

UNITED STATES DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

Availability of petrographic thin-sections  
from measured sections and wells in Early-  
to Late-Cretaceous Nanushuk Group rocks,  
National Petroleum Reserve in Alaska,  
North Slope, Alaska

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This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature. (~~Additional disclaimers where necessary.~~)

1. Anchorage, Alaska

A collection of thin sections from rocks of the Early to Late Cretaceous Nanushuk Group, North Slope, are available for study. The thin sections are from measured sections collected in 1977 and 1978, and from wells drilled within the boundaries of the National Petroleum Reserve in Alaska. The thin sections, which are predominantly sandstones, have been stained with sodium cobaltinitrite for potassium-feldspar and with alizarin red-s for calcite. They have been injected, under vacuum, with blue plastic dye in order to examine the pore space for diagenetic and porosity characteristics. The majority of the samples from measured sections have not undergone petrographic analysis. Details of the stratigraphy and locations of many of the surface samples are discussed in Huffman, Ahlbrandt, Pasternack, Fox and others and in Huffman, Ahlbrandt, Pasternack, Stricker, and others (1981). Discussions of the petrographic characteristics of the sandstones comprising selected measured sections and all of the well samples have been reported in the following publications:

- Bartsch-Winkler, Susan, and Huffman, A. Curtis, in preparation, Petrography of the Nanushuk Group and Torok Formation, in Gryc, George, editor, Geology of the National Petroleum Reserve Alaska, U.S. Geological Survey Professional Paper.
- Bartsch-Winkler, Susan, 1979, Textural and mineralogical study of some surface and subsurface sandstones from the Nanushuk Group, western North Slope, Alaska, in Ahlbrandt, T. S., ed., Preliminary geologic, petrologic, and paleontologic results of the study of the Nanushuk Group rocks, North Slope, Alaska: U.S. Geol. Survey Circular 794, p. 61-76.
- Bartsch-Winkler, Susan, and Huffman, A. C., 1979, Petrographic study of some surface and subsurface sandstone, Nanushuk Group, North Slope, Alaska: Geological Society of America Abstracts with Programs, Cordilleran Section, April, 1979.
- Bartsch-Winkler, Susan, and Huffman, A. C., 1980, Compositional variation in Nanushuk Group sandstones, Arctic North Slope, in (Albert, Nairn R. D., and Hudson, Travis, eds.) The United States Geologic Survey in Alaska: Accomplishments during 1980: U.S. Geol. Survey Circular 823-B, p. B -B.
- Bartsch-Winkler, Susan, and Huffman, A. Curtis, 1981, Petrography of the Nanushuk Group and Torok Formation, U.S. Geological Survey Open-File report 81-1222.
- Collins, F. R., 1958, Test wells, Meade and Kaolak areas, Alaska, with Micropaleontology of Meade test well 1 and Kaolak test well 1, northern Alaska, by H.R. Berquist: U.S. Geologic Survey Professional Paper 305-F., p. 341-376.
- Collins, F. R., 1958, Test wells, Topogoruk arrea, Alaska, with Micropaleontologic study of the Topagoruk test wells, northern Alaska, by H.R. Berquist: U.S. Geological Survey Professional Paper 305-D, p. 265-316.

- Collins, F. R., 1959, Test Wells, Square Lake and Wolf Creek areas, Alaska, with Micropaleontology of Square Lake test wells, northern Alaska, by H. R. Berquist: U.S. Geological Survey Professional Paper 305-H, p. 423-484. (Professional Paper 305, issued only as separate chapters under the general title, Exploration of Naval Petroleum Reserve No. 4 and adjacent areas, northern Alaska, part 5, sub-surface geology and engineering data.)
- Huffman, A. C., Ahlbrandt, T. S., Pasternak, Ira, Fox, J. E., Bartsch-Winkler, Susan, May, F. E., Scott, R. A., Materna, W. L., 1981, Measured sections of Cretaceous Nanushuk Group, undivided, western North Slope, Alaska: U.S. Geological Survey Open-file report 81-176.
- Huffman, A. C., Ahlbrandt, T. S., Pasternak, Ira, Stricker, G. D., Bartsch-Winkler, Susan, Fox, J. E., Scott, R. A., Materna, W. L., 1981, Measured sections of Cretaceous Nanushuk and Colville Groups, undivided, central North Slope, Alaska: U.S. Geological Survey Open-file report 81-177.
- Robinson, F.M., 1959, Test wells, Titaluk and Knifeblade areas, Alaska, with Micropaleontologic study of test wells in the Titaluk and Knifeblade areas, northern Alaska, by H. R. Berquist: U.S. Geological Survey Professional Paper 305-G, p. 377-422.
- Robinson, F. M., 1959, Test wells, Simpson area, Alaska, with a section on Core analyses, by S. T. Yuster: U.S. Geological Survey Professional Paper 305-J, p. 523-568.
- Robinson, F. M. 1959, Test well, Grandstand aarea, Alaska, with Micro-paleontologic study of Grandstand test well 1, northern Alaska, by H. R. Berquist: U.S. Geological Survey Professional Paper 305-E, p. 317-339.
- Robinson, F. M., 1958, Test wells, Gubik area, Alaska, with Micropaleontologic study of the Gubik test wells, northern Alaska, by H. R. Berquist: U.S. Geological Survey Professional Paper 305-C, p. 207-264.
- Robinson, F. M., 1956, Core tests and test wells, Oumalik area, Alaska, with Paleontology of test wells and core tests in the Oumalik area, Alaska, by H. R. Berquist: U.S. Geological Survey Professional Paper 305-A, p. 1-70.
- Robinson, F. M., 1964, Core tests, Simpson area, Alaska, with a section on Temperature measurement studies, by M. C. Brewer: U.S. Geological Survey Professional Paper 305-L, p. 654-730. (Professional Paper 305, issued only as separate chapters under the general title, Exploration of Naval Petroleum Reserve No. 4 and adjacent areas, northern Alaska, part 5, subsurface geology and engineering data.)

A map showing locations of the measured sections and wells from which the samples were collected and a listing of the sample numbers of available thin sections by measured section are shown in figure 1 and table 1, respectively.

The sets of thin sections will be sent out on 3-week loan. Loans will be made in the order that requests are received. The slides may be retained for study by the U.S. Geological Survey for up to three weeks between successive loans. There are no facilities for systematic on-site examination of the slides in Menlo Park, California.

Requests for loans should be directed to:

Irvin L. Tailleir  
Office of National Petroleum Reserve in Alaska  
U.S. Geological Survey, M.S. 87  
345 Middlefield Road.  
Menlo Park, CA 94025

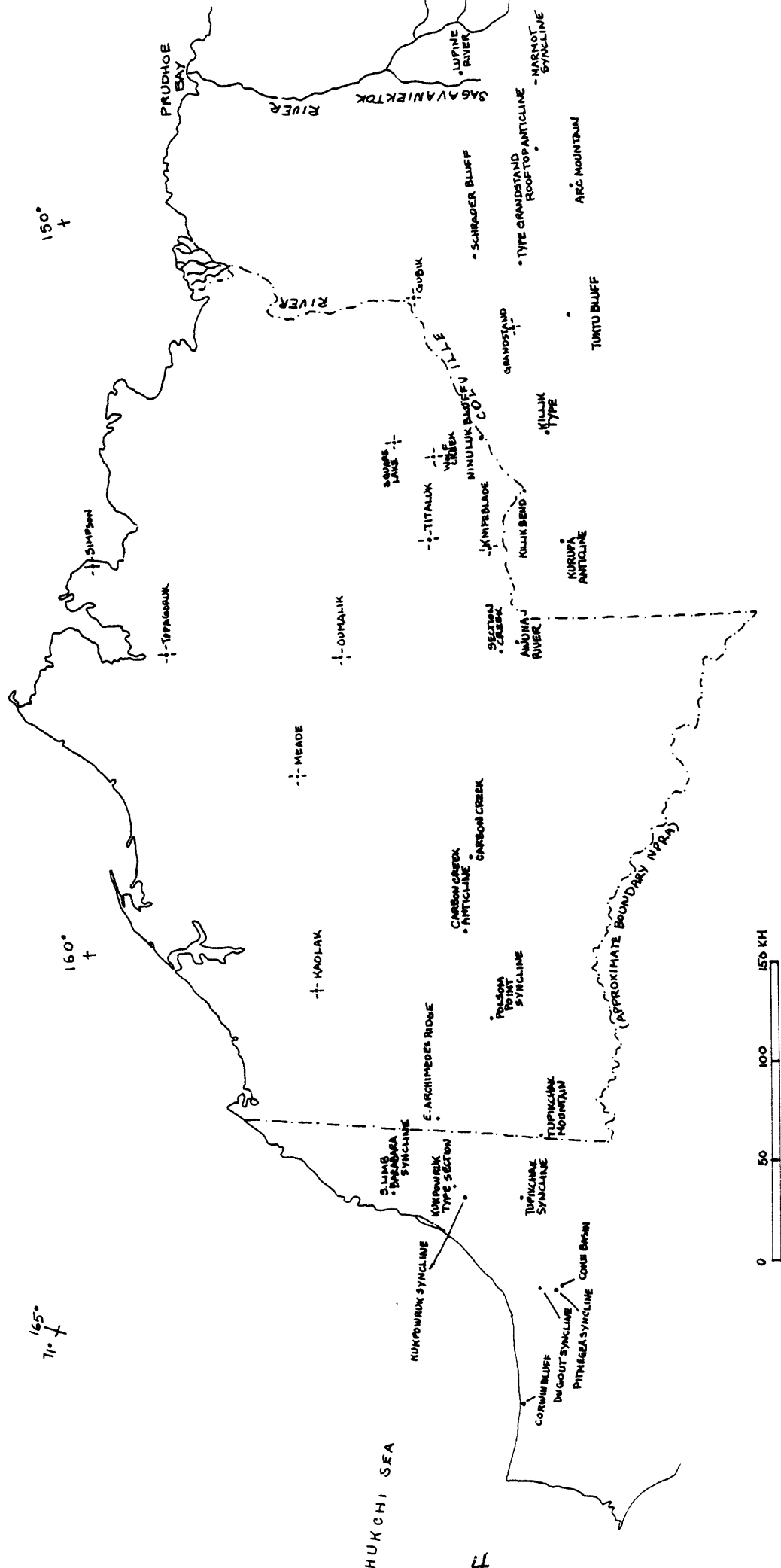


FIGURE 1. LOCATIONS OF MEASURED SECTIONS AND WELLS FROM WHICH PETROGRAPHIC SAMPLES LISTED IN TABLE 1 ARE TAKEN

TABLE 1. List of sample numbers of available thin sections.

Arc Mountain	Carbon Creek Anticline
78 AAh 6 AM	77 ACh 180
9	183
10	184
13	188
15	195
16	198
17	201
18	202
19	205
20	Carbon Creek
22	78 AAh 4 CC
25	5 "
26	6 "
27	8 "
30	9 "
31	10 "
32	12 "
41 LMU	13 "
E Archimedes Ridge	Coke Basin
77 AJF 5	77AAh 80
10 A,B,C	81
12	82
14	83 L
15	87
16 L,U	88
18	89
20	91
	92
Awuna River	94 A,B,C, Pebble conglomerate
78 AAh 1 AW	97 L,M
7 "	
9 "	
12 "	
S. Limb Barabara Syncline	Corwin Bluff
77 ACh 82	77AAh 29
83	31 A,B,C
85	33 Cobbles
87 L,U	39
89 L,U	40
90 L,U	42
92	43
93 L,M,U	46
97	48 A,B
98 L,U	76
100	77
101 L,M,U	100 A,B
104 L,U	101
108 L,M,U	103
110	104
113	105
116	106
120 L,U	107 A,B
123	110
77 ACh 126	111
127	112
129	113

TABLE 1 (continued).

Dugout Syncline

77ACh 1  
3  
5  
9  
10  
11  
13  
14  
15  
19

Folsom Point Syncline

77AAh 2 AR  
3 "  
5 "  
9 "  
12 "  
14 L,M,U AR  
14a pebbles AR  
15 AR  
16 AR  
17 AR  
23 AR

Type Grandstand

77 AAh 1 TG  
2  
4  
6  
7  
10  
11  
14  
15  
16  
17  
20 L,M,U  
21  
22  
23  
24  
26  
27  
29  
31  
32  
35  
36  
37  
38  
41  
42  
43  
47  
48

Killik Bend

77 AAh 1 KB  
2 KB  
3 A,B, KB  
4 L,M,U KB  
14 L,M,U KB  
17 KB

Killik Type Section

78 AAh 2 KT  
8  
9  
10  
11  
18  
19  
20  
21  
22  
24  
26

Kukpowruk Syncline  
(Amatusuk River)

77 AAh 118  
120  
122  
125

Kukpowruk Type Section

77 AAh 151 L,M,U  
153 L,U,B,C  
154a L,U  
154  
156  
157 L,M,U, U<sub>2</sub>  
161  
163 L,M,U  
167 L,U  
171 L,M,U  
174  
177  
178  
179

TABLE 1 (continued).

Kurupa Anticline  
78 ACh 1 KA

- 4
- 7
- 9
- 11
- 12
- 13
- 15
- 16
- 17
- 18
- 20
- 21
- 23
- 24
- 25
- 26
- 27
- 28
- 29
- 30
- 31
- 32
- 33
- 35
- 37 A,B
- 40
- 43
- 44
- 46
- 47
- 48
- 49
- 53
- 54
- 55
- 57
- 59
- 61
- 62
- 63
- 64
- 67
- 70
- 71
- 72
- 73
- 74
- 76
- 78
- 79
- 80
- 103
- 78ACh 108
- 113
- 116

Lupine River  
78 APE 3 LR

- 5
- 7
- 8
- 11
- 14 L,U
- 15
- 17
- 18
- 19
- 20 L,U
- 21
- 22

Marmot Syncline  
78 ACh 1 MS

- 10
- 14
- 16
- 18
- 20
- 24, 24A
- 25
- 26
- 28
- 29
- 30
- 31
- 32
- 34
- 35
- 37
- 38
- 39
- 40
- 41
- 43
- 44
- 45
- 46
- 48
- 51
- 52
- 53
- 54
- 56

Niakogen Tongue  
78 ARS 1 NT

- 2
- 4
- 5
- 7



Ninuluk Bluff

77 ACh 251  
261 L,U  
265 L,M,U  
266 L,M,U  
279  
282 L,M,U  
294

Pitmegea Syncline

77 ACh 21  
22  
23  
28  
29  
30

Rooftop Anticline

78 ACh 1 RT  
3  
11  
14  
16  
17  
18  
19

Schrader Bluff

78 ASg 1 SB  
6  
7  
8  
12  
18  
20  
21  
23  
26  
29  
32  
35  
37  
39  
40  
41

Section Creek

78 AAh 1 (A)SC  
5  
6  
8

Tuktu Bluff

77 AAh 11 TB L perpendicular  
L parallel  
U

12  
13 L,U  
14  
16  
17  
19  
20  
21  
23  
25  
30  
32

78 AAh 35 L,U

37 L,M,U  
38 L,M,U  
39 L,M,U  
41 L,U  
43 L,M,U  
45 L,U pebbles  
47 L pebbles  
48 L,M,U  
49 L,U

Tupikchak Mountain

77 AJF 23  
26 L,M,U  
28  
30  
32 L,U  
36 L,U  
37 L,M,U  
39 L,M,U  
42 L,A pebbles, M,U  
44  
47 L,M,U  
52 L,M,U,A pebbles

Tupikchak Syncline

77 ACh 34  
35 A,B  
38  
40  
48  
52  
55  
58  
59  
60  
61  
62  
64

Subsurface Samples

Kaolak 1(937)  
Kaolak 1(2453)  
Kaolak 1(3187)  
Kaolak 1(4078)  
Meade 1(2953)  
Meade 1(4133)  
Oumalik 1(979-984)  
Oumalik 1(1606)  
Oumalik 1(3260)

Knifeblade 2A(172)  
Knifeblade 2A(792)  
Knifeblade 2A(1557)  
Titaluk 1(539)  
Titaluk 1(2675)  
Titaluk 1(3004)  
Titaluk 1(3431)  
Wolf Creek 1(867)  
Wolf Creek 3(1553)  
Wolf Creek 3(2050)  
Wolf Creek 3(2532)  
Square Lake (1916)  
Square Lake (3036)  
Square Lake (3480)  
Grandstand (364-69)  
Grandstand (862-82)  
Gubik 2(3529)  
Gubik 2(3822)  
Simpson (829)  
Topagoruk 1(603)  
Topagoruk 1(1204)