVANIRKTOK FM.
TERTIARY (Undifferentiated)
PRINCE CREEK FM. OR SAGAVANIRKTOK FM.
LATEST CRETACEOUS TO TERTIARY
SCHRADER BLUFF FM.
SENONIAN
SEABEE FM. PRINCE CRK. FM.
TURONIAN TO CONIACIAN
SEABEE FM.
AYIYAK MBR.
SHALE WALL MBR.
CENOMANIAN TO TURONIAN
NANUSHUK GRP.
ALBIAN TO CENOM.
ALBIAN


SADLEROCHIT FM.
IVISHAK MEMBER
PERMO-TRIASSIC
TOROK FM. OR FORTRESS MTN. FM.
APTIAN TO EARLY ALBIAN
NANUSHUK GRP.–UPPER TOROK FM.
A L B I A N
FM.
AGE
SPECIES

HUSKY/U.S.N.

W. T. FORAN #1
SEC. 13, 17N/2W U.B.M.
NORTH SLOPE, ALASKA

R = RARE C = COMMON
F = FREQUENT D = DITCH

PREPARED BY: A.W.A.

CHART 3

FM.		AGE		DEPTH (Feet)
LISBURNE GROUP	WAHOO LIMESTONE	MIDDLE PENN.	ZONE 21	8200-8500
LISBURNE GROUP	WAHOO LIMESTONE	EARLY PENN.	ZONE 20	8500-8590
PROBABLE	ENDICOTT GRP.	INDET.		8590-8770
ARGILLITE		INDET.		8770-8864

FORAMINIFERA & ALGAE

DEPTH (Feet)	SPL. TYPE	Stylocodium sp.	Earlandia spp.	Pseudoglomospira sp.	Trepeilopsis sp.	Kamaena sp.	Biseriella parva	Monotaxinoides multivolutus	Neoarchaediscus incertus	Endothyra spp.	Calcisphaera laevis	Archaediscids	Priscella prisca	Asphaltina sp.	Calcisphaera pachysphaerica	Globivalvulina bulloides	Asteroarchaediscus sp.	Eoschubertella yukonensis	Pseudostaffella? sp.	Zellerina sp.	Stacheoides meandriformis	Planoendothyra rotayi	Miscellaneous	Chert	Coral wall debris	Birds eyes	Oolites	Ostracods
8200-8230	D	R																										
8230-8250	D	F	F	F	R	R																		F				
8280-8310	D		F	F			F	R	R																			
8310-8340	D		F	C	R		R	R		R														F	R			
8340-8360	D			C	F	R		R			F	R	R	R										F	R	R		
8370-8400	D	R	C	C	F	F					C		R		F	R								C			R	
8400-8430	D		F	F	R	F	R	R																F				
8440-8470	D			C	F	F	F			R	F	R	F			R	R	R	R	R	R						C	
8470-8500	D		F	C	F	R	F				F		F	R	R			?			F				R		R	R
8500-8530	D		C	F	F	R		R			F		R	F						R							R	
8530-8560	D		F	C		R	R			R	F		R		R					R								
8560-8590	D			F	F	R	F				F	R										R						
8590-8620	D		F	F	R		R				R			R														
8620-8650	D		F	F	R		R													R								
8650-8680	D		R	R	R	R																						
8680-8710	D			R	R															R								
8710-8740	D		R	R																					R			
8740-8770	D			R																								
8770-8800	D																											
8800-8830	D																											
8830-8850	D																											
8850-8860	D																											
8860-8864	D																											