Core Permeability Determinations and Other Related Physical Analyses of the following 20 North Slope Wells:

Exxon Corp. Alaska State A No. 1;
Exxon Corp. Alaska State C No. 1;
Exxon Corp. Alaska State F No. 1;
Exxon Corp. Point Thomson Unit No. 1;
Exxon Corp. Point Thomson Unit No. 2;
Exxon Corp. Point Thomson Unit No. 3;
Husky Oil NPR Operations Inc. (U.S.G.S.) Ikpikpuk Test Well No. 1;
Husky Oil NPR Operations Inc. (U.S.G.S.) Inigok Test Well No. 1;
Husky Oil NPR Operations Inc. (U.S.G.S.) Peard Test Well No. 1;
Mobil Oil Corp. Gwydyr Bay South No. 1;
Mobil Oil Corp. Gwydyr Bay State Unit No. 1;
Mobil Oil Corp. Mikkelsen Bay State 13-09-19;
Mobil Oil Corp. West Staines State 18-09-23;
Sinclair Oil & Gas Colville No. 1;
Sohio Alaska Petroleum Co. Long Island No. 1;
Sohio Alaska Petroleum Co. Nechelik No. 1;
U. S. Navy Point Barrow Core Test No. 1;
U. S. Navy South Barrow Test Well No. 1;
U. S. Navy South Barrow No. 2; and
U. S. Navy South Barrow No. 3

ALASKA ST. A-1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
12437.0		9.5					2.62		2.89
12444.0		19.3					2.14		2.65
12468.0		14.3					2.28		2.66
12474.0		17.9					2.20		2.68
12476.0		14.3					2.24		2.61
12528.0		12.7					2.33		2.67
12535.0		16.5					2.23		2.67
12566.0		15.9					2.27		2.71
12574.0		23.1					2.06		2.68
12579.0		19.3					2.18		2.70
12605.0		10.3					2.48		2.77
12613.0		17.7					2.24		2.72
12614.0		17.9					2.22		2.71
12615.0		17.1					2.22		2.68
12640.0		18.7					2.20		2.70

ALASKA ST. C-1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
13562.2		16.6					2.49		2.98
13564.2		16.1					2.44		2.91
13566.2		19.9					2.32		2.90
13570.2		15.7					2.47		2.93
13572.2		19.9					2.48		3.09

ALASKA ST. F-1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
12063.0		15.9					2.16		2.57
12072.0		19.6	18.1	93		4.43	2.11	2.14	2.62
12074.0		17.1	15.5	91		1.5	2.18	2.22	2.63
12075.0		20.0					2.12		2.65
12076.0		21.1					2.06		2.62
12576.0		22.8					2.06		2.67
12584.0		11.6					2.07		2.34
12599.0		22.0					2.10		2.69
12600.0		18.8					2.17		2.68
12601.0		21.9	18.9	86		11.3	2.12	2.20	2.71
12602.0		22.8					2.07		2.69
12603.0		18.2					2.21		2.70
12906.0		16.0					2.21		2.63
12907.0		19.3					2.18		2.70
12908.0		18.4					2.21		2.70
12909.0		18.9					2.19		2.70

PT. THOMSON NO.1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
12837.0		11.7					2.47		2.80
12838.0		12.6					2.50		2.86
12858.0		15.9					2.37		2.81
12869.0		16.5					2.34		2.80
12875.0		13.1					2.41		2.78
12876.0		14.0					2.41		2.80
12913.0		15.6					2.41		2.86
12922.0		14.9					2.38		2.80
12932.0		14.3					2.45		2.86
12995.0		21.8					2.17		2.77

PT. THOMSON NO.2

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
9875.0		10.6					2.46		2.76
9880.0		11.3					2.45		2.76
10156.0		13.2					2.36		2.72
10157.0		21.6					2.17		2.77
10196.0		14.5					2.37		2.78
11595.0		17.7					2.31		2.81
11597.0		14.8					2.29		2.69
11607.0		13.9					2.41		2.80
11619.0		18.7					2.28		2.80
11634.0		15.3					2.18		2.58
11636.0		16.9					2.28		2.75
11775.0		21.3					2.19		2.78
11777.0		20.1					2.22		2.78
11778.0		17.6					2.21		2.69

PT. THOMSON NO.3

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
13673.0		16.4					2.38		2.85
13676.0		16.3					2.42		2.89
13689.0		24.0					2.09		2.74
13766.0		23.9					2.15		2.83
13768.0		25.9					2.11		2.85
13777.0		25.0					2.13		2.84
13780.0		26.6					2.12		2.88
13788.0		22.1					2.20		2.82

IKPIKPUK NO.1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
7139.2	8.4	9.8	9.3	95	0.1	0.0036	2.45	2.47	2.72
7141.2	12.7	13.6	12.6	93	0.1	0.0292	2.34	2.37	2.71
7142.2	12.9	13.1	11.9	91	0	0.0064	2.35	2.38	2.70
7143.1		13.4	12.3	92		0.0207	2.34	2.37	2.70

INIGOK NO.1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
2632.0		14.6	12.3	84		0.045	2.32	2.38	2.70
2636.5		19.2	18.3	95		2.4	2.18	2.21	2.69
2637.7		17.5	16.8	96		0.705	2.23	2.25	2.69
2649.7		18.0	16.9	94		0.751	2.23	2.26	2.71
2650.7		20.7	19.8	95		6.24	2.15	2.18	2.71
2655.9		19.4	18.7	96		2.49	2.17	2.19	2.69
3077.5		17.6	16.5	94		1.53	2.23	2.26	2.70
3078.5		19.6	18.6	95		6.51	2.17	2.20	2.69
3081.0		20.5	20.1	98		25.9	2.13	2.14	2.67
3081.9		23.1	21.6	94		45.1	2.08	2.12	2.70
8212.9	8.4	8.8	7.6	86	0	0.0019	2.49	2.52	2.72
8213.9	8.5	9.1	7.7	85	0.1	0.0032	2.49	2.50	2.73
8228.9	9.1	9.6	8.3	86	0.1	0.0072	2.47	2.51	2.72
8229.9	9.1	9.5	8.1	85	0.1	0.0045	2.47	2.48	2.72
8849.0		7.3	6.1	84		0.0001	2.51	2.52	2.70
8850.0		8.7	7.4	85		0.0043	2.49	2.51	2.72
8851.0		8.0	7.7	96		0.0021	2.49	2.50	2.70

PEARD NO.1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
3034.8		11.4	10.2	90		0.0069	2.39	2.42	2.70
3037.3		9.3	8.4	91		0.0062	2.45	2.47	2.70
3046.4		15.1	14.6	97		0.343	2.27	2.29	2.68
3052.1		16.7	16.6	99		2.06	2.24	2.24	2.68
3058.4		14.4	13.8	96		0.119	2.30	2.32	2.69
5415.8	12.1	12.3	11.4	93	0.7	0.0292	2.37	2.39	2.70
5416.8	12.9	13.0	12.0	92	0.3	0.0318	2.37	2.40	2.72
5417.8		13.6	12.8	94		0.0496	2.39	2.41	2.77

GWYDYR BAY SOUTH NO.1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
8005.0		16.7	12.3	74		0.146	2.27	2.38	2.72
8006.0		20.5	18.0	88		4.78	2.14	2.21	2.69
8007.0		21.7	18.9	87		9.29	2.13	2.21	2.72
8009.0		23.4	20.4	87		7.84	2.08	2.16	2.71
8280.0		19.5					2.33		2.90
8281.0		26.2	17.9	68			2.04	2.27	2.76
8282.0		25.0	20.8	83		5.84	2.34	2.47	3.12
8285.0		26.3	21.4	82		15.8	2.08	2.21	2.82
8286.0		26.4	22.1	84		14.8	2.01	2.13	2.73
8290.1		8.5					2.42		2.64

NO.1 GWYDYR BAY

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
8287.0		24.1					2.02		2.66
8288.0		22.1					2.12		2.72
8289.0		21.2	20.3	96		3.36	2.12	2.15	2.69
8290.0		18.3					2.24		2.74
8291.0		20.2					2.16		2.71
8292.0		21.4					2.14		2.73
8316.0		21.1					2.20		2.70
8317.0		21.8	20.8	95		20.1	2.09	2.12	2.67

MIKKELSEN BAY ST. 13-9-19

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
11690.0		4.2				0.00063	2.61		2.72
11699.0		7.8				0.0109	2.45		2.66
11702.0		6.2				0.0012	2.53		2.70
11703.0		8.1				0.0096	2.46		2.68
11704.0		9.3				0.0384	2.44		2.69
11730.0		9.5					2.47		2.73
11733.0		14.7					2.32		2.72
11734.0		12.2					2.33		2.65
11735.0		13.0					2.34		2.69
11736.0		3.8					2.65		2.75

West Staines No.18-9-23

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
7711.0		10.2					2.40		2.67
7756.0		13.1					2.36		2.71
7768.0		9.2				0.0013	2.42		2.67
10583.0		12.8					2.31		2.65
10589.0		4.9					2.57		2.70
10590.0		12.7					2.32		2.66
10591.0		15.4				1.03	2.20		2.60
10592.0		13.5					2.24		2.59
10594.0		10.3					2.24		2.50
10597.2		13.3					2.24		2.58
11695.0		11.3					2.30		2.60
11696.0		13.5				1.68	2.24		2.59
11709.5		12.4				1.81	2.27		2.59
11710.0		10.8					2.30		2.58
11711.0		13.3					2.23		2.57
11712.5		10.9					2.30		2.58
13068.0		6.6				<.001	2.54		2.72
13112.0		7.2				<.001	2.61		2.81
13113.0		7.4					2.51		2.72
13114.0		7.1					2.52		2.72

COLVILLE NO.1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
2373.0		31.8					1.78		2.62
2374.0		30.4					1.83		2.63
2375.0		31.5					1.83		2.68
2376.0		30.0					1.85		2.64

LONG ISLAND NO.1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
9064.0		21.5					2.19		2.80
9066.0		17.4	17.2	99		0.453	2.25	2.25	2.72
9069.0		24.5					2.01		2.67
9070.0		17.8					2.21		2.68
9071.0		20.0					2.22		2.77
9074.0		23.9					2.06		2.71
9085.0		19.6					2.15		2.67
9088.0		21.5	21.4	99		11.8	2.16	2.17	2.76

NECHELIK NO.1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
6382.0		13.6					2.39		2.76
6387.0		14.7					2.38		2.79

~~SOUTH~~ BARROW CORE TEST NO.1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
169.0		34.6	31.4	91		123	1.78	1.87	2.73
179.0		30.7	29.1	95		12.8	1.88	1.92	2.71
181.0		35.8	31.2	87		60.9	1.75	1.87	2.72
184.0		36.2	31.7	87		184	1.75	1.87	2.74
184.7		31.8					1.87		2.74
185.0		35.8	32.4	90		298	1.75	1.84	2.72
190.5		35.0	30.8	88		60.1	1.78	1.89	2.73
194.0		32.5					1.86		2.76

SOUTH BARROW NO.1

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
1908.0	23.1	24.6	22.8	93	15.5	22.4	2.02	2.06	2.68
1909.7	23.7	24.9	22.9	92	16.7	18.4	2.03	2.08	2.70
1912.6	28.2	29.2	26.3	90	208	30.9	1.89	1.97	2.67

SOUTH BARROW NO.2

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
1756.0		36.2					1.56		2.44
1763.0		18.4	17.4	94		4.43	2.15	2.17	2.62

SOUTH BARROW NO.3

Depth (ft)	Routine Lab Porosity (%)	Ambient Helium Porosity (%)	In-situ Helium Porosity (%)	In-situ/ Ambient Ratio (%)	Routine Lab Permeability (md)	In-situ Klinkenberg Permeability (md)	Ambient Bulk Density (g/cc)	In-situ Bulk Density (g/cc)	Grain Density (g/cc)
226.5		32.7	30.4	93		26.6	1.80	1.86	2.67
228.7		31.6	29.7	94		3.12	1.81	1.86	2.65
225.5		29.4	27.8	95		6.98	1.87	1.91	2.65
234.0		15.6	13.5	86		0.0387	2.27	2.33	2.69