

Vitrinite reflectance data of cuttings (5200' - 15310') and of core (7902' - 7918') from the Atlantic Richfield Co. Itkillik River Unit No. 1 well.

Received 27 September 1990.

Total of 27 pages in report

**Alaska Geologic Materials Center Data Report No. 170**

File Name: 90016073  
 Channel Name: Point 9  
 Description: 90016073 #1 Itkillik Rvr 5,200- 400 Alaska ker VI90

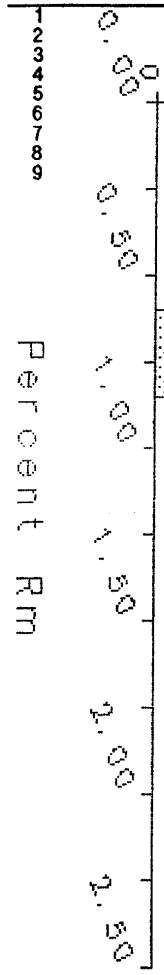
Min: 0.62  
 Max: 0.82  
 Mean: 0.73  
 StDev: 0.07



90016073 #1 Itkillik Rvr  
 Mean: 0.73  
 SD: 0.07

Pt. X-Pos Y-Pos Z-Pos Meas1 Meas2 Ratio Conc.

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				0.79			
2				0.82			
3			12	0.76			
4	0.00	4	8	0.67			
5				0.62			
6				0.78			
7				0.70			
8				0.79			
9				0.66			



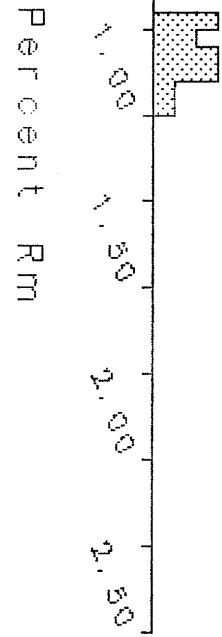
File Name: 90016074  
 Channel Name: Point 9  
 Description: 90016074 #1 Itkiilik Rvr 5,600- 800 Alaska ker VI90



Min: 0.70  
 Max: 0.96  
 Mean: 0.82  
 StDev: 0.08

90016074  
 #1 Itkiilik Rvr  
 0.82 SD: 0.08

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				0.72			
2				0.70			
3			12	0.86			
4		4	20	0.96			
5				0.77			
6				0.85			
7				0.87			
8				0.90			
9				0.77			
10				0.73			
11				0.85			
12				0.91			
13				0.82			



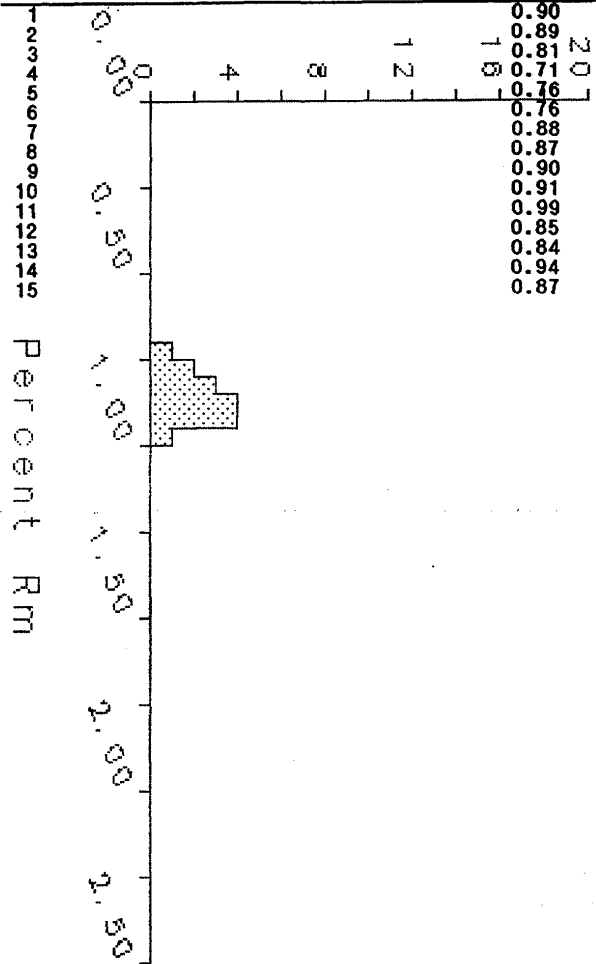
File Name: 90016075  
 Channel Name: Point 9  
 Description: 90016075 #1 Itkiilik Rvr 6,000- 200 Alaska ker VI90

Min: 0.71  
 Max: 0.99  
 Mean: 0.86  
 StDev: 0.07



90016075 #1 Itkiilik Rvr  
 M: 0.86  
 SD: 0.07

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				0.90			
2				0.89			
3			12	0.81			
4		4	12	0.71			
5				0.76			
6				0.76			
7				0.88			
8				0.87			
9				0.90			
10				0.91			
11				0.99			
12				0.85			
13				0.84			
14				0.94			
15				0.87			



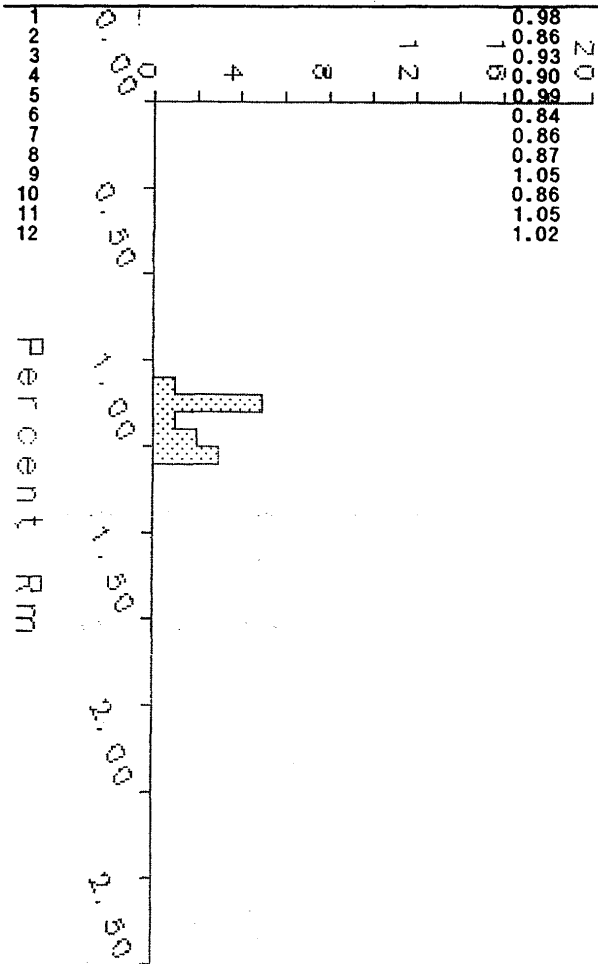
File Name: 90016076  
 Channel Name: Point 9  
 Description: 90016076 #1 Itkillik Rvr 6,400- 600 Alaska ker VI90



Min: 0.84  
 Max: 1.05  
 Mean: 0.93  
 StDev: 0.08

90016076  
 #1 Itkillik Rvr  
 SD: 0.08

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				0.98			
2				0.86			
3				0.93			
4				0.90			
5				0.99			
6				0.84			
7				0.86			
8				0.87			
9				1.05			
10				0.86			
11				1.05			
12				1.02			



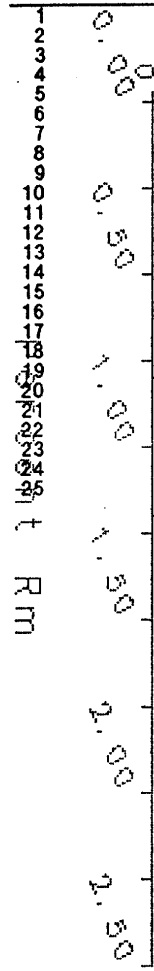
File Name: 90016077  
 Channel Name: Point 9  
 Description: 90016077 #1 Itkillik Rvr 6,800- 7,000 Alaska ker V190

Min: 0.84  
 Max: 1.19  
 Mean: 1.01  
 StDev: 0.10

00016077 #1 Itkillik Rvr  
 Mean: 1.01  
 SD: 0.10

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
-----	-------	-------	-------	-------	-------	-------	-------

1				0.85			
2				1.11			
3			1	1.02			
4		4	2	0.91			
5				0.93			
6				1.06			
7				1.05			
8				1.03			
9				0.90			
10				1.03			
11				1.14			
12				0.93			
13				1.14			
14				1.03			
15				0.84			
16				0.90			
17				0.99			
18				1.13			
19				0.96			
20				0.88			
21				1.03			
22				1.02			
23				1.05			
24				1.09			
25				1.19			



File Name: 90016078  
 Channel Name: Point 9  
 Description: 90016078 #1 Itkiliik Rvr 7,200- 400 Alaska ker VI90

Min: 0.87  
 Max: 1.15  
 Mean: 1.02  
 StDev: 0.10

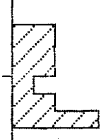
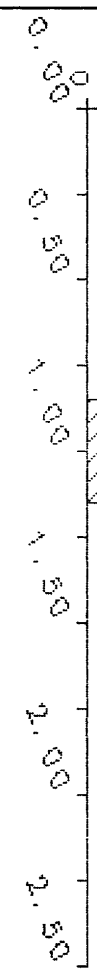


90016078 #1 Itkiliik Rvr  
 Mn: 1.02 SD: 0.10  
 90016078 #1 Itkiliik Rvr  
 Mn: 1.02 SD: 0.10

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
-----	-------	-------	-------	-------	-------	-------	-------

1				1.15			
2				0.87			
3				0.93			
4			12	0.91			
5		4		1.00			
6				1.05			
7				1.12			
8				1.14			
9				0.87			
10				1.10			
11				1.00			
12				0.95			
13				1.12			

Percent Rm



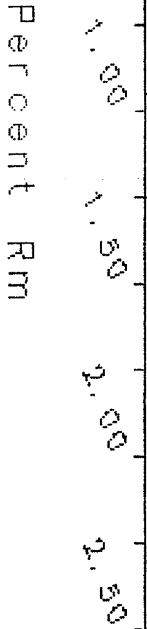
File Name: 90016080  
 Channel Name: Point 9  
 Description: 90016080 #1 Itkiliik Rvr 7,902- 18 Alaska ker VI90

Min: 0.97  
 Max: 1.22  
 Mean: 1.13  
 StDev: 0.08



90016080  
 #1 Itkiliik Rvr  
 SD: 0.08

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				1.02			
2				1.14			
3				0.97			
4	4	0	12	1.18			
5				1.19			
6				1.20			
7				1.02			
8				1.12			
9				1.19			
10				1.14			
11				1.21			
12				1.12			
13				1.11			
14				1.22			
15				1.05			





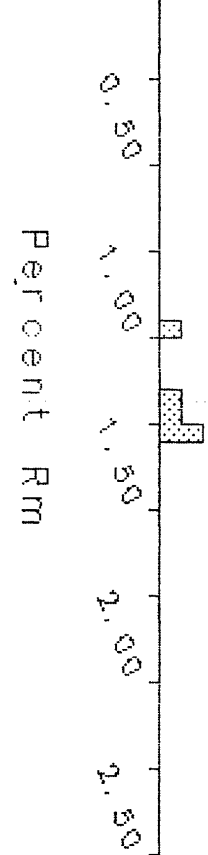
File Name: 90016081  
 Channel Name: Point 9  
 Description: 90016081 #1 Itkillik Rvr 8,200- 400 Alaska ker VI96

Min: 1.00  
 Max: 1.27  
 Mean: 1.18  
 StDev: 0.11



90016081  
 #1 Itkillik Rvr  
 1.18 SD: 0.11

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				1.26			
2				1.16			
3				1.00			
4				1.27			
5				1.24			

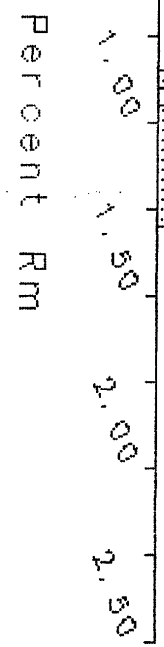


File Name: 90016082  
 Channel Name: Point 9  
 Description: 90016082 #1 Itkillik Rvr 8,600- 800 Alaska ker VI90

Min: 0.90  
 Max: 1.29  
 Mean: 1.13  
 StDev: 0.12

90016082 #1 Itkillik Rvr  
 Mean: 1.13  
 SD: 0.12

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				1.16			
2				1.04			
3				1.29			
4		4	0	1.07			
5			12	1.17			
6				0.98			
7				1.15			
8				1.15			
9				0.90			
10				1.13			
11				1.29			
12				1.23			



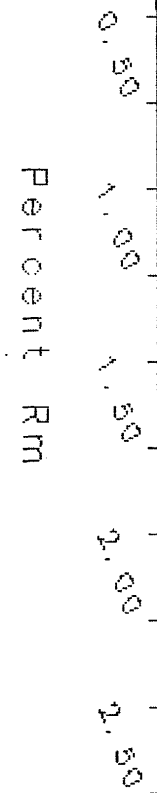
File Name: 90016083  
 Channel Name: Point 9  
 Description: 90016083 #1 Itkillik Rvr 9,000- 200 Alaska ker VI96

Min: 1.01  
 Max: 1.32  
 Mean: 1.17  
 StDev: 0.11



90016083  
 #1 Itkillik Rvr  
 SD: 0.11

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				1.18			
2				1.15			
3				1.01			
4				1.10			
5				1.24			
6				1.04			
7				1.29			
8				1.32			



File Name: 90016084  
 Channel Name: Point 9  
 Description: 90016084 #1 Itk1111k Rvr 9,400- 600 Alaska ker VI90

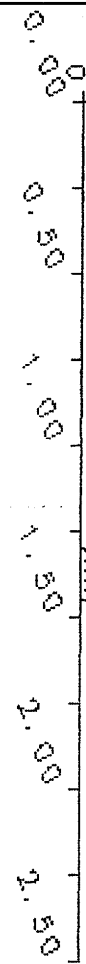
# Frequency

Min: 1.33  
 Max: 1.43  
 Mean: 1.37  
 StDev: 0.04

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
-----	-------	-------	-------	-------	-------	-------	-------

1	0.00			1.33	1	20	
2				1.43			
3				1.34	1		
4		4	00	1.38			
5				1.36			
6							

Percent Rm

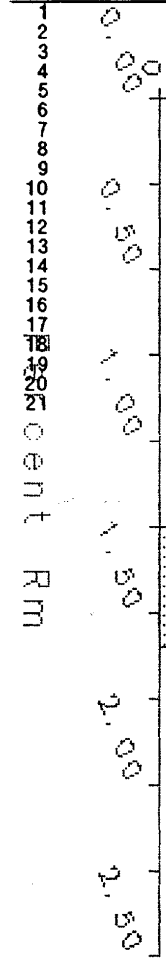


90016084 #1 Itk1111k Rvr  
 Min: 1.37 SD: 0.04

File Name: 90016085  
 Channel Name: Point 9  
 Description: 90016085 #1 Itkillik Rvr 9,800- 10,000 Alaska ker

Min: 1.26  
 Max: 1.59  
 Mean: 1.42  
 StDev: 0.10

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				1.47			
2				1.56			
3				1.35			
4		4	12	1.56			
5				1.47			
6				1.47			
7				1.44			
8				1.39			
9				1.41			
10				1.32			
11				1.31			
12				1.46			
13				1.43			
14				1.36			
15				1.58			
16				1.26			
17				1.28			
18				1.40			
19				1.59			
20				1.51			
21				1.26			



90016085  
 #1 Itkillik Rvr  
 1.42 SD: 0.10

File Name: 90016086  
 Channel Name: Point 9  
 Description: 90016086 #1 Itkillik Rvr 10,200- 400 Alaska ker VI90

Min: 1.45  
 Max: 1.76  
 Mean: 1.59  
 StDev: 0.11

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				1.52			
2				1.64			
3			12	1.52			
4				1.74			
5				1.59			
6				1.76			
7				1.59			
8				1.64			
9				1.45			
10				1.48			
11				1.74			
12				1.70			
13				1.50			
14				1.47			
15				1.52			
16							
17							



90016086 #1 Itkillik Rvr  
 Mean: 1.59  
 SD: 0.11

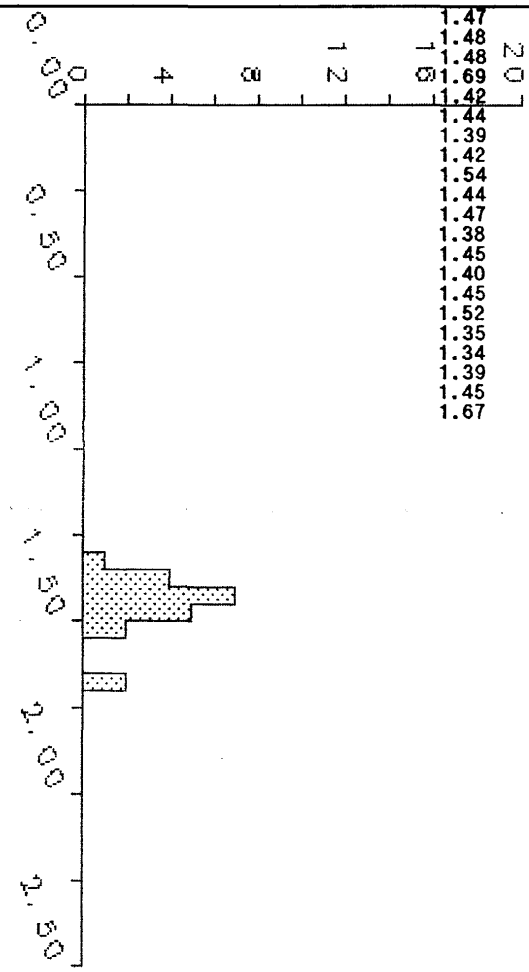
File Name: 90016087  
 Channel Name: Point 9  
 Description: 90016087 #1 Itkillik Rvr 10,600- 800 Alaska ker VI99

Min: 1.34  
 Max: 1.69  
 Mean: 1.46  
 StDev: 0.09

90016087  
 #1 Itkillik Rvr  
 Mean: 1.46  
 SD: 0.09

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				1.47			
2				1.48			
3				1.48			
4		4	0	1.69			
5				1.42			
6				1.44			
7				1.39			
8				1.42			
9				1.54			
10				1.44			
11				1.47			
12				1.38			
13				1.45			
14				1.40			
15				1.45			
16				1.52			
17				1.35			
18				1.34			
19				1.39			
20				1.45			
21				1.67			

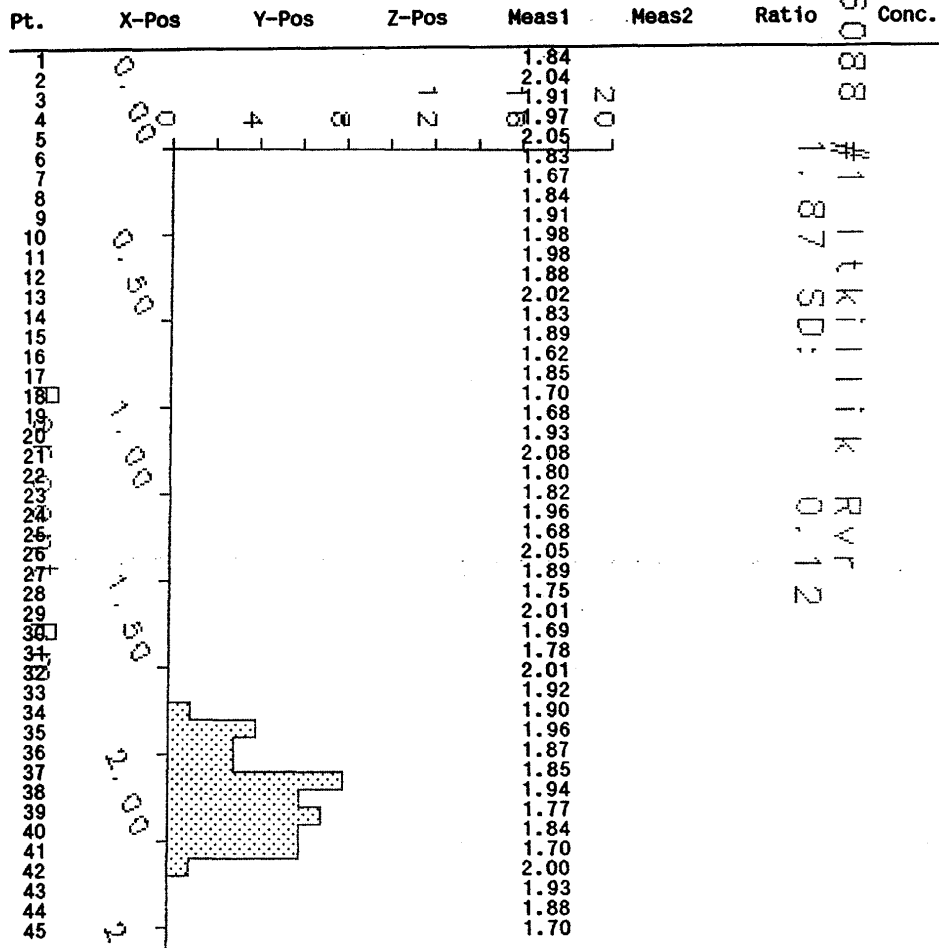
Percent Rm



File Name: 90016088  
 Channel Name: Point 9  
 Description: 90016088 #1 Itkiliik Rvr 1,000- 200 Alaska ker VI90

Min: 1.62  
 Max: 2.08  
 Mean: 1.87  
 StDev: 0.12

90016088 #1 Itkiliik Rvr  
 Min: 1.87 SD: 0.12



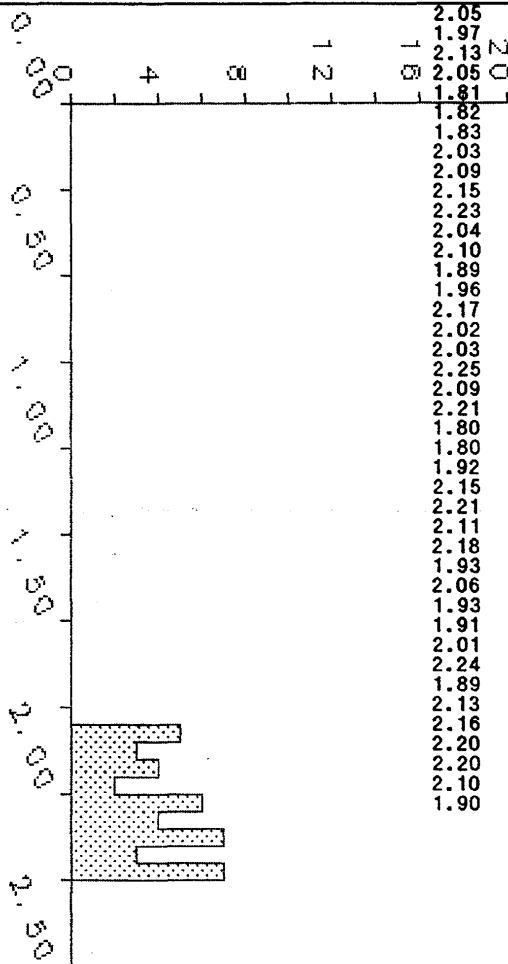


File Name: 90016089  
 Channel Name: Point 9  
 Description: 90016089 #1 Iktikiik Rvr 11,400- 600 Alaska ker VI90

Min: 1.80  
 Max: 2.25  
 Mean: 2.04  
 StDev: 0.14

90016089  
 #1 Iktikiik Rvr  
 2,04 SD:  
 0,14

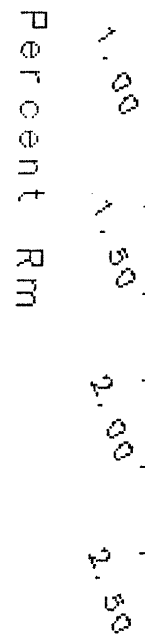
Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				2.05			
2				1.97			
3				2.13			
4				2.05			
5				1.81			
6				1.82			
7				1.83			
8				2.03			
9				2.09			
10				2.15			
11				2.23			
12				2.04			
13				2.10			
14				1.89			
15				1.96			
16				2.17			
17				2.02			
18				2.03			
19				2.25			
20				2.09			
21				2.21			
22				1.80			
23				1.80			
24				1.92			
25				2.15			
26				2.21			
27				2.11			
28				2.18			
29				1.93			
30				2.06			
31				1.93			
32				1.91			
33				2.01			
34				2.24			
35				1.89			
36				2.13			
37				2.16			
38				2.20			
39				2.20			
40				2.10			
41				1.90			



File Name: 90016090  
 Channel Name: Point 9  
 Description: 90016090 #1 Itkilluk River 11,800-12,000 Alaska

Min: 1.66  
 Max: 2.38  
 Mean: 2.06  
 StDev: 0.20

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				2.13			
2				2.09			
3				2.17			
4				2.12			
5				1.71			
6				2.10			
7				1.93			
8				2.08			
9				2.38			
10				2.27			
11				2.07			
12				2.12			
13				1.66			



90016090  
 #1 Itkilluk River  
 2.06 SD: 0.20

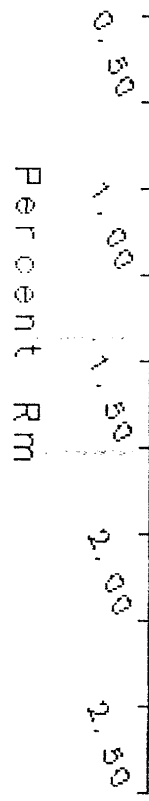
File Name: 90016091  
 Channel Name: Point 9  
 Description: 90016091 #1 Itkilluk River 12,200-12,400 Alaska

Min: 1.57  
 Max: 1.91  
 Mean: 1.69  
 StDev: 0.13



90016091 #1 Itkilluk River  
 SD: 0.13

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1	0.00			1.68			
2	0.00			1.64			
3	0.00		12	1.57			
4	0.00	4	00	1.74			
5	0.00			1.91			
6	0.00			1.57			



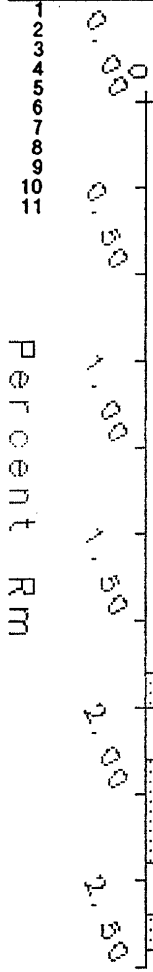
File Name: 90016092  
 Channel Name: Point 9  
 Description: 90016092 #1 Itkilluk River 12,600-12,800 Alaska

Min: 1.66  
 Max: 2.44  
 Mean: 2.06  
 StDev: 0.23



00016092  
 #1 Itkilluk River  
 SD: 0.23

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				2.09			
2				1.73			
3				2.02			
4				2.19			
5				2.36			
6				2.12			
7				1.66			
8				1.99			
9				2.44			
10				2.11			
11				1.93			



File Name: 90016093  
 Channel Name: Point 9  
 Description: 90016093 #1 Itkiitluk River 13,200-13,400 Alaska

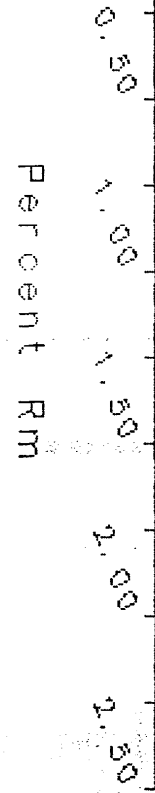
Min: 1.58  
 Max: 1.69  
 Mean: 1.62  
 StDev: 0.05



00016093  
 #1 Itkiitluk River  
 SD: 0.05

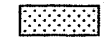
Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
-----	-------	-------	-------	-------	-------	-------	-------

1				1.69			
2				1.59			
3				1.59			
4				1.58			
5				1.61			
6				1.63			
7							
8				1.69			



File Name: 90016094  
 Channel Name: Point 9  
 Description: 90016094 #1 Itkilluk River 13,400-13,600 Alaska

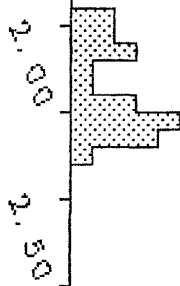
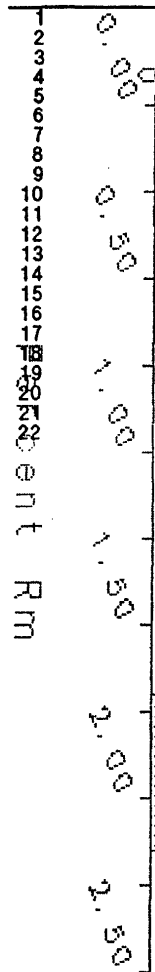
Min: 1.73  
 Max: 2.15  
 Mean: 1.94  
 StDev: 0.12



0016094  
 #1 Itkilluk River  
 SD: 0.12

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
-----	-------	-------	-------	-------	-------	-------	-------

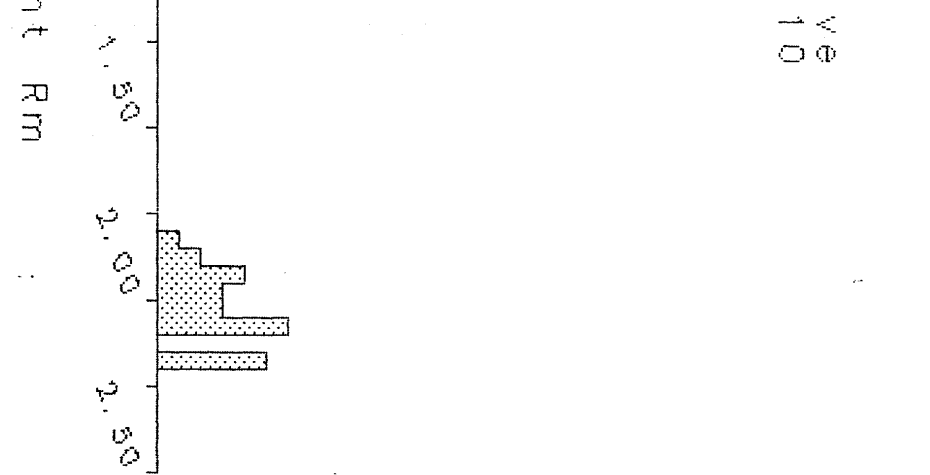
1				2.02			
2				2.15			
3				1.75			
4				1.95			
5				2.03			
6				2.06			
7				2.07			
8				1.99			
9				1.82			
10				1.83			
11				1.91			
12				2.01			
13				1.83			
14				2.06			
15				2.07			
16				2.02			
17				2.00			
18				1.73			
19				1.90			
20				1.77			
21				2.02			
22				1.75			



File Name: 90016095  
 Channel Name: Point 9  
 Description: 90016095 #1 Itkilluk River 13,800-14,000 Alaska

Min: 1.83  
 Max: 2.20  
 Mean: 2.03  
 StDev: 0.10

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				2.09			
2				2.17			
3				1.95			
4				1.95			
5				2.04			
6				2.05			
7				1.99			
8				2.20			
9				2.04			
10				2.05			
11				1.97			
12				1.93			
13				2.07			
14				1.83			
15				2.18			
16				2.09			
17				1.88			
18				2.05			
19				2.17			
20				2.05			
21				1.87			
22				1.97			
23				1.94			
24				2.19			



0016095  
 #1 Itkilluk River  
 SD: 0.10

File Name: 90016096  
 Channel Name: Point 9 Frequency  
 Description: 90016096 #1 Itkiituk River 14,200-14,400 Alaska

Min: 1.81  
 Max: 2.23  
 Mean: 2.01  
 StDev: 0.12

00016096  
 #1 Itkiituk River  
 SD: 0.12

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Rat10	Conc.
1				1.99			
2				2.04			
3				1.98			
4				2.00			
5				2.08			
6				2.12			
7				2.20			
8				2.22			
9				1.94			
10				2.01			
11				2.21			
12				2.23			
13				2.19			
14				2.12			
15				2.02			
16				2.12			
17				2.12			
18				1.94			
19				1.95			
20				1.88			
21				2.02			
22				2.01			
23				2.18			
24				2.04			
25				1.81			
26				2.15			
27				1.95			
28				1.82			
29				1.98			
30				1.87			
31				1.92			
32				2.02			
33				2.08			
34				1.96			
35				1.99			
36				1.92			
37				2.07			
38				1.96			
39				2.14			
40				1.87			
41				1.97			
42				1.84			
43				2.07			
44				1.88			
45				2.08			
46				1.89			
47				1.96			
48				1.83			
49				2.13			
50				1.91			
51				1.83			

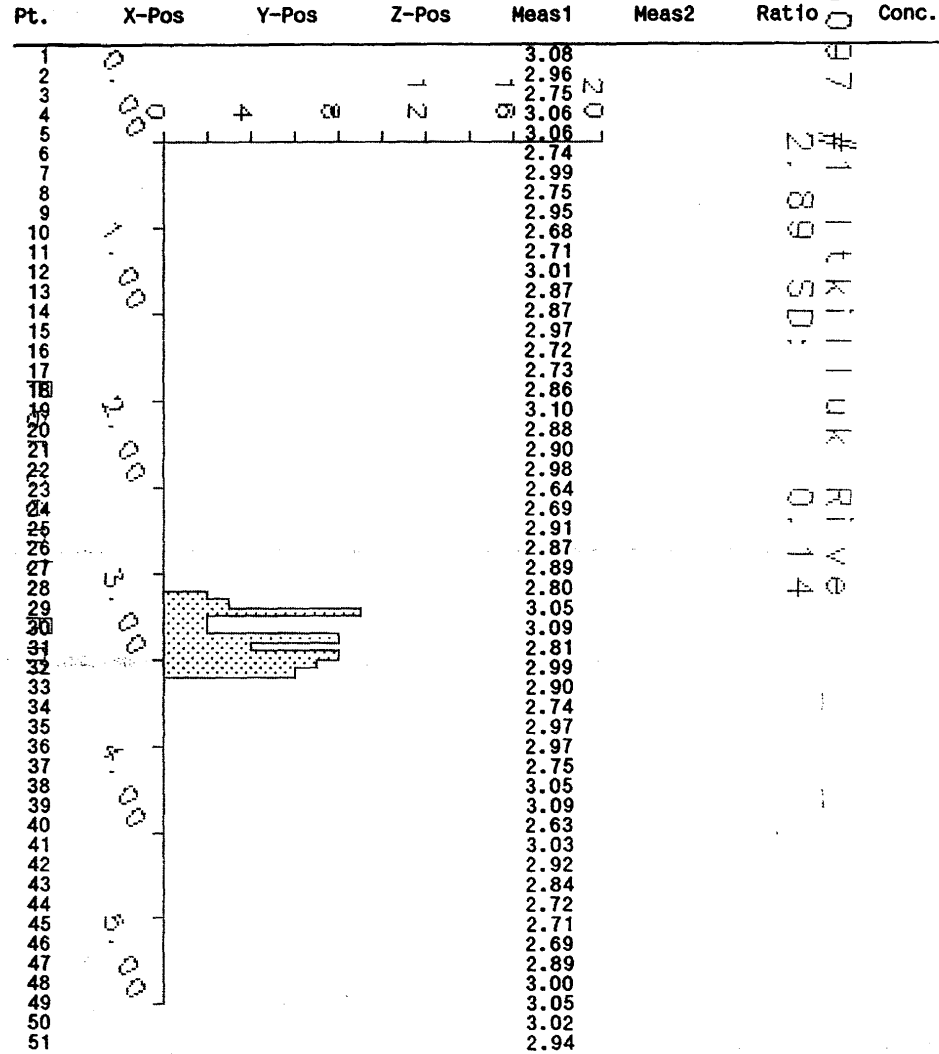


File Name: 90016097  
 Channel Name: Point 9 Frequency  
 Description: 90016097 #1 Itkilluk River 14,600-14,800 Alaska

Min: 2.63  
 Max: 3.10  
 Mean: 2.89  
 StDev: 0.14



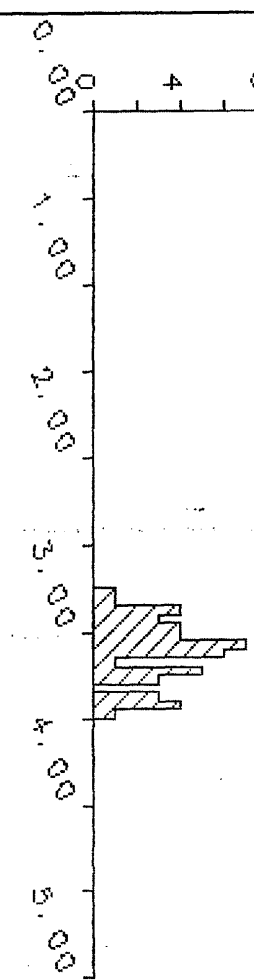
N: 0016097  
 #1 ITKILLUK RIVER  
 2.89 SD: 0.14



File Name: 90016098  
 Channel Name: Point 9  
 Description: 90016098 #1 Itkilluk River 14,800-15,000 Alaska

Min: 2.79  
 Max: 3.45  
 Mean: 3.12  
 StDev: 0.18

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				3.00			
2				2.87			
3			12	3.40			
4		4	12	3.25			
5				3.00			
6				3.13			
7				3.21			
8				3.11			
9				3.29			
10				3.01			
11				3.24			
12				3.15			
13				3.06			
14				3.10			
15				3.15			
16				3.45			
17				3.45			
18				3.42			
19				3.06			
20				3.24			
21				3.36			
22				2.95			
23				3.10			
24				3.36			
25				3.29			
26				3.14			
27				2.86			
28				2.93			
29				3.43			
30				3.06			
31				3.04			
32				3.22			
33				2.98			
34				2.96			
35				2.81			
36				3.02			
37				3.07			
38				2.86			
39				2.79			
40				3.21			
41				3.03			
42				2.87			
43				3.13			
44				3.43			
45				3.11			
46				3.08			
47				2.91			



0016098  
 #1 Itkilluk River  
 0.12 SD:  
 90016098  
 #1 Itkilluk River  
 3.12 SD:

File Name: 90016099  
 Channel Name: Point 9  
 Description: 90016099 #1 Itkilluk River 15,200-310 Alaska kerogen

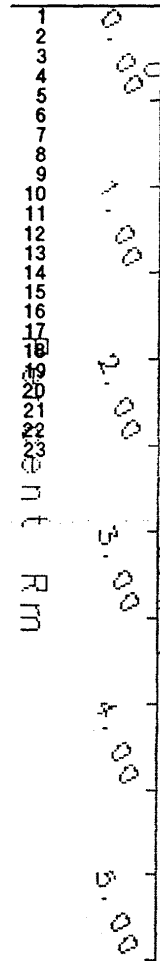
Min: 2.60  
 Max: 3.20  
 Mean: 2.97  
 StDev: 0.17



0016099  
 #1 ITKILLUK RIVER  
 2.97 SD: 0.17

Pt. X-Pos Y-Pos Z-Pos Meas1 Meas2 Ratio Conc.

Pt.	X-Pos	Y-Pos	Z-Pos	Meas1	Meas2	Ratio	Conc.
1				2.60			
2				3.19			
3				3.16			
4				2.82			
5				3.07			
6				3.19			
7				3.06			
8				2.98			
9				3.05			
10				2.62			
11				3.04			
12				2.96			
13				2.99			
14				3.20			
15				2.97			
16				2.82			
17				2.76			
18				3.01			
19				2.89			
20				3.00			
21				2.99			
22				2.85			
23				3.13			





# United States Department of the Interior



GEOLOGICAL SURVEY  
BOX 25046 M.S. 990  
DENVER FEDERAL CENTER  
DENVER, COLORADO 80225

IN REPLY REFER TO:

17 September, 1990

John Reeder  
P.O. Box 772116  
Eagle River, AK  
99577-2116

John:

I am returning the prepared samples I borrowed from the state back in January. Enclosed, also, you will find data and histogram sheets for almost all the samples.

Some samples did have organic material I deemed good enough to measure. For the most part, the samples were good and the results are evident, at least individually. Taken on a well-by-well basis several were difficult to make good sense out of from an organic petrology point of view. The shape of the histograms is a good general indicator of consistency of the organics contained within and in the confidence I had while examining the samples. My technique was to measure at least 50 organic grains, while trying to stay within a narrow range. This becomes difficult with increased vitrinite reflectance, and the histogram spread increases. With adequate material and consistent rank (contamination from uphole cavings can introduce diverse groups of organics) the histogram will have some kind of a bell curve shape. Gaps in the histogram, relating to multiple populations of organics, are a problem and dilute the strength of the mean value as a good measure of the thermal maturity. These gaps are more common at the higher ranks, (> 1.5% reflectance), but occur at lower ranks when insufficient material exists or there is contamination in the sample. I admit to certain biases against samples prepared by people other than myself, and these samples were made by several different companies. I feel I lose too much control over the processing of the cuttings and do not have the confidence in other people's dedication to the work.

I hope these data can be of some use to you. If I can help by providing additional information, please let me know.

Thank you for providing the samples, and for your assistance while I was visiting.

*Mark Pawlewicz*  
Mark Pawlewicz