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AVAILABILITY OF PALYNOMORPH AND FORAMINIFERA MICROSCOPE SLIDES FROM TEST WELLS OF NATIONAL PETROLEUM RESERVE IN ALASKA: GROUP II

By

Roger J. Witmer

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AVAILABILITY OF PALYNOMORPH AND FORAMINIFERA MICROSCOPE SLIDES FROM TEST WELLS OF NATIONAL PETROLEUM RESERVE IN ALASKA: GROUP II

Roger J. Witmer

SUMMARY

The first group of palynomorph (dinoflagellates, acritarchs, pollen, and spores) and Foraminifera microscope slides prepared from 29 test and field wells drilled during the National Petroleum Reserve in Alaska (N.P.R.A.) program and the earlier Naval Petroleum Reserve No. 4 (N.P.R.-4) program were made available for examination in Open-File Report No. 80-193. The Reserve became officially known as N.P.R.A. on June 1, 1977, when the jurisdiction of N.P.R.-4 was transferred from the Department of the Navy to the Department of the Interior (U. S. Geological Survey). Palynomorph microscope slides processed from well cuttings, sidewall cores, and conventional cores of an additional nine test wells may now be borrowed one well at a time for a period of three weeks from the U. S. Geological Survey. Both palynomorph and Foraminifera slides may also be examined on-site at the laboratory of the subcontractor Anderson, Warren and Associates Micropaleontology Consultants of San Diego, California. Slides prepared from any subsequently drilled test wells will be announced in future open-file reports.

Palynology and Foraminifera micropaleontological reports prepared by Anderson, Warren, and Associates for the test and field wells included in this report and the previous open-file report can now be purchased from the National Geophysical and Solar-Terrestrial Data Center in Denver, Colorado.

INTRODUCTION

Naval Petroleum Reserve No. 4 (N.P.R.-4) was established for an area of about 37,000 square miles in northern Alaska in 1923. Thirty-six test and field wells and 45 core tests were drilled in and adjacent to the Reserve from 1944 to 1953, as well as one replacement well at Barrow in 1955 (Gryc, 1970). Beginning again in 1964 and continuing until 1977, seventeen additional test and field wells were completed. The jurisdiction of N.P.R.-4 was transferred from the Department of the Navy to the Department of the Interior (U.S. Geological Survey) on June 1, 1977, and the Reserve was officially renamed the National Petroleum Reserve in Alaska (N.P.R.A.). Drilling was contracted to Husky Oil N.P.R. Operations, Inc., in mid 1975. To date Husky has drilled 21 test wells and eight field wells in the Reserve, six test wells and two field wells under the N.P.R.-4 program and 15 test wells and six field wells during the N.P.R.A. program. Two other test wells are scheduled to be completed by late spring of 1981. There is a possibility of additional test wells being drilled in 1981.

The first group of palynomorph and Foraminifera microscope slides prepared from 29 test and field wells completed under the N.P.R.-4/N.P.R.A. programs were released for loan in Open-File Report No. 80-193. The present report announces the availability of palynomorph and Foraminifera microscope slides prepared from well cuttings (ditch), sidewall cores, and

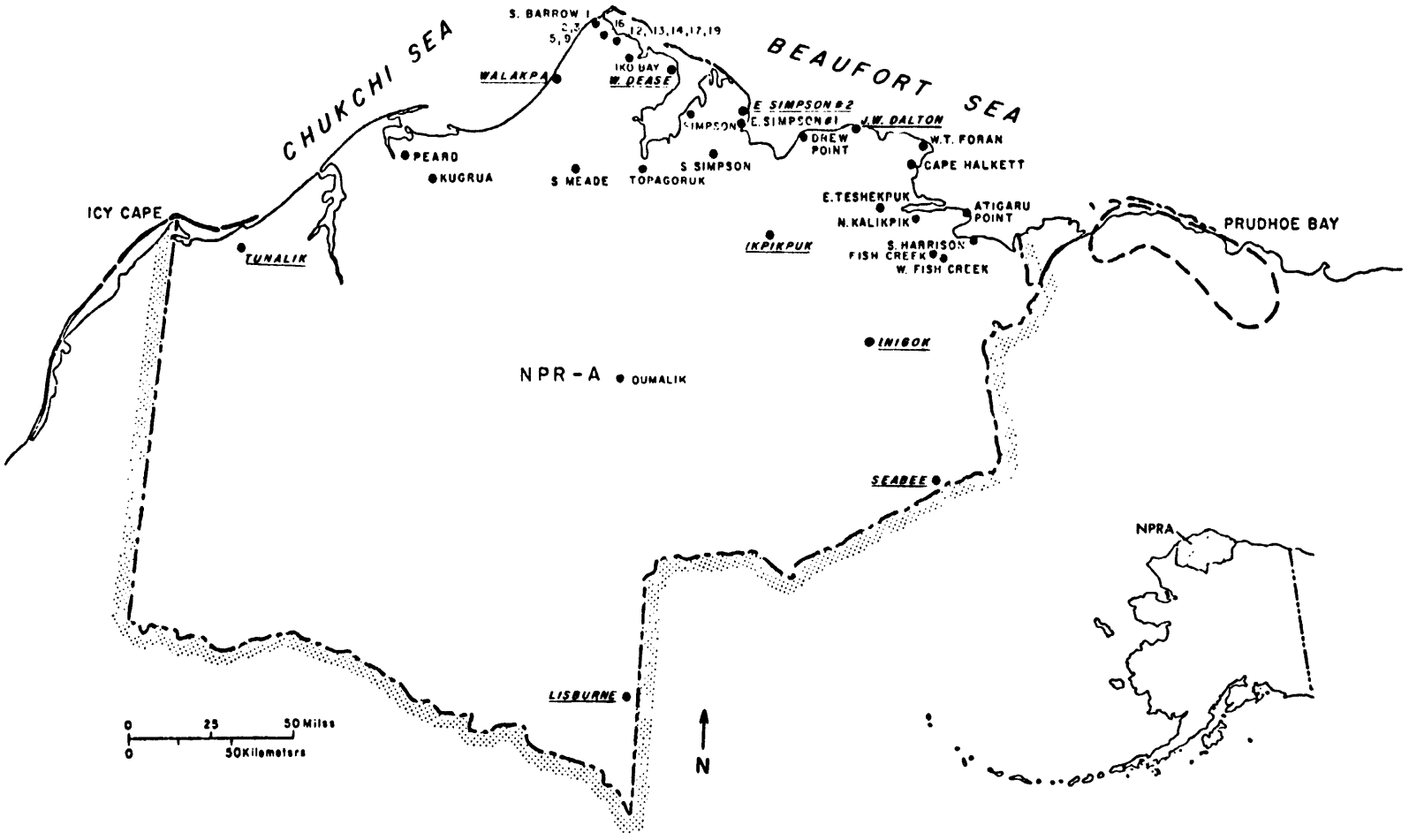

Figure 1. Map of N.P.R.A. showing locations of 37 test and field wells.

conventional cores from an additional nine N.P.R.A. test wells. Figure 1 is a map of the Reserve showing the locations of all the wells drilled to date from which slides are available on open-file; underlined well names are those with slides being announced in this report.

With the exception of the Lisburne well which was drilled in the southernmost Arctic foothills of the Brooks Range, all wells listed in this report and in the previous open-file report are located in the Arctic coastal plain and northern Arctic foothills of the Reserve. They have penetrated varying portions of the generalized stratigraphic section shown in Figure 2. Publications discussing the location, lithology, and stratigraphy of test wells, field wells, and core tests of the N.P.R.-4 program include the following: Collins (1958a-c; 1959; 1961), Collins and Robinson (1967), Robinson (1956; 1958a,b; 1964); and Robinson and Collins (1959). The foraminiferal distributions for these wells and core tests are recorded in Bergquist (1956; 1958a,b; 1966). The general geologic framework, in addition to the well data, of N.P.R.A. is summarized by Carter et al. (1977). Additional references can be found in bibliographies compiled by Mather and Trollman (1970) and Carter et al. (1975).

PREVIOUSLY RELEASED MICROSCOPE SLIDES

Naval Petroleum Reserve No. 4 Microscope Slides

Palynomorph microscope slides prepared from cores of test wells, field wells, and core tests drilled during the N.P.R.-4 program (see Table 1-A) were released for loan by Scott (1967a,b;

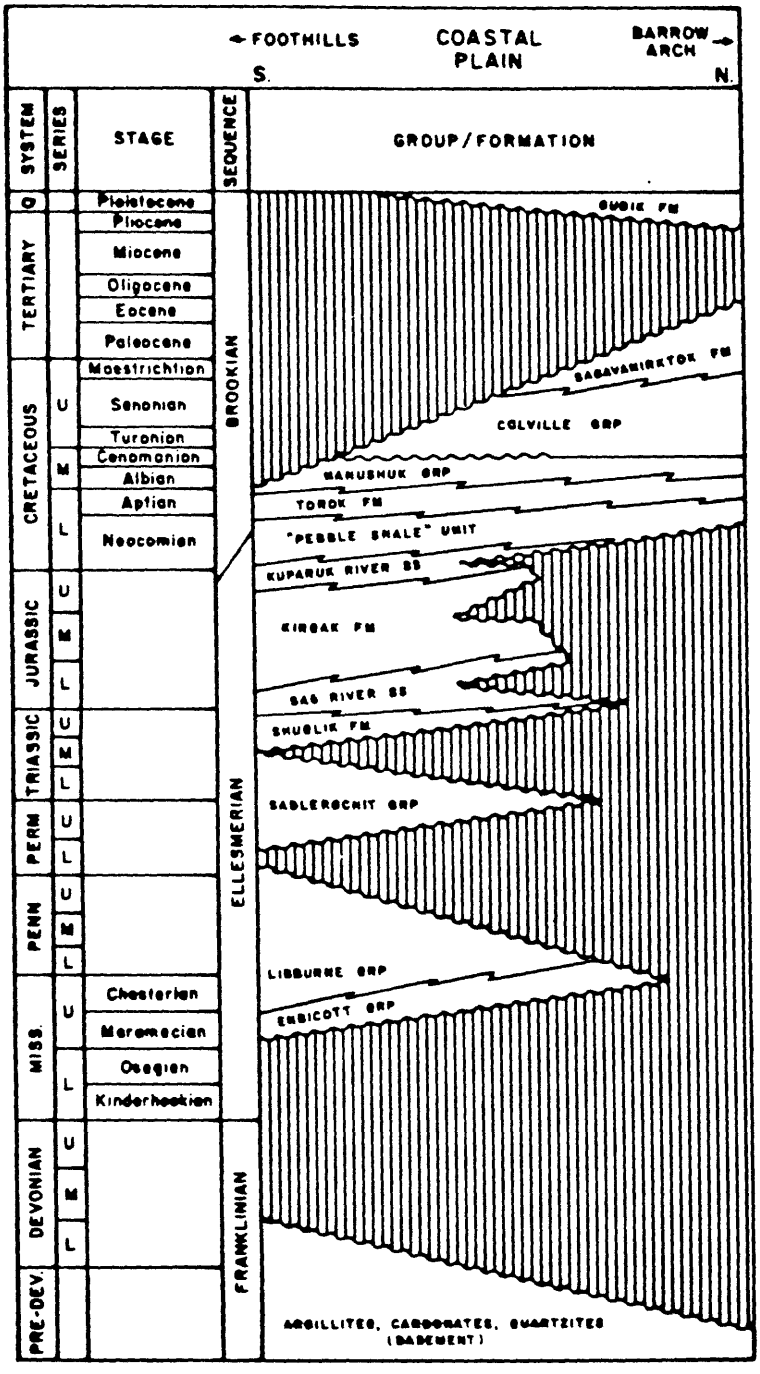

Figure 2. Generalized north-south stratigraphic section of N.P.R.A. coastal plain.

Table 1(A). Test wells, field wells, and core tests of N.P.R.-4 program with previously released palynomorph microscope slides (see references Scott (1967a - 1970b) of this report).

Arcon Barrow Core Test No. 1
Avak Field Well No. 1
S. Barrow Field Well Nos. 1, 2, 3, 4
Fish Creek Test Well No. 1
Grandstand Test Well No. 1
Gubik Test Well Nos. 1, 2
Kaolak Test Well No. 1
Knifeblade Test Well Nos. 1, 2, 2A
Meade Test Well No. 1
Oumalik Test Well No. 1
E. Oumalik Test Well No. 1
Sentinel Hill Core Test No. 1
Simpson Core Test Nos. 13, 14, 21, 25, 30, 30A
Simpson Test Well No. 1
N. Simpson Test Well No. 1
Skull Cliff Core Test No. 1
Square Lake Test Well No. 1
Titaluk Test Well No. 1
Topagoruk Test Well No. 1
E. Topagoruk Test Well No. 1
Umiat Test Well Nos. 1, 2, 3, 8, 9, 11
Wolf Creek Test Well Nos. 1, 2, 3

Table 1(B). Test wells and field wells of N.P.R.-4/N.P.R.A. programs with previously released palynomorph and Foraminifera microscope slides (see Open-File Report No. 80-193).

Atigaru Point Test Well No. 1
S. Barrow Field Well Nos. 1, 2, 3, 5, 9, 12, 13, 14, 16, 17, 19
Cape Halkett Test Well No. 1
Drew Point Test Well No. 1
Fish Creek Test Well No. 1
W. Fish Creek Test Well No. 1
S. Harrison Bay Test Well No. 1
Iko Bay Field Well No. 1
N. Kalikpik Test Well No. 1
Kugrua Test Well No. 1
S. Meade Test Well No. 1
Oumalik Test Well No. 1
Peard Bay Test Well No. 1
E. Simpson Test Well No. 1
Simpson Test Well No. 1
S. Simpson Test Well No. 1
E. Teshekpuk Test Well No. 1
Topagoruk Test Well No. 1
W. T. Foran Test Well No. 1

1968a-j; 1969a-f; 1970a,b). All samples were processed and slides prepared by the U.S. Geological Survey in Denver, Colorado. Requests for loans of these N.P.R.-4 palynomorph slides should be addressed to U.S. Geological Survey, Paleontology and Stratigraphy Branch, Denver Federal Center, Denver, Colorado 80225 (Attn: Richard A. Scott). Foraminiferal slides are not presently available for loan.

National Petroleum Reserve in Alaska Microscope Slides (Group I Release)

A total of over 10,200 palynomorph and Foraminifera microscope slides from ditch and sidewall/conventional cores of 29 N.P.R.-4/N.P.R.A. test and field wells were released for examination in Open-File Report No. 80-193. This publication may be obtained from U.S. Geological Survey, Open-File Services Section, Branch of Distribution, Box 25425, Denver, Colorado 80225 (paper copy $3.00/microfiche $3.50) or other distribution centers as listed in New Publications of the Geological Survey, List 859, February 1980. Table 1-B lists the wells with available slides and the map in Figure 1 shows the well locations. Loan and on-site examination policy for these slides is the same as is set forth in this report.

NATIONAL PETROLEUM RESERVE IN ALASKA MICROSCOPE SLIDES: GROUP II

Introduction

Rock samples of well cuttings, sidewall cores, and conven-

tional cores from the nine test wells shown underlined on the map in Figure 1 have been processed for palynomorphs and Foraminifera by the subcontractor Anderson, Warren, and Associates Micropaleontology Consultants of San Diego, California. Microscope slides prepared from these samples are now available for loan as described below.

Palynomorph Microscope Slides

Palynomorph assemblages, which may include both marine dinoflagellates and acritarchs and terrestrial plant pollen grains and spores, were extracted from the rock samples using standard maceration procedures. Sediments were treated with HCl (cold and hot), HF, and HNO_3, and then sieved with a 10 micrometer mesh. Cellosize was used to mount the unstained palynomorphs on the coverslips, which were in turn bonded to the glass slides with Coverbond. If sufficient residue was present, four microscope slides were prepared from the ditch and/or sidewall and conventional core samples.

The nine test wells yielded approximately 2,750 palynomorph microscope slides. Refer to Table 2 (p. 12-14) for a listing of the types of samples and the number of slides for each of the well depth intervals (in feet) sampled.

Foraminifera Microscope Slides

Standard techniques were employed to extract the Foraminifera from the rock samples. Sediments were first boiled in Quaternary-O solution and then washed over 20 and 200 mesh screens. Picked slides and thin-sections were prepared from

ditch and/or sidewall and conventional core samples. Some slides were made from well cuttings for lithologic analysis. Typically one slide was prepared for each sample.

The nine test wells of this report yielded over 6,200 Foraminifera microscope slides. The numbers of the various types of slides (i.e., picked, thin-sections, and lith) prepared from ditch and sidewall/conventional cores for each of the well depth intervals sampled are given in Table 2 (p.12-14).

Loan and On-Site Examination Policy

Anderson, Warren, and Associates have prepared four nearly identical sets of palynomorph microscope slides. One of these sets is being made available for loan directly from the U. S. Geological Survey, Office of National Petroleum Reserve in Alaska, Mail Stop 87, 345 Middlefield Road, Menlo Park, California 94025 (Attn: Roger J. Witmer); telephone (415) 323-8111, extension 2138. These slides may be borrowed one well at a time for a period of three weeks; requests for loan should be made by letter. To insure as safe as possible transport, slides will be shipped by certified or registered mail and should be returned under similar safeguard. At the present time, our O.N.P.R.A. facilities cannot accomodate on-site study of the palynomorph slides.

A second set of palynomorph slides may be examined on-site at the laboratory of the subcontractor: Anderson, Warren, and Associates, Inc., 11526 Sorrento Valley Road, Suite G, San

Diego, California 92121; telephone (714) 755-1524. Microscopes will not be available for use at these facilities. Interested individuals or companies should contact Anderson, Warren, and Associates directly in regard to available times and office space fees.

One of the two remaining sets of palynomorph slides will become part of the permanent collections of the U. S. Geological Survey, and the other will remain housed at Anderson, Warren, and Associates as a reference collection for the duration of the N.P.R.A. program.

The single set of Foraminifera slides is being stored at Anderson, Warren, and Associates until the N.P.R.A. program is terminated, at which time it too will become part of the U. S. Geological Survey permanent collections. Consequently, these slides may only be examined on-site at the subcontractor's facilities at the present time. Arrangements to study these slides should be made directly through Anderson, Warren, and Associates.

Additional microscope slides from future test wells will be announced in upcoming U. S. Geological Survey open-file reports.

PALYNOLOGY AND FORAMINIFERA REPORTS

Anderson, Warren, and Associates Micropaleontology Consultants of San Diego, California, have prepared palynology and Foraminifera micropaleontological reports and species

distribution (range) charts based on the study of the microscope slides released under Open-File Report No. 80-193 and the present report. Palynology reports discuss the palynomorph assemblages of dinoflagellates, acritarchs, pollen, and spores. The Foraminifera reports are primarily analyses of Foraminifera, but include Radiolaria and other observed miscellaneous microfossils, minerals, and rock fragments as well. Both types of reports include species lists, paleontological stages and zonules, and inferred paleoenvironments for specified well depth intervals, in addition to detailed species distribution charts with relative abundances noted.

Inquiries regarding purchase of these reports and charts (available in paper copy and microfilm) should be addressed to: National Geophysical and Solar-Terrestrial Data Center (D621), NOAA/EDIS/NGSDC, Boulder, Colorado 80303; telephone (303) 499-1000, extension 6338.

N.P.R.A. TEST WELL	LOCATION	PENETRATION	PALYNOMORPH MICROSCOPE SLIDES			FORAMINIFERA MICROSCOPE SLIDES			
(A.P.I. No.)	Latitude Longitude Sec.Twp.Rge.	Total Depth Deepest Horizon Date Completed	Depths	Type Sample	No. Slides	Depths	Type Sample	Type Slide	No. Slides
J. W. DALTON No. 1 (50-279-20006)	Lat. 70°55'14"N Long. 153°08'15"W Sec. 14, T18N, R5W	9,367' Argillite Basement (Devonian/older) August,1979	90-9360' 3503-8166' 8081-8543.5' 7653-8450'	Ditch Core Core Sidewall	103 100 70 5	90-8530' 8290-9360' 8320-9360' 3503-8093' 8317-8543.5' 7653-7790' 8286-8450'	Ditch Ditch Ditch Core Core Sidewall Sidewall	Picked Thin Section Lith Picked Thin Section Picked Thin Section	282 36 34 112 58 4 2
W. DEASE No. 1 (50-023-20014)	Lat. 71°09'33"N Long. 155°37'45"W Sec. 21, T21N, R14W	4,170' Argillite Basement (Devonian/older) March, 1980	110-4150' 600-4003.5' 766-4061'	Ditch Core Sidewall	43 123 24	110-4150' 600-4003.5' 766-4061' 4150-4151.5'	Ditch Core Sidewall Core	Picked Picked Picked Thin Section	127 121 24 2
IKPIKPUK No. 1 (50-279-20004)	Lat. 70°27'20"N Long. 154°19'53"W Sec. 25, T13N, R10W	15,481' Argillite Basement (Devonian/older) February, 1980	100-15480' 2935-12753' 5450-11293'	Ditch Core Sidewall	173 122 33	100-11740' 11740-15480' 11290-15480' 2930-11135' 11718-15466' 5450-11058'	Ditch Ditch Ditch Core Core Sidewall	Picked Lith Thin Section Picked Thin Section Picked	387 128 143 130 21 32
INIGOK No. 1 (50-279-20003)	Lat. 70°00'17"N Long. 153°05'57"W Sec. 34, T8N, R5W	20,102' Kekiktuk Fm. (Mississippian) May. 1979	110-20090' 2632-20092' 8853-14375'	Ditch Core Sidewall	231 339 17	110-13890' 13890-20090' 13890-20090' 2632-13880' 14020-20092' 14164-14375' 12172-12972'	Ditch Ditch Ditch Core Core Sidewall Sidewall	Picked Lith Thin Section Picked Thin Section Thin Section Picked	467 212 212 294 45 2 7

Table 2. Inventory of N.P.R.A. palynomorph and Foraminifera microscope slides (Group II release).

N.P.R.A. TEST WELL	LOCATION	PENETRATION	PALYNOMORPH MICROSCOPE SLIDES			FORAMINIFERA MICROSCOPE SLIDES			
(A.P.I. No.)	Latitude Longitude Sec.Twp.Rge.	Total Depth Deepest Horizon Date Completed	Depths	Type Sample	No. Slides	Depths	Type Sample	Type Slide	No. Slides
LISBURNE No. 1 (50-137-20003)	Lat. 68°29'05"N Long. 155°41'36"W Sec. 17, T11S, R16W	17,000' Lisburne Group (Mississippian) June, 1980	130-17000' 1554-16996.5'	Ditch Core	190 126	130-8010' 8010-8550' 8550-9800' 9800-10840' 10840-11970' 11970-13340' 13340-13730' 13730-14390' 14390-14600' 14600-15320' 15320-15410' 15410-16200' 16200-16370' 16370-17000' 7270-17000' 1554-16996.5' 8038-16996.5'	Ditch Ditch Ditch Ditch Ditch Ditch Ditch Ditch Ditch Ditch Ditch Ditch Ditch Ditch Ditch Core Core	Picked Lith Picked Lith Picked Lith Picked Lith Picked Lith Picked Lith Picked Lith Thin Section Picked Thin Section	263 18 44 36 40 46 13 22 7 26 3 28 6 22 292 69 112
SEABEE No. 1 (50-287-20007)	Lat. 69°22'49"N Long. 152°10'31"W Sec. 5, T1S, R1W	15,611' Pebble Shale Unit (Neocomian) April, 1980	115-15610' 5391-14604'	Ditch Core	174 62	115-15610' 5391-14604'	Ditch Core	Picked Picked	521 62
E. SIMPSON No. 2 (50-279-20007)	Lat. 70°58'43"N Long. 154°40'26"W Sec. 23, T19N, R11W	7,505' Argillite Basement (Devonian/older) March, 1980	90-7504' 2377-7346' 540-6400'	Ditch Core Sidewall	83 95 22	90-7504' 6810-7504' 2377-7196' 7167-7346' 540-6400'	Ditch Ditch Core Core Sidewall	Picked Thin Section Picked Thin Section Picked	247 24 55 51 22

Table 2 (con't.). Inventory of N.P.R.A. palynomorph and Foraminifera microscope slides (Group II release).

N.P.R.A. TEST WELL	LOCATION	PENETRATION	PALYNOMORPH MICROSCOPE SLIDES			FORAMINIFERA MICROSCOPE SLIDES			
(A.P.I. No.)	Latitude Longitude Sec.Twp.Rge.	Total Depth Deepest Horizon Date Completed	Depths	Type Sample	No. Slides	Depths	Type Sample	Type Slide	No. Slides
TUNALIK No. 1 (50-301-20001)	Lat. 70°12'21"N Long. 161°04'09"W Sec. 20, T10N, R36W	20,335' Argillite Basement (Devonian/older) January, 1980	90-20330' 3280-17888' 7350-11317'	Ditch Core Sidewall	227 149 19	90-17550' 17550-20330' 16930-20330' 7350-11317' 3280-16947' 17135.5-17888' 17135.5-17888'	Ditch Ditch Ditch Sidewall Core Core Core	Picked Lith Thin Section Picked Picked Lith Thin Section	605 94 116 17 121 28 28
WALAKPA No. 1 (50-023-20013)	Lat. 71°05'58"N Long. 156°53'04"W Sec. 9, T20N, R19W	3,666' Argillite Basement (Devonian/older) February, 1980	90-2070' 257-3420' 2245-3615'	Ditch Core Sidewall	42 169 13	90-3650' 257-3420' 3656-3666' 2245-3615'	Ditch Core Core Sidewall	Picked Picked Thin Section Picked	119 165 4 13

Table 2 (con't.). Inventory of N.P.R.A. palynomorph and Foraminifera microscope slides (Group II release).

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