Sec 27-T34S-R43W
Topeka Ls.

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

CORE ANALYSIS REPORT

FOR

ANADARKO PETROLEUM CORPORATION

U.S.A. "AB" NO. 1 WELL
GREENWOOD FIELD
MORTON COUNTY, KANSAS

API 15-129-21,136

27-34-43W

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Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

September 16, 1992

ANADARKO PETROLEUM CORPORATION
17001 Northchase Drive
Houston, Texas 77060

Attn: Mr. Nic Thams

Subject: Core Analysis Report
U.S.A. "AB" No. 1 Well
Greenwood Field
Morton County, Kansas
CL File 57182-13522

Dear Mr. Thams:

Cores taken in the subject well from the Topeka formation were received at the Oklahoma City laboratory for special analytical testing described on the Procedure Page.

The accompanying Coregraph presents the Surface Core Gamma-Log and binomially averaged core analysis data in graphical form to aid correlation with downhole electrical surveys.

Tabular presentation of the measured physical properties is presented on FINAL REPORT pages 1-1 thru 1-6 of this report.

Statistical summaries, cross-plots of permeability versus porosity and histograms of porosity, permeability and grain density are included.

It is a pleasure to have this opportunity of serving you. Should you have questions regarding these data call (405) 946-5422.

Very truly yours,

Core Laboratories, a division of
WESTERN ATLAS INTERNATIONAL

Lynn Antwine
Laboratory Supervisor

CORE LABORATORIES

Company : ANADARKO PETROLEUM CORPORATION
Well : U.S.A. "AB" NO. 1 WELL
Location : SEC. 27, T34S; R43W
Co,State : MORTON COUNTY, KANSAS

Field : GREENWOOD FIELD
Formation : TOPEKA
Coring Fluid : WATER BASE
Elevation :

File No.: 57182-13522
Date : 2-AUG-1992
API No. :
Analysts: MH/SB/TW/DF

CORE ANALYSIS RESULTS

SAMPLE NUMBER		DEPTH ft	PERMEABILITY (MAXIMUM) Kair md	PERMEABILITY (90 DEG) Kair md	PERMEABILITY (VERTICAL) Kair md	POROSITY (BOYLES'LAW) (Helium) %	SATURATION (PORE VOLUME) OIL %	SATURATION (PORE VOLUME) WATER %	GRAIN DENSITY (Measured) gm/cc	DESCRIPTION
					FULL DIAMETER ANALYSIS					
X	1	2760.0- 61.0		20.0	1.10	12.1	0.0	43.3	2.74	Ls bu gran frac-(I)
	2	2761.0- 62.0	16.0	10.0	16.0	17.5	0.0	34.4	2.72	Ls bu gran frac-(I)
	3	2762.0- 63.0	9.10	0.96	5.30	14.6	0.0	81.6	2.79	Dol tn-gry vf-f xln brec shly frac-(N)
					2763.0 - 2765.0 - No Analysis - Sh					
	4	2765.0- 66.0	34.0	34.0	10.0	16.3	0.0	42.1	2.72	Ls bu gran pp foss
	5	2766.0- 67.0	18.0	12.0	17.0	16.7	0.0	55.1	2.70	Ls bu gran pp foss
	6	2767.0- 68.0	10.0	9.90	<.01	15.6	0.0	46.6	2.71	Ls bu gran pp foss
	7	2768.0- 69.0	13.0	4.90	1.10	6.3	0.0	56.0	2.71	Ls gry vf xln brec styl frac-(N)
	8	2769.0- 70.0	0.91	0.58	0.59	7.3	0.0	52.0	2.70	Ls gry vf xln brec
	9	2770.0- 71.0	30.0	12.0	36.0	7.5	0.0	52.6	2.74	Ls gry vf xln brec styl frac-(I)
*	10	2771.0- 72.0		<.01		6.9	0.0	62.8	2.71	Ls gry vf xln brec styl
X	11	2772.0- 73.0		0.69		2.5	0.0	72.5	2.70	Ls gry vf xln shly lam foss frac-(I)
	12	2773.0- 74.0	0.74	0.43	0.08	2.6	0.0	74.0	2.70	Ls gry vf xln frac-(I)
	13	2774.0- 75.0	0.03	0.02	<.01	1.9	0.0	86.2	2.72	Ls gry-dk rd vf xln sh/lam foss
					2775.0 - 2781.0 No Analysis - Sh					
*	14	2781.0- 82.0		<.01		6.8	0.0	38.2	2.73	Ls gry vf xln foss
*	15	2782.0- 83.0		8.00		15.2	0.0	55.2	2.72	Ls bu gran pp foss
*	16	2783.0- 84.0		1.60		11.6	0.0	54.8	2.73	Ls bu gran pp foss
	17	2784.0- 85.0	3.10	3.00	1.20	15.6	0.0	55.7	2.74	Ls bu gran pp foss
	18	2785.0- 86.0	12.0	8.80	5.20	19.0	0.0	63.3	2.75	Ls bu gran pp foss
	19	2786.0- 87.0	6.10	4.30	16.0	16.1	0.0	59.7	2.74	Ls bu gran pp foss frac-(I)

FINAL REPORT 1 - 1

CORE LABORATORIES

Company : ANADARKO PETROLEUM CORPORATION
Well : U.S.A. "AB" NO. 1 WELL
Field : GREENWOOD FIELD
Formation : TOPEKA
File No.: 57182-13522
Date : 2-AUG-1992

CORE ANALYSIS RESULTS

	SAMPLE NUMBER	DEPTH ft	PERMEABILITY (MAXIMUM) Kair md	PERMEABILITY (90 DEG) Kair md	PERMEABILITY (VERTICAL) Kair md	POROSITY (BOYLES'LAW) (Helium) %	SATURATION (PORE VOLUME) OIL %	SATURATION (PORE VOLUME) WATER %	GRAIN DENSITY (Measured) gm/cc	DESCRIPTION
	20	2787.0- 88.0	5.30	4.50	7.20	18.9	0.0	58.9	2.73	Ls bu gran pp foss frac-(I)
	21	2788.0- 89.0	144.	5.90	8.90	14.4	0.0	54.6	2.72	Ls bu gran pp foss styl frac-(I)
	22	2789.0- 90.0	0.66	0.62	0.09	11.5	0.0	59.7	2.72	Ls bu gran pp foss
	23	2790.0- 91.0	0.17	0.16	<.01	7.7	0.0	80.4	2.71	Ls gry-dk rd vf xln slty lam
	24	2791.0- 92.0	0.34	0.31	<.01	11.1	0.0	82.4	2.70	Sltst dk rd-gry calc lam shly
	25	2792.0- 93.0	1.10	0.81	<.01	11.1	0.0	84.4	2.70	Sltst dk rd-gry calc lam shly
	26	2793.0- 94.0	0.28	0.23	<.01	8.7	0.0	88.8	2.71	Sltst dk rd-gry calc lam shly
	27	2794.0- 95.0	0.84	0.60	<.01	12.4	0.0	78.7	2.72	Sltst dk rd-gry calc lam shly
	28	2795.0- 96.0	0.13	0.11	<.01	10.8	0.0	75.7	2.70	Sltst gry-dk rd calc lam
	29	2796.0- 97.0	0.03	0.02	<.01	2.7	0.0	79.4	2.70	Ls gry-dk rd f xln slty shly lam foss
	30	2797.0- 98.0	0.13	0.12	<.01	6.0	0.0	81.0	2.70	Sltst dk rd calc shly foss
	31	2798.0- 99.0	0.33	0.28	<.01	10.1	0.0	91.0	2.69	Sltst dk rd-gry calc shly lam
	32	2799.0- 00.0	0.34	0.25	<.01	10.7	0.0	90.8	2.69	Sltst dk rd-gry calc shly lam
	33	2800.0- 01.0	0.38	0.21	<.01	9.2	0.0	77.9	2.69	Sltst dk rd-gry calc shly lam
	34	2801.0- 02.0	0.29	0.22	<.01	7.3	0.0	85.0	2.68	Sltst dk rd-gry calc shly lam
	35	2802.0- 03.0	0.37	0.35	<.01	5.8	0.0	91.9	2.67	Sltst dk rd-gry calc shly lam
	36	2803.0- 04.0	22.0	4.90	<.01	6.0	0.0	92.1	2.66	Sltst dk rd-gry calc shly lam
	37	2804.0- 05.0	7.20	2.60	<.01	5.6	0.0	89.3	2.69	Sltst dk rd-gry calc shly lam lmy slily foss
	38	2805.0- 06.0	0.53	0.53	<.01	6.1	0.0	87.9	2.69	Sltst dk rd-gry calc shly lam lmy slily foss
	39	2806.0- 07.0	0.05	0.03	<.01	4.0	0.0	85.1	2.69	Ls dk gry-gry vf xln slty shly foss
	40	2807.0- 08.0	0.20	0.20	<.01	6.8	0.0	89.4	2.67	Sltst dk gry calc shly foss
	41	2808.0- 09.0	0.18	0.14	0.01	4.3	0.0	91.7	2.67	Ls dk gry vf xln slty shly foss
					2809.0 - 2816.4	-	No Analysis - Sh			
X	42	2816.4- 17.0		0.04		3.1	0.0	60.3	2.71	Ls gry vf xln styl frac-(N)
	43	2817.0- 18.0	13.0	0.03	5.30	2.5	0.0	48.9	2.70	Ls gry vf xln frac-(PI)
*	44	2818.0- 19.0		0.12		9.9	1.5	45.4	2.71	Ls gry vf xln
	45	2819.0- 20.0	0.43	0.35	<.01	2.2	0.0	73.7	2.73	Ls gry vf-f xln foss sh/lam

FINAL REPORT 1 - 2

CORE LABORATORIES

Company : ANADARKO PETROLEUM CORPORATION
Well : U.S.A. "AB" NO. 1 WELL
Field : GREENWOOD FIELD
Formation : TOPEKA
File No.: 57182-13522
Date : 2-AUG-1992

CORE ANALYSIS RESULTS

	SAMPLE NUMBER	DEPTH ft	PERMEABILITY (MAXIMUM) Kair md	PERMEABILITY (90 DEG) Kair md	PERMEABILITY (VERTICAL) Kair md	POROSITY (BOYLES'LAW) (Helium) %	SATURATION (PORE VOLUME) OIL %	SATURATION (PORE VOLUME) WATER %	GRAIN DENSITY (Measured) gm/cc	DESCRIPTION
	46	2820.0- 21.0	0.03	0.02	<.01	2.9	0.0	72.1	2.70	Ls dk gry vf xln cgl
	47	2821.0- 22.0	0.01	0.01	<.01	2.7	0.0	82.1	2.72	Ls gry vf xln pyr
	48	2822.0- 23.0	0.07	0.05	0.96	6.8	0.0	62.7	2.72	Ls gry gran foss styl pp frac-(PI)
	49	2823.0- 24.0	0.18	0.15	0.05	6.7	0.0	56.3	2.71	Ls gry gran foss styl pp frac-(N)
	50	2824.0- 25.0	4.80	0.96	0.44	9.4	1.4	48.7	2.70	Ls gry f xln foss pp slily vug sltyl frac-(N)
X	51	2825.0- 26.0		9.00		16.5	1.1	29.9	2.71	Ls bu gran foss pp styl frac-(PI)
	52	2826.0- 27.0	3.50	3.20	1.40	19.1	1.0	27.3	2.71	Ls bu gran foss pp styl frac-(N)
	53	2827.0- 28.0	3.50	2.20	1.40	18.9	1.0	22.4	2.72	Ls bu gran foss pp styl frac-(N)
	54	2828.0- 29.0	0.68	0.45	0.27	9.0	0.9	72.6	2.71	Ls bu f xln pp styl frac-(PI)
	55	2829.0- 30.0	3.50	0.24	<.01	6.2	1.2	82.0	2.71	Ls bu f xln pp styl frac-(PI)
	56	2830.0- 31.0	0.24	0.16	0.21	9.7	0.0	53.5	2.71	Ls bu f xln pp sh/lam frac-(PI)
	57	2831.0- 32.0	0.14	0.13	0.16	7.6	0.0	70.0	2.72	Ls bu f xln pp sh/lam
	58	2832.0- 33.0	0.63	0.62	0.95	7.5	0.0	65.4	2.71	Ls bu f xln styl frac-(PI)
	59	2833.0- 34.0	0.70	0.68	0.44	6.0	0.0	79.5	2.72	Ls gry f xln frac-(N)
	60	2834.0- 35.0	6.50	0.53	82.0	5.8	0.0	62.4	2.71	Ls gry f xln frac-(N)
*	61	2835.0- 36.0		<.01		4.6	0.0	71.6	2.82	Ls gry f xln foss pyr frac-(I)
*	62	2836.0- 37.0		<.01		6.8	0.0	77.9	2.71	Ls gry f xln frac-(I)
	63	2837.0- 38.0	5.00	0.05	0.01	3.5	0.0	82.3	2.70	Ls dk gry vf xln foss frac-(I)
	64	2838.0- 39.0	0.31	0.28	0.05	9.4	0.0	81.7	2.73	Ls lt gry f xln sh/lam frac-(I)
	65	2839.0- 40.0	0.57	0.47	2.10	10.6	0.0	68.6	2.70	Ls lt gry f xln sh/lam frac-(I)
	66	2840.0- 41.0	0.48	0.45	0.06	9.2	0.0	77.3	2.70	Ls lt gry f xln sh/lam frac-(I)
	67	2841.0- 42.0	0.31	0.23	0.02	10.3	0.0	71.4	2.72	Ls lt gry f xln foss
	68	2842.0- 43.0	22.0	11.0	<.01	4.8	0.0	83.3	2.69	Ls dk gry f xln v shly foss frac-(I)
	69	2843.0- 44.0	286.	<.01	555.	1.1	0.0	90.0	2.70	Ls gry f xln foss frac-(I)
*	70	2844.0- 45.0		<.01		6.9	2.3	88.5	2.71	Ls gry f xln foss
*	71	2845.0- 46.0		<.01		6.6	2.4	91.1	2.73	Ls gry f xln foss shly lam
	72	2846.0- 47.0	27.0	0.18	0.07	5.2	0.0	81.0	2.74	Ls gry f xln shly lam foss frac-(I)
	73	2847.0- 48.0	0.08	0.05	0.06	5.9	0.0	86.3	2.74	Ls gry f xln shly lam foss
	74	2848.0- 49.0	3.10	0.22	0.06	8.2	1.6	78.4	2.73	Ls gry f xln shly lam foss frac-(I)

FINAL REPORT 1 - 3

CORE LABORATORIES

Company : ANADARKO PETROLEUM CORPORATION
Well : U.S.A. "AB" NO. 1 WELL
Field : GREENWOOD FIELD
Formation : TOPEKA
File No.: 57182-13522
Date : 2-AUG-1992

CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH ft	PERMEABILITY (MAXIMUM) Kair md	PERMEABILITY (90 DEG) Kair md	PERMEABILITY (VERTICAL) Kair md	POROSITY (BOYLES'LAW) (Helium) %	SATURATION (PORE VOLUME) OIL %	SATURATION (PORE VOLUME) WATER %	GRAIN DENSITY (Measured) gm/cc	DESCRIPTION
* 75	2849.0- 50.0		<.01		6.7	2.8	88.6	2.72	Ls gry f xln foss
* 76	2850.0- 51.0		<.01		4.9	0.0	85.3	2.71	Ls gry f xln foss
77	2851.0- 52.0	0.84	0.80	0.11	13.6	0.0	84.3	2.69	Sst gry vf gr slty calc
78	2852.0- 53.0	1.40	1.30	0.04	14.1	0.0	77.1	2.67	Sst gry vf gr slty calc
79	2853.0- 54.0	0.86	0.86	0.07	15.1	0.0	72.1	2.66	Sst gry vf gr slty calc
80	2854.0- 55.0	2.50	2.50	0.63	17.5	0.0	64.8	2.65	Sst gry vf gr slty calc sh/lam
81	2855.0- 56.0	2.60	2.50	0.60	16.3	0.0	68.7	2.66	Sst gry vf gr slty calc sh/lam
82	2856.0- 57.0	2.20	2.10	0.36	16.2	0.0	64.3	2.67	Sst gry vf gr slty calc sh/lam
83	2857.0- 58.0	1.80	1.80	0.10	16.4	0.0	63.6	2.67	Sst gry vf gr slty calc sh/lam
84	2858.0- 59.0	0.72	0.67	0.04	14.7	0.0	74.1	2.66	Sst gry vf gr slty calc sh/lam
85	2859.0- 60.0	0.95	0.89	0.11	15.8	0.0	74.1	2.68	Sst gry vf gr slty calc sh/lam
86	2860.0- 61.0	0.22	0.21	0.02	12.8	0.0	65.7	2.69	Sst dk gry vf gr slty calc shly lam
87	2861.0- 62.0	0.37	0.26	0.11	10.1	0.0	70.4	2.67	Sst dk gry vf gr slty calc shly lam
88	2862.0- 63.0	0.51	0.41	0.13	7.7	0.0	69.2	2.66	Sst dk gry vf slty calc shly lam
89	2863.0- 64.0	0.36	0.30	0.08	5.9	0.0	86.6	2.67	Sst dk gry vf slty calc shly lam foss
90	2864.0- 65.0	0.04	0.02	0.02	3.8	0.0	74.3	2.68	Sst dk gry vf slty calc shly lam foss
91	2865.0- 66.0	0.01	<.01	<.01	3.8	0.0	72.8	2.70	Ls gry f xln slty shly
# 92	2866.0- 67.0	6.50	4.20	0.24	2.9	0.0	76.4	2.71	Ls gry f xln shly lam
93	2867.0- 68.0	0.07	0.04	0.08	1.0	1.8	72.3	2.71	Ls gry vf xln sh/lam styl foss frac-(N)
94	2868.0- 69.0	0.07	0.07	0.08	2.1	0.0	75.7	2.72	Ls gry vf xln frac-(N)
95	2869.0- 70.0	0.06	0.02	0.10	1.8	0.0	78.6	2.71	Ls gry vf xln frac-(N)
96	2870.0- 71.0	0.45	0.14	0.07	5.0	1.8	38.8	2.71	Ls gry vf xln frac-(N)
97	2871.0- 72.0	1.50	1.10	0.12	2.1	2.0	67.4	2.71	Ls gry vf xln frac-(N)
98	2872.0- 73.0	3.20	1.80	0.04	7.5	1.7	33.8	2.73	Ls gry vf xln sh/lam frac-(N)
99	2873.0- 74.0	8.60	0.65	0.06	3.8	1.8	78.0	2.73	Ls lt gry gran foss sh/lam frac-(N)
100	2874.0- 75.0	0.06	0.06	0.02	2.9	0.0	80.8	2.70	Ls gry f xln slily slty sh/lam frac-(N)
	2875.0- 75.4	0.20	0.20	0.03	6.0	0.0	66.4	2.69	Ls gry f xln slily slty sh/lam

CORE LABORATORIES

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Well : U.S.A. "AB" NO. 1 WELL
Field : GREENWOOD FIELD
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CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH ft	PERMEABILITY (MAXIMUM) Kair md	PERMEABILITY (90 DEG) Kair md	PERMEABILITY (VERTICAL) Kair md	POROSITY (BOYLES'LAW) (Helium) %	SATURATION (PORE VOLUME) OIL %	SATURATION (PORE VOLUME) WATER %	GRAIN DENSITY (Measured) gm/cc	DESCRIPTION
	2875.4 - 2892.1	No Analysis - Sh							
* 102	2892.1- 93.0		<.01		2.7	0.0	61.4	2.72	Ls gry f xln slily slty sh/lam frac-(PI)
* 103	2893.0- 94.0		0.17		7.1	0.0	85.1	2.72	Ls gry f xln slily slty sh/lam frac-(PI)
* 104	2894.0- 95.0		<.01		4.0	0.0	79.1	2.71	Ls gry f xln slily slty sh/lam frac-(PI)
	2895.0 - 2897.6	No Analysis - Sh							
* 105	2897.6- 98.0		<.01		3.1	0.0	72.6	2.69	Ls gry f xln slily slty sh/lam frac-(I)
106	2898.0- 99.0	0.07	0.04	0.04	4.8	0.0	92.2	2.69	Ls gry f xln slily slty sh/lam
107	2899.0- 00.0	0.43	0.17	0.05	5.9	0.0	81.5	2.71	Ls gry f xln slily slty sh/lam
108	2900.0- 01.0	1.80	0.88	0.56	12.2	0.0	49.7	2.70	Ls gry f xln slily slty sh/lam
109	2901.0- 02.0	0.39	0.25	0.05	9.3	0.0	52.7	2.70	Ls gry f xln slily slty sh/lam
110	2902.0- 03.0	0.50	0.46	0.04	8.7	0.0	54.9	2.69	Ls gry f xln slily slty sh/lam
111	2903.0- 04.0	0.63	0.62	0.03	8.8	0.0	58.8	2.70	Ls gry f xln slily slty sh/lam
112	2904.0- 05.0	1.50	1.40	0.05	9.9	0.0	52.2	2.70	Ls gry f xln slily slty sh/lam
113	2905.0- 06.0	2.50	2.30	0.05	11.7	0.0	44.7	2.70	Ls gry f xln slily slty sh/lam
114	2906.0- 07.0	0.51	0.49	0.05	9.0	0.0	66.7	2.71	Ls gry f xln slily slty sh/lam
115	2907.0- 08.0	0.40	0.31	0.04	8.6	0.0	68.4	2.70	Ls gry f xln slily slty sh/lam
116	2908.0- 09.0	0.69	0.58	0.04	9.3	0.0	63.8	2.70	Ls gry f xln slily slty sh/lam
117	2909.0- 10.0	4.10	3.90	0.07	11.2	0.0	49.2	2.70	Ls gry f xln slily slty sh/lam
118	2910.0- 11.0	0.17	0.16	0.16	7.3	0.0	86.3	2.69	Ls gry f xln slily slty sh/lam
119	2911.0- 12.0	0.08	0.07	0.01	7.5	0.0	74.5	2.69	Ls gry f xln slily slty sh/lam

* Plug Analysis

CORE LABORATORIES

Company : ANADARKO PETROLEUM CORPORATION
Well : U.S.A. "AB" NO. 1 WELL

Field : GREENWOOD FIELD
Formation : TOPEKA

File No.: 57182-13522
Date : 2-AUG-1992

C O R E A N A L Y S I S R E S U L T S

SAMPLE NUMBER	DEPTH ft	PERMEABILITY (MAXIMUM) Kair md	PERMEABILITY (90 DEG) Kair md	PERMEABILITY (VERTICAL) Kair md	POROSITY (BOYLES'LAW) (Helium) %	SATURATION (PORE VOLUME) OIL %	SATURATION (PORE VOLUME) WATER %	GRAIN DENSITY (Measured) gm/cc		DESCRIPTION

X Sample unsuitable for K-max measurement.

Permeability enhanced by shale lamination.

Fracture Notations: (I) - Induced, (PI) - Possibly Induced, (N) - Natural

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

GRAPHICAL PRESENTATION

FOR

ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
NORTON COUNTY, KANSAS

TOPEKA FORMATION - COMPOSITE

CORE LABORATORIES

Company : ANADARKO PETROLEUM CORPORATION
Well : U.S.A. "AB" NO. 1 WELL
Field : GREENWOOD FIELD
Formation : TOPEKA
File No.: 57182-13522
Date : 2-AUG-1992

TABLE I

SUMMARY OF CORE DATA

ZONE AND CUTOFF DATA

ZONE:

Identification	TOPEKA
Top Depth	2760.0 ft
Bottom Depth	2912.0 ft
Number of Samples	119

DATA TYPE:

Porosity	(BOYLES'LAW) (Helium)
Permeability	(90 DEG) Kair

CUTOFFS:

Porosity (Minimum)	0.0 %
Porosity (Maximum)	100.0 %
Permeability (Minimum)	0.0000 md
Permeability (Maximum)	100000. md
Water Saturation (Maximum)	100.0 %
Oil Saturation (Minimum)	0.0 %
Grain Density (Minimum)	2.00 gm/cc
Grain Density (Maximum)	3.00 gm/cc
Lithology Excluded	NONE

CHARACTERISTICS REMAINING AFTER CUTOFFS

ZONE:

Number of Samples	119
Thickness Represented	117.3 ft

POROSITY:

Storage Capacity	1013.5 ϕ-ft
Arithmetic Average	8.6 %
Minimum	1.0 %
Maximum	19.1 %
Median	7.5 %
Standard Deviation	±4.7 %

GRAIN DENSITY:

Arithmetic Average	2.71 gm/cc
Minimum	2.65 gm/cc
Maximum	2.82 gm/cc
Median	2.71 gm/cc
Standard Deviation	±0.02 gm/cc

PERMEABILITY:

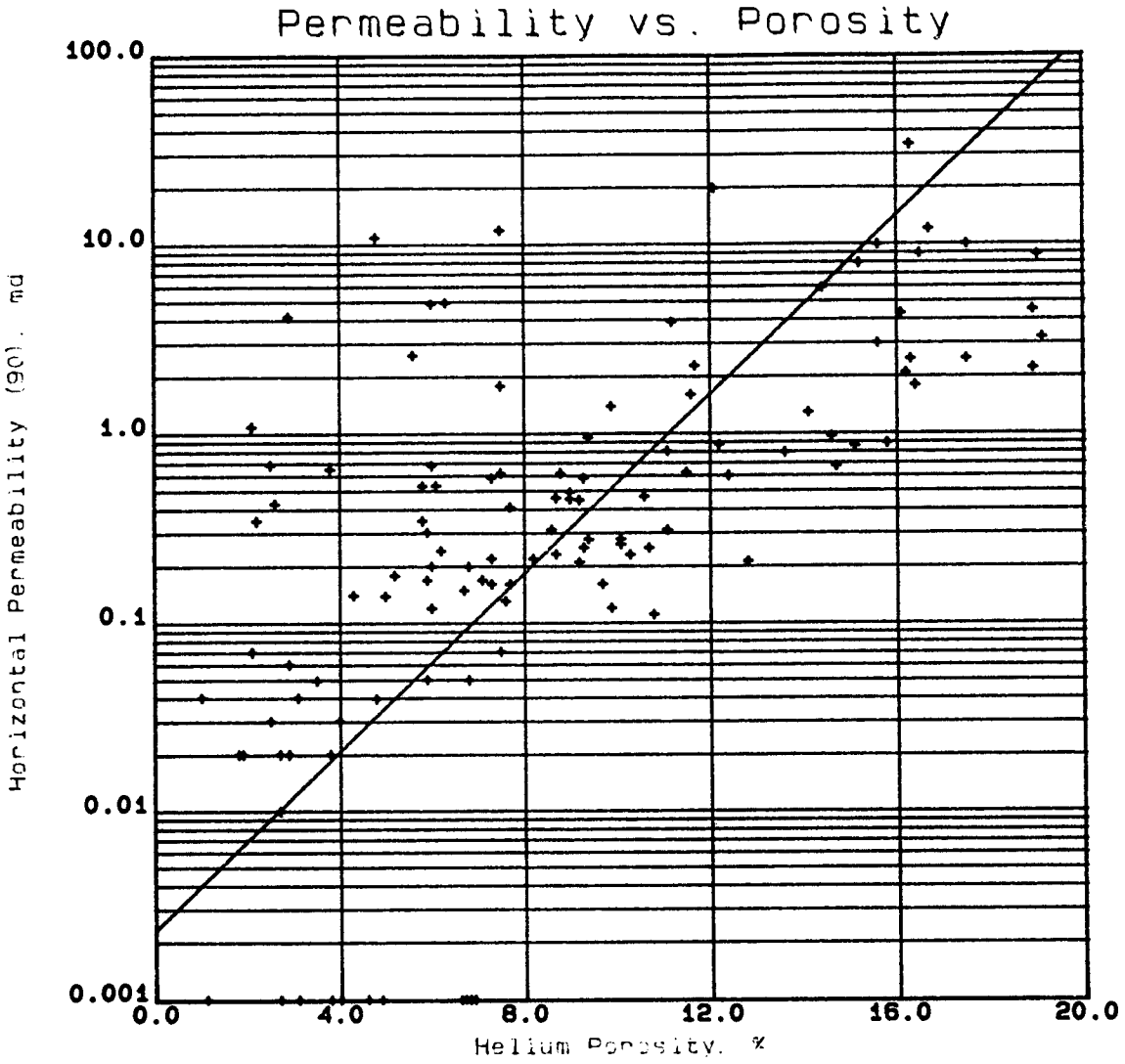
Flow Capacity	220.7 md-ft
Arithmetic Average	1.88 md
Geometric Average	0.26 md
Harmonic Average	0.01 md
Minimum	0.00 md
Maximum	34.0 md
Median	0.31 md
Standard Dev. (Geom) --	$K \cdot 10^{\pm 1.111}$ md

HETEROGENEITY (Permeability):

Dykstra-Parsons Var.	0.862
Lorenz Coefficient	0.683

AVERAGE SATURATIONS (Pore Volume):

Oil	0.2 %
Water	65.2 %



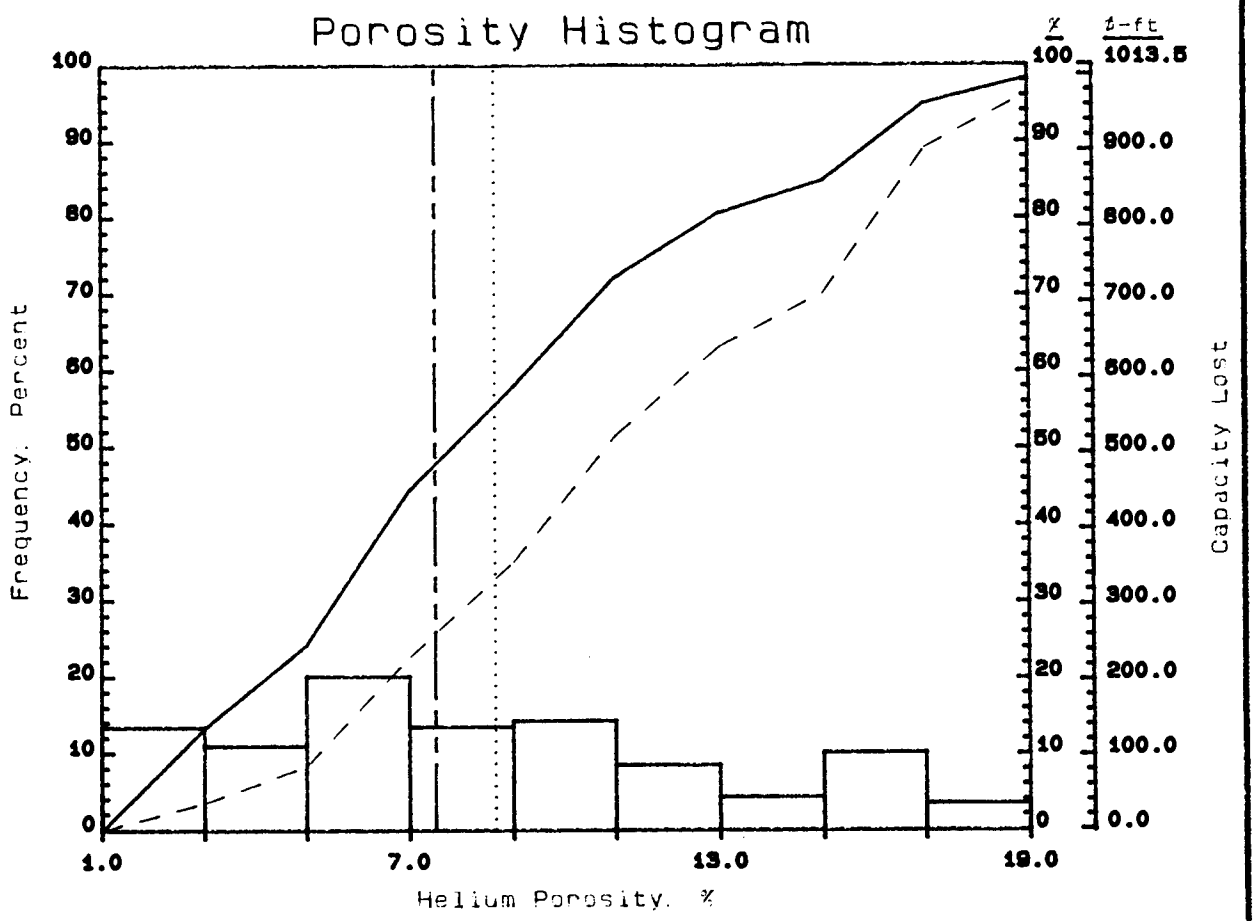
ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

TOPEKA (2760 - 2912 feet)

Core Laboratories August 18, 1992

- LEGEND -

TOPEKA



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

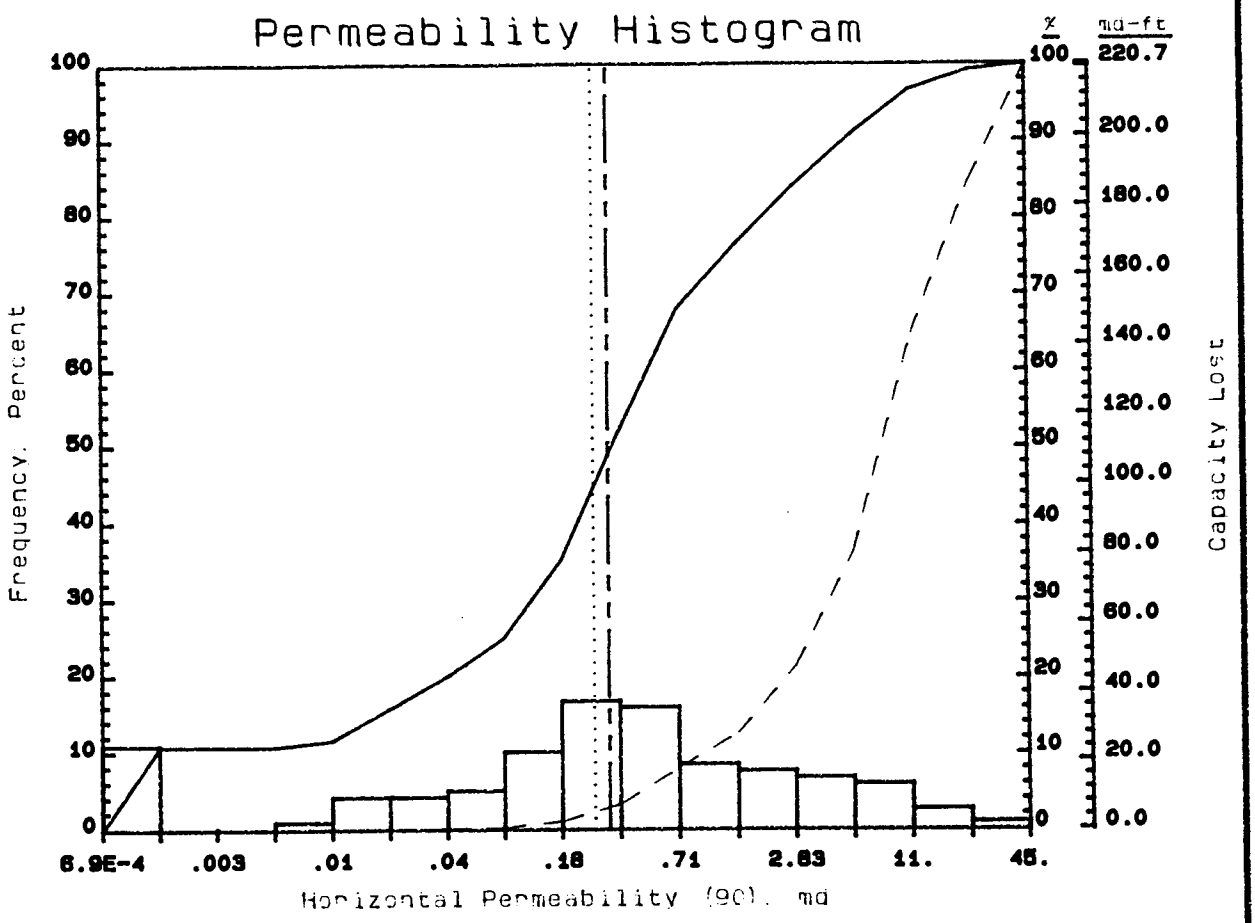
TOPEKA (2760 - 2912 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (7.5)
..... Arith. Average (8.6)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

119 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

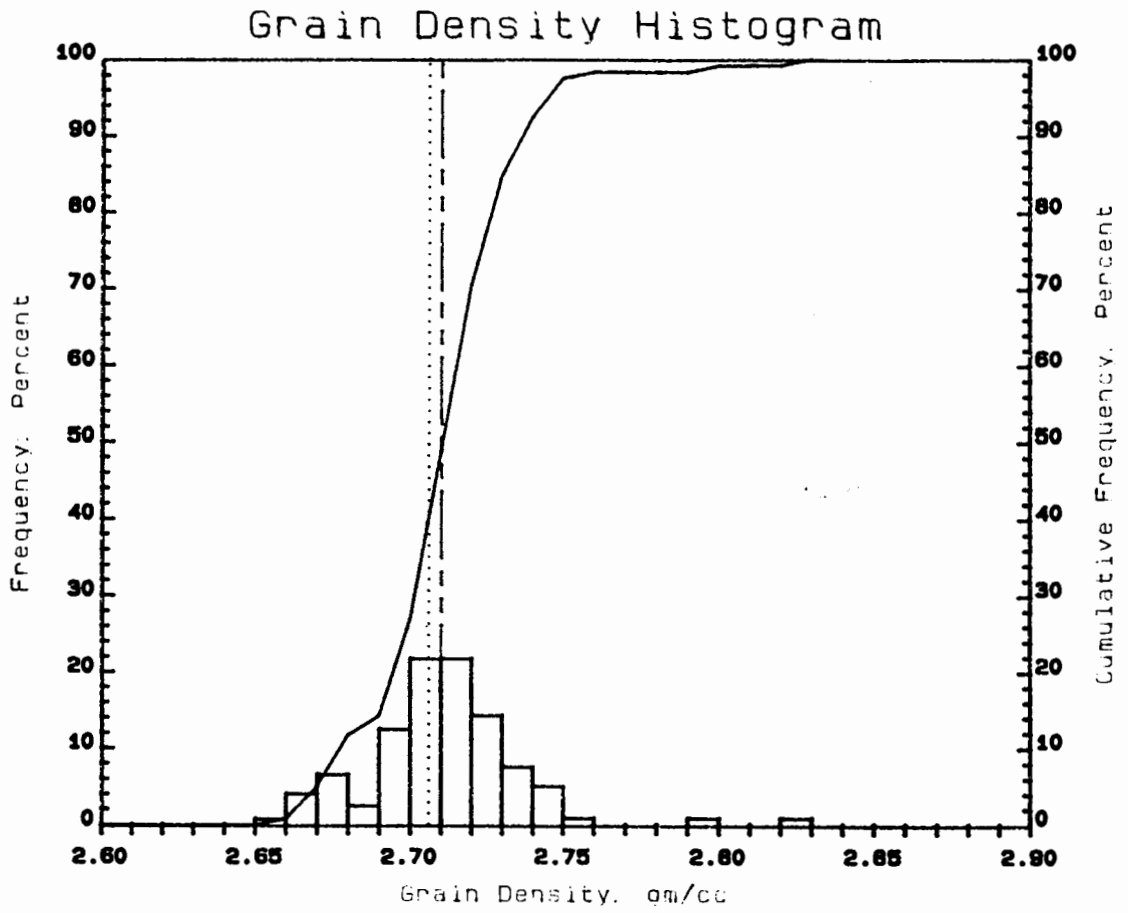
TOPEKA (2760 - 2912 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (0.310)
..... Geom. Average (0.258)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

119 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

TOPEKA (2760 - 2912 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (2.71)
..... Arith. Average (2.71)
——— Cumulative Frequency

119 Samples

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
NORTON COUNTY, KANSAS

TOPEKA FORMATION - ZONATION

ZONE	F	2760 - 2763 feet
ZONE	E	2765 - 2775 feet
ZONE	D	2781 - 2791 feet
ZONE	C	2816 - 2851 feet
ZONE	CW	2851 - 2865 feet
ZONE	B	2892 - 2912 feet

CORE LABORATORIES

Company : ANADARKO PETROLEUM CORPORATION
Well : U.S.A. "AB" NO. 1 WELL
Field : GREENWOOD FIELD
Formation : TOPEKA
File No.: 57182-13522
Date : 2-AUG-1992

TABLE II

SUMMARY OF CORE DATA

ZONE AND CUTOFF DATA

ZONE:

Identification	ZONE F
Top Depth	2760.0 ft
Bottom Depth	2763.0 ft
Number of Samples	3

DATA TYPE:

Porosity ------- (BOYLES'LAW) (Helium)
Permeability ----------- (90 DEG) Kair

CUTOFFS:

Porosity (Minimum)	0.0 %
Porosity (Maximum)	100.0 %
Permeability (Minimum)	0.0000 md
Permeability (Maximum)	100000. md
Water Saturation (Maximum)	100.0 %
Oil Saturation (Minimum)	0.0 %
Grain Density (Minimum)	2.00 gm/cc
Grain Density (Maximum)	3.00 gm/cc
Lithology Excluded	NONE

CHARACTERISTICS REMAINING AFTER CUTOFFS

ZONE:

Number of Samples	3
Thickness Represented	3.0 ft

POROSITY:

Storage Capacity	44.2 ϕ-ft
Arithmetic Average	14.7 %
Minimum	12.1 %
Maximum	17.5 %
Median	14.6 %
Standard Deviation	±2.7 %

GRAIN DENSITY:

Arithmetic Average	2.75 gm/cc
Minimum	2.72 gm/cc
Maximum	2.79 gm/cc
Median	2.74 gm/cc
Standard Deviation	±0.04 gm/cc

PERMEABILITY:

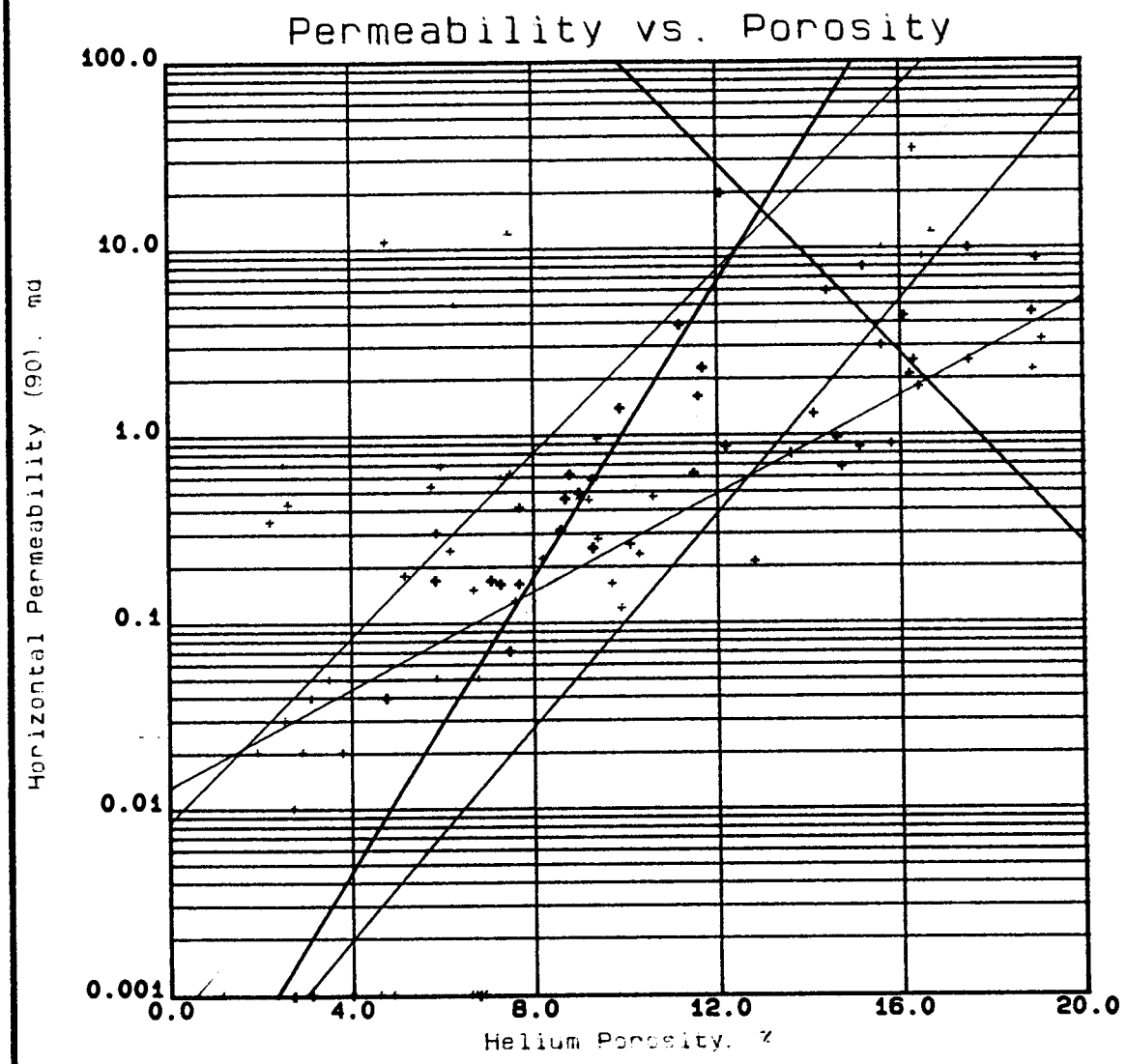
Flow Capacity	31.0 md-ft
Arithmetic Average	10.3 md
Geometric Average	5.77 md
Harmonic Average	2.52 md
Minimum	0.96 md
Maximum	20.0 md
Median	10.0 md
Standard Dev. (Geom) --	$K \cdot 10^{\pm 0.691}$ md

HETEROGENEITY (Permeability):

Dykstra-Parsons Var.	0.935
Lorenz Coefficient	0.513

AVERAGE SATURATIONS (Pore Volume):

Oil	0.0 %
Water	52.4 %



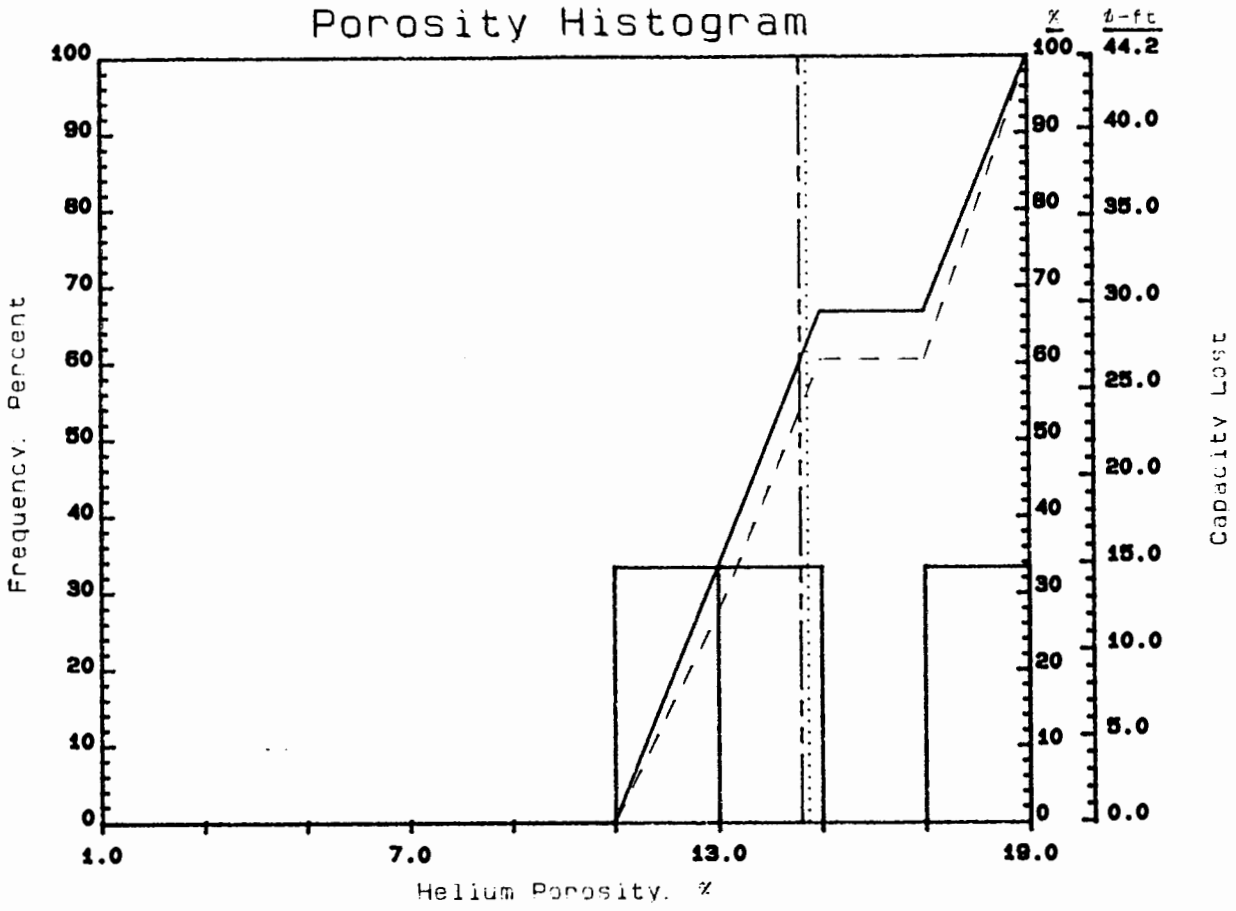
ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

TOPEKA ZONED

Core Laboratories August 18, 1992

- LEGEND -

ZONE B
ZONE F
ZONE E
ZONE D
ZONE C
ZONE CW



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

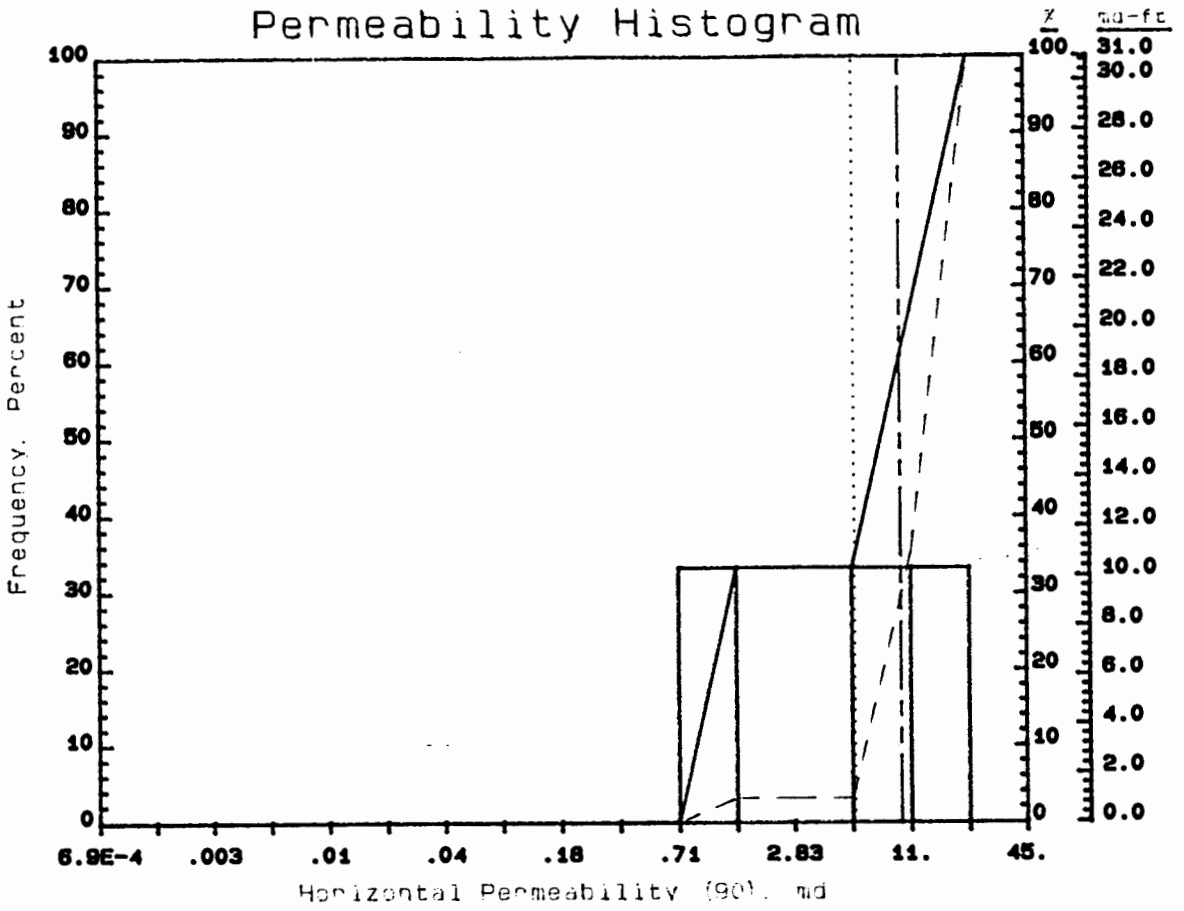
ZONE F (2760 - 2763)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (14.6)
..... Arith. Average (14.7)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

3 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

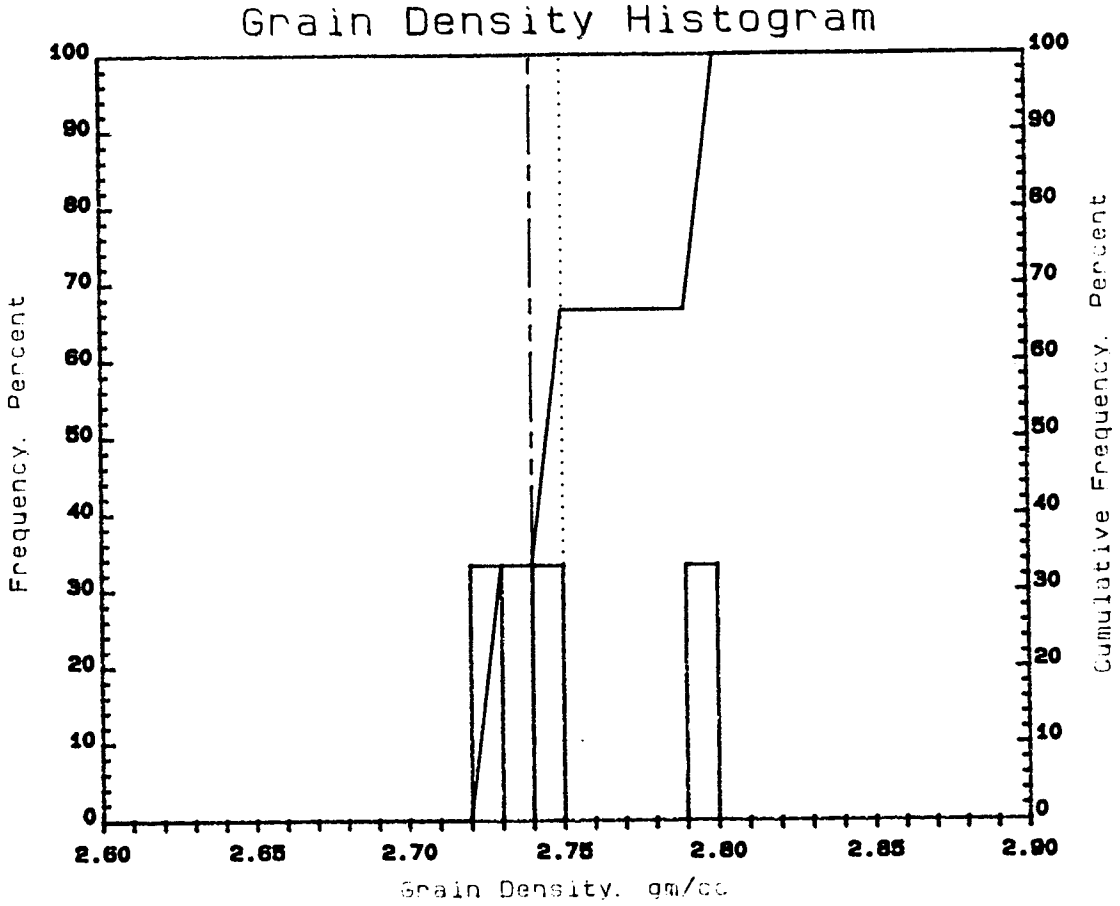
ZONE F (2760 - 2763)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (10.0)
..... Geom. Average (5.77)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

3 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

ZONE F (2760 - 2763)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (2.74)
..... Arith. Average (2.75)
——— Cumulative Frequency

3 Samples

CORE LABORATORIES

Company : ANADARKO PETROLEUM CORPORATION
Well : U.S.A. "AB" NO. 1 WELL
Field : GREENWOOD FIELD
Formation : TOPEKA
File No.: 57182-13522
Date : 2-AUG-1992

TABLE III

SUMMARY OF CORE DATA

ZONE AND CUTOFF DATA

ZONE:

Identification	ZONE E
Top Depth	2765.0 ft
Bottom Depth	2775.0 ft
Number of Samples	10

DATA TYPE:

Porosity	(BOYLES'LAW) (Helium)
Permeability	(90 DEG) Kair

CUTOFFS:

Porosity (Minimum)	0.0 %
Porosity (Maximum)	100.0 %
Permeability (Minimum)	0.0000 md
Permeability (Maximum)	100000. md
Water Saturation (Maximum)	100.0 %
Oil Saturation (Minimum)	0.0 %
Grain Density (Minimum)	2.00 gm/cc
Grain Density (Maximum)	3.00 gm/cc
Lithology Excluded	NONE

CHARACTERISTICS REMAINING AFTER CUTOFFS

ZONE:

Number of Samples	10
Thickness Represented	10.0 ft

POROSITY:

Storage Capacity	83.6 ϕ-ft
Arithmetic Average	8.4 %
Minimum	1.9 %
Maximum	16.7 %
Median	7.1 %
Standard Deviation	±5.8 %

GRAIN DENSITY:

Arithmetic Average	2.71 gm/cc
Minimum	2.70 gm/cc
Maximum	2.74 gm/cc
Median	2.71 gm/cc
Standard Deviation	±0.01 gm/cc

PERMEABILITY:

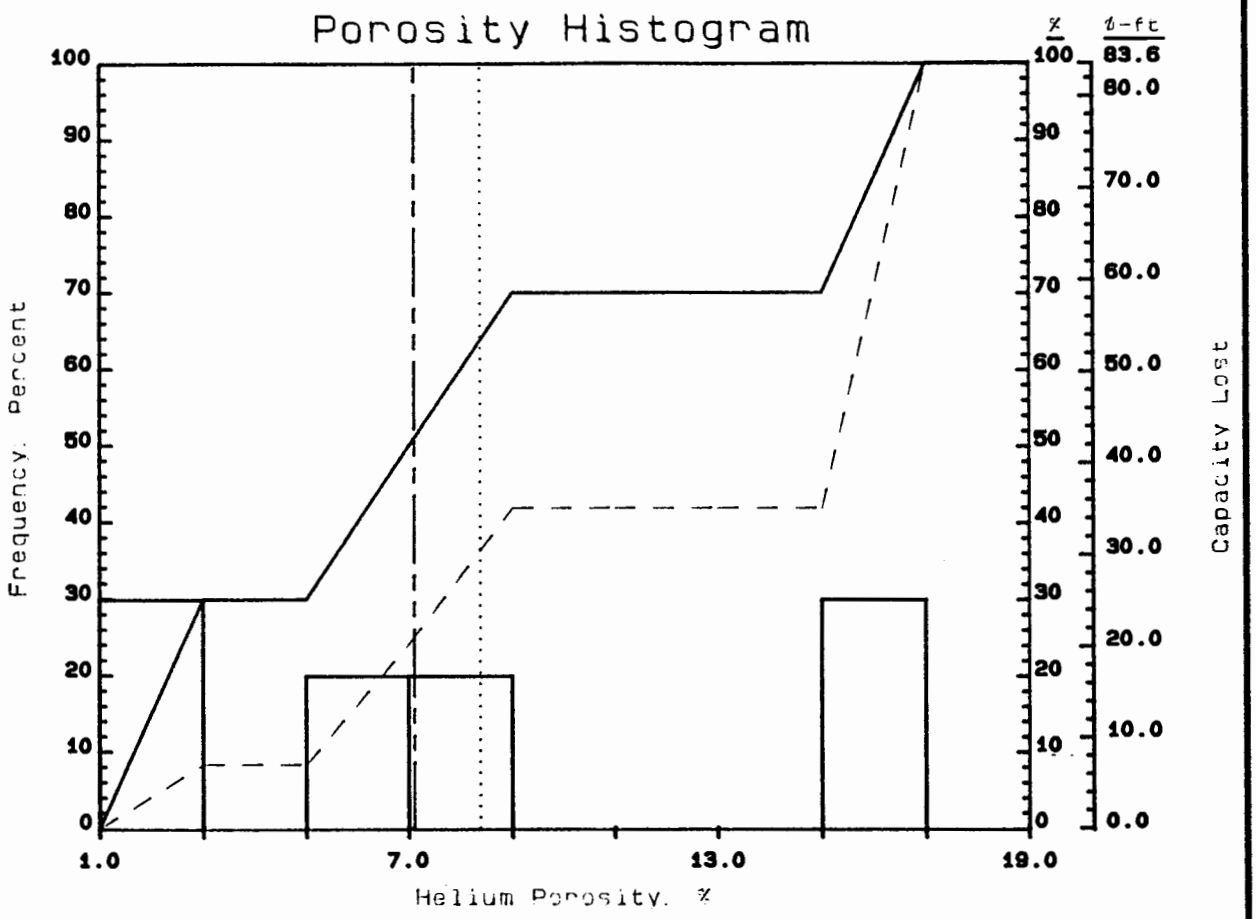
Flow Capacity	74.5 md-ft
Arithmetic Average	7.45 md
Geometric Average	0.98 md
Harmonic Average	0.01 md
Minimum	0.00 md
Maximum	34.0 md
Median	2.80 md
Standard Dev. (Geom)	$K \cdot 10^{\pm 1.424}$ md

HETEROGENEITY (Permeability):

Dykstra-Parsons Var.	0.893
Lorenz Coefficient	0.428

AVERAGE SATURATIONS (Pore Volume):

Oil	0.0 %
Water	53.0 %



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

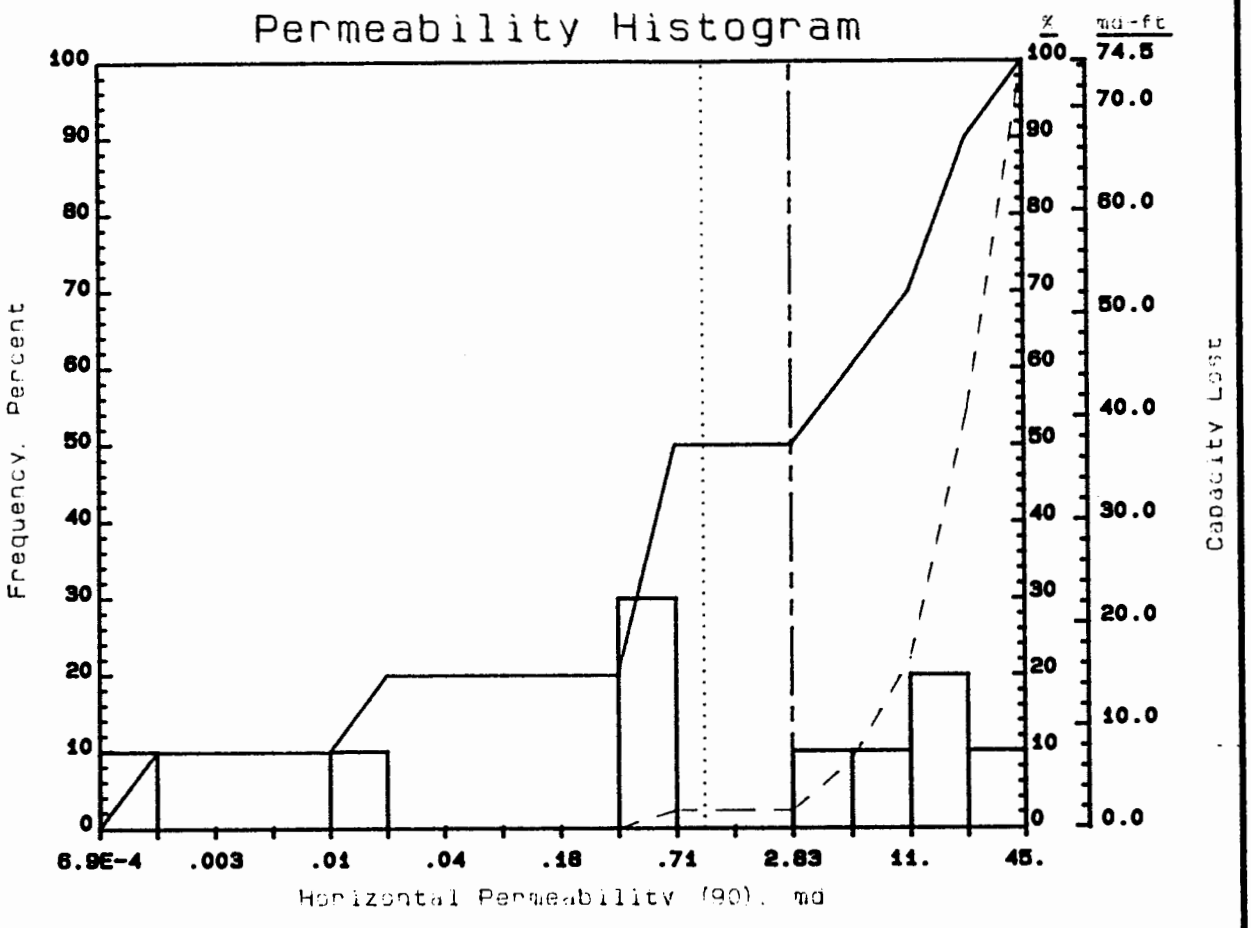
ZONE E (2765 - 2775 feet)

Core Laboratories Auguet 18, 1992

- LEGEND -

——— - Median Value (7.1)
..... Arith. Average (8.4)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

10 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

ZONE E (2765 - 2775 feet)

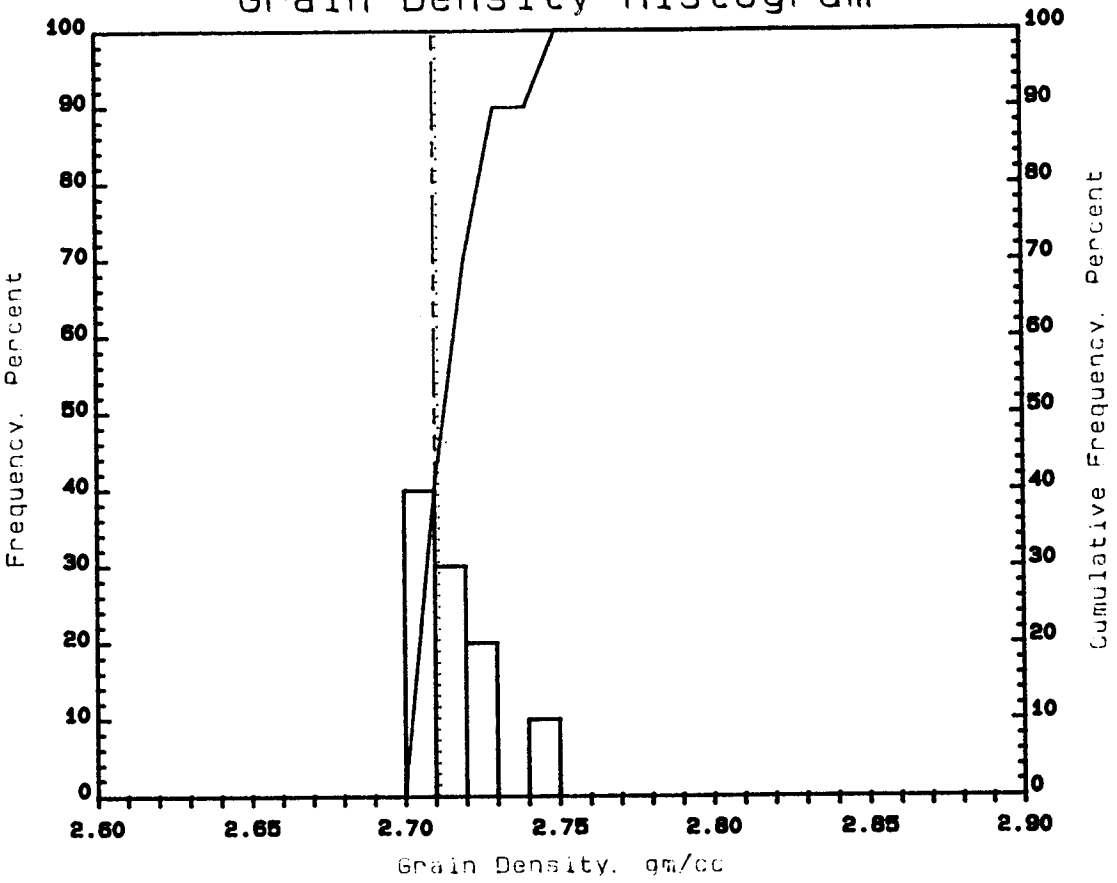
Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (2.80)
..... Geom. Average (0.980)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

10 Samples

Grain Density Histogram



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

ZONE E (2765 - 2775 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (2.71)
..... Arith. Average (2.71)
——— Cumulative Frequency

10 Samples

CORE LABORATORIES

Company : ANADARKO PETROLEUM CORPORATION
Well : U.S.A. "AB" NO. 1 WELL

Field : GREENWOOD FIELD
Formation : TOPEKA

File No.: 57182-13522
Date : 2-AUG-1992

TABLE IV

SUMMARY OF CORE DATA

ZONE AND CUTOFF DATA

ZONE:

Identification	ZONE D
Top Depth	2781.0 ft
Bottom Depth	2791.0 ft
Number of Samples	10

DATA TYPE:

Porosity ------- (BOYLES'LAW) (Helium)
Permeability ---------- (90 DEG) Kair

CUTOFFS:

Porosity (Minimum)	0.0 %
Porosity (Maximum)	100.0 %
Permeability (Minimum)	0.0000 md
Permeability (Maximum)	100000. md
Water Saturation (Maximum)	100.0 %
Oil Saturation (Minimum)	0.0 %
Grain Density (Minimum)	2.00 gm/cc
Grain Density (Maximum)	3.00 gm/cc
Lithology Excluded	NONE

CHARACTERISTICS REMAINING AFTER CUTOFFS

ZONE:

Number of Samples	10
Thickness Represented	10.0 ft

POROSITY:

Storage Capacity	136.8 ϕ-ft
Arithmetic Average	13.7 %
Minimum	6.8 %
Maximum	19.0 %
Median	14.8 %
Standard Deviation	±4.2 %

GRAIN DENSITY:

Arithmetic Average	2.73 gm/cc
Minimum	2.71 gm/cc
Maximum	2.75 gm/cc
Median	2.73 gm/cc
Standard Deviation	±0.01 gm/cc

PERMEABILITY:

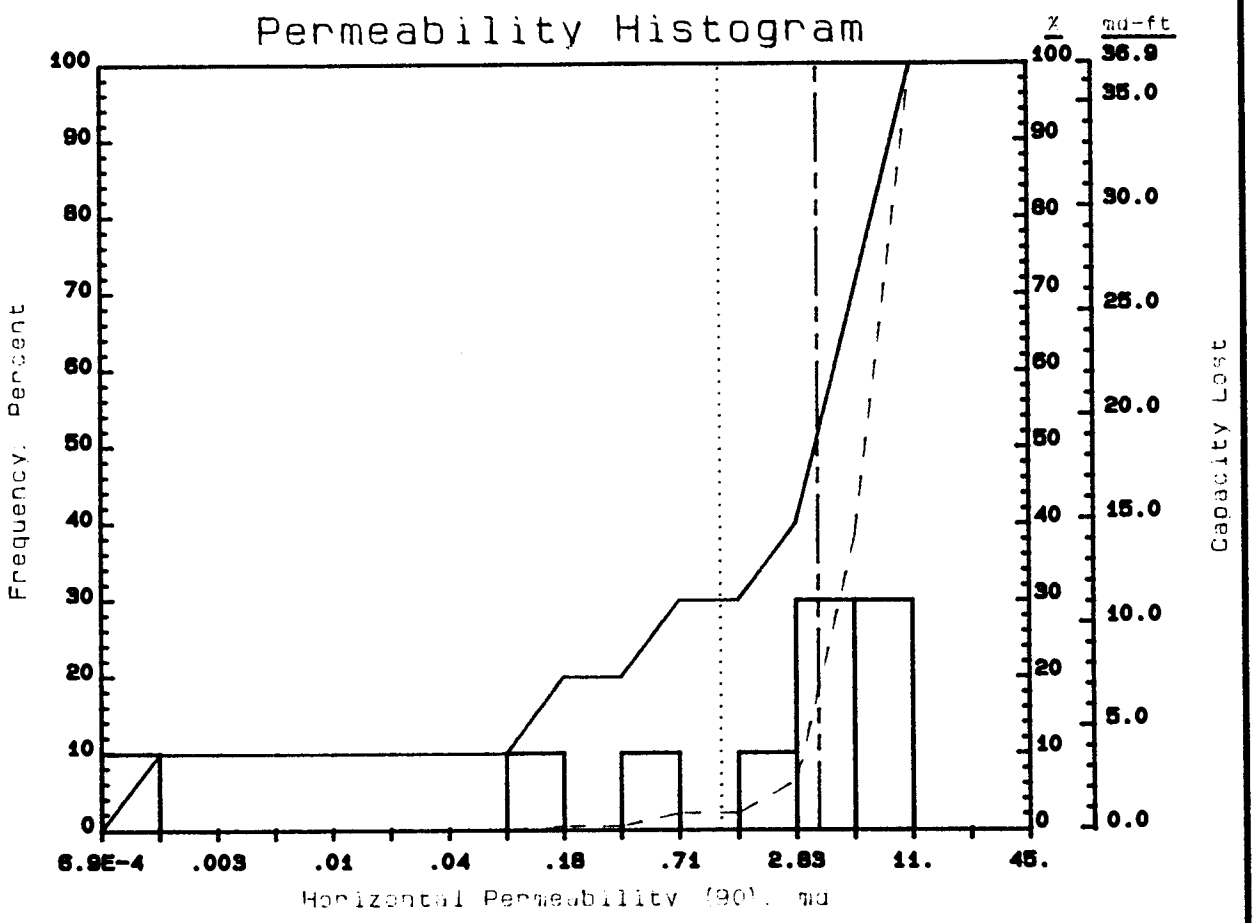
Flow Capacity	36.9 md-ft
Arithmetic Average	3.69 md
Geometric Average	1.14 md
Harmonic Average	0.01 md
Minimum	0.00 md
Maximum	8.80 md
Median	3.65 md
Standard Dev. (Geom)	$K \cdot 10^{\pm 1.204}$ md

HETEROGENEITY (Permeability):

Dykstra-Parsons Var.	0.789
Lorenz Coefficient	0.370

AVERAGE SATURATIONS (Pore Volume):

Oil	0.0 %
Water	58.3 %



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

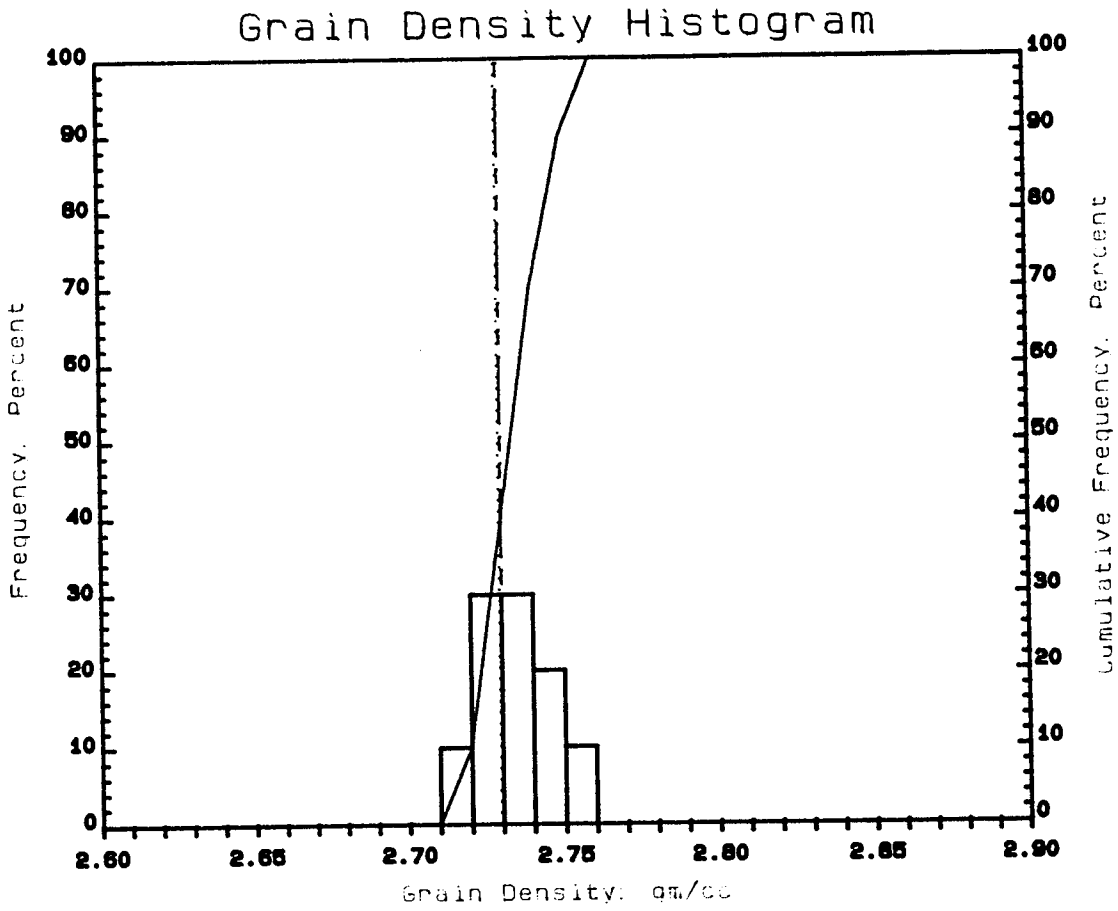
ZONE D (2781 - 2791 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (9.65)
..... Geom. Average (1.14)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

10 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

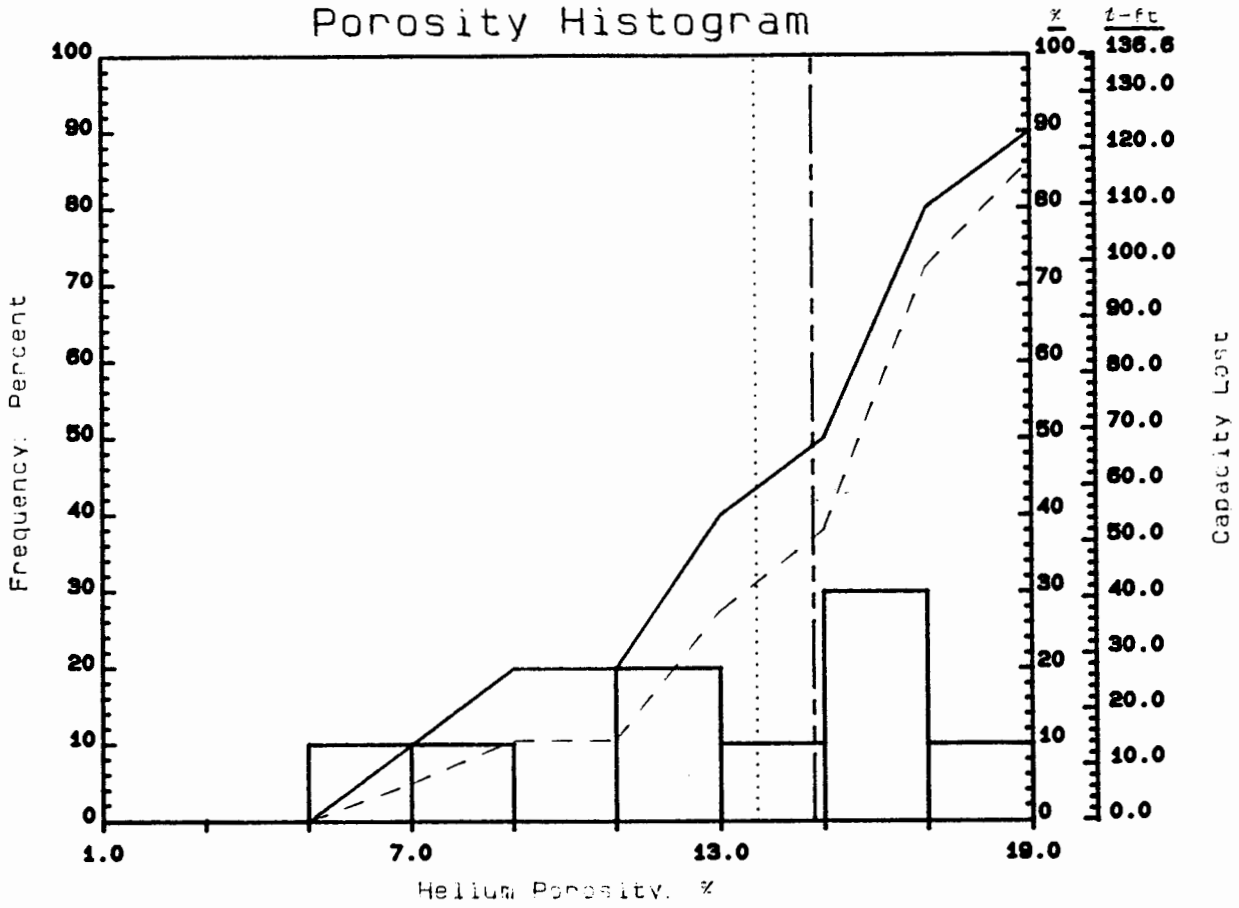
ZONE D (2781 - 2791 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (2.73)
..... Arith. Average (2.73)
——— Cumulative Frequency

10 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

ZONE D (2781 - 2791 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (14.8)
..... Arith. Average (13.7)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

10 Samples

CORE LABORATORIES

Company : ANADARKO PETROLEUM CORPORATION
Well : U.S.A. "AB" NO. 1 WELL
Field : GREENWOOD FIELD
Formation : TOPEKA
File No.: 57182-13522
Date : 2-AUG-1992

TABLE V

SUMMARY OF CORE DATA

ZONE AND CUTOFF DATA

ZONE:
- Identification -------- ZONE C
- Top Depth ---------- 2816.4 ft
- Bottom Depth ---------- 2851.0 ft
- Number of Samples -------- 35

DATA TYPE:
- Porosity ------- (BOYLES'LAW) (Helium)
- Permeability ---------- (90 DEG) Kair

CUTOFFS:
- Porosity (Minimum) ------- 0.0 %
- Porosity (Maximum) ------- 100.0 %
- Permeability (Minimum) --- 0.0000 md
- Permeability (Maximum) --- 100000. md
- Water Saturation (Maximum) 100.0 %
- Oil Saturation (Minimum) - 0.0 %
- Grain Density (Minimum) -- 2.00 gm/cc
- Grain Density (Maximum) -- 3.00 gm/cc
- Lithology Excluded ------- NONE

CHARACTERISTICS REMAINING AFTER CUTOFFS

ZONE:

Number of Samples -----	35
Thickness Represented -	34.6 ft

POROSITY:

Storage Capacity ------	256.0 ϕ-ft
Arithmetic Average ----	7.4 %
Minimum ----------	1.1 %
Maximum ----------	19.1 %
Median ----------	6.7 %
Standard Deviation ----	±4.2 %

GRAIN DENSITY:

Arithmetic Average ----	2.72 gm/cc
Minimum ----------	2.69 gm/cc
Maximum ----------	2.82 gm/cc
Median ----------	2.71 gm/cc
Standard Deviation ----	±0.02 gm/cc

PERMEABILITY:

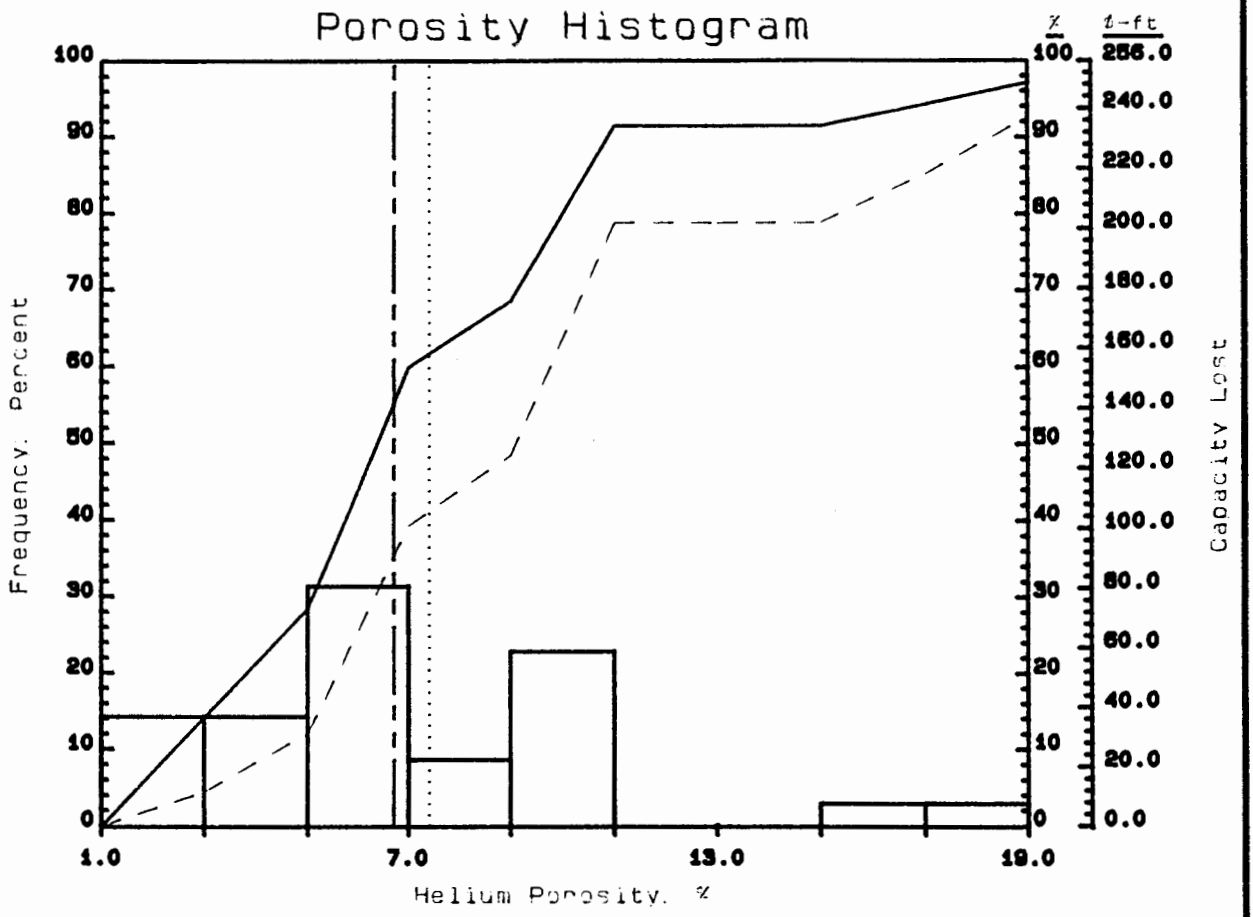
Flow Capacity ---------	31.9 md-ft
Arithmetic Average ----	0.92 md
Geometric Average -----	0.09 md
Harmonic Average ------	0.00 md
Minimum ----------	0.00 md
Maximum ----------	11.0 md
Median ----------	0.16 md
Standard Dev. (Geom) --	$K \cdot 10^{\pm 1.179}$ md

HETEROGENEITY (Permeability):

Dykstra-Parsons Var. --	0.867
Lorenz Coefficient ----	0.754

AVERAGE SATURATIONS (Pore Volume):

Oil ----------	0.6 %
Water ----------	62.1 %



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

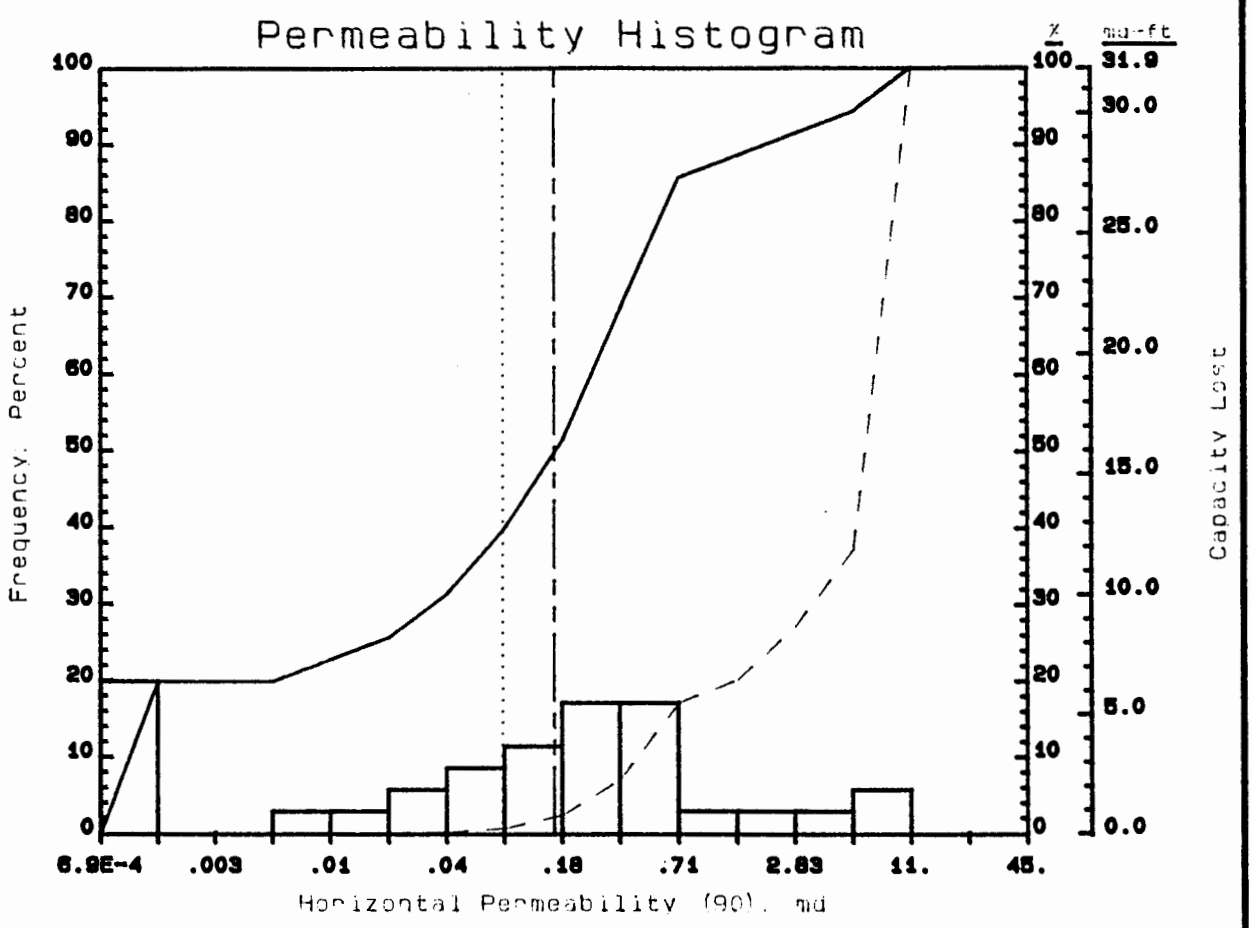
ZONE C (2816.4 - 2851.0 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (6.7)
..... Arith. Average (7.4)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

35 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

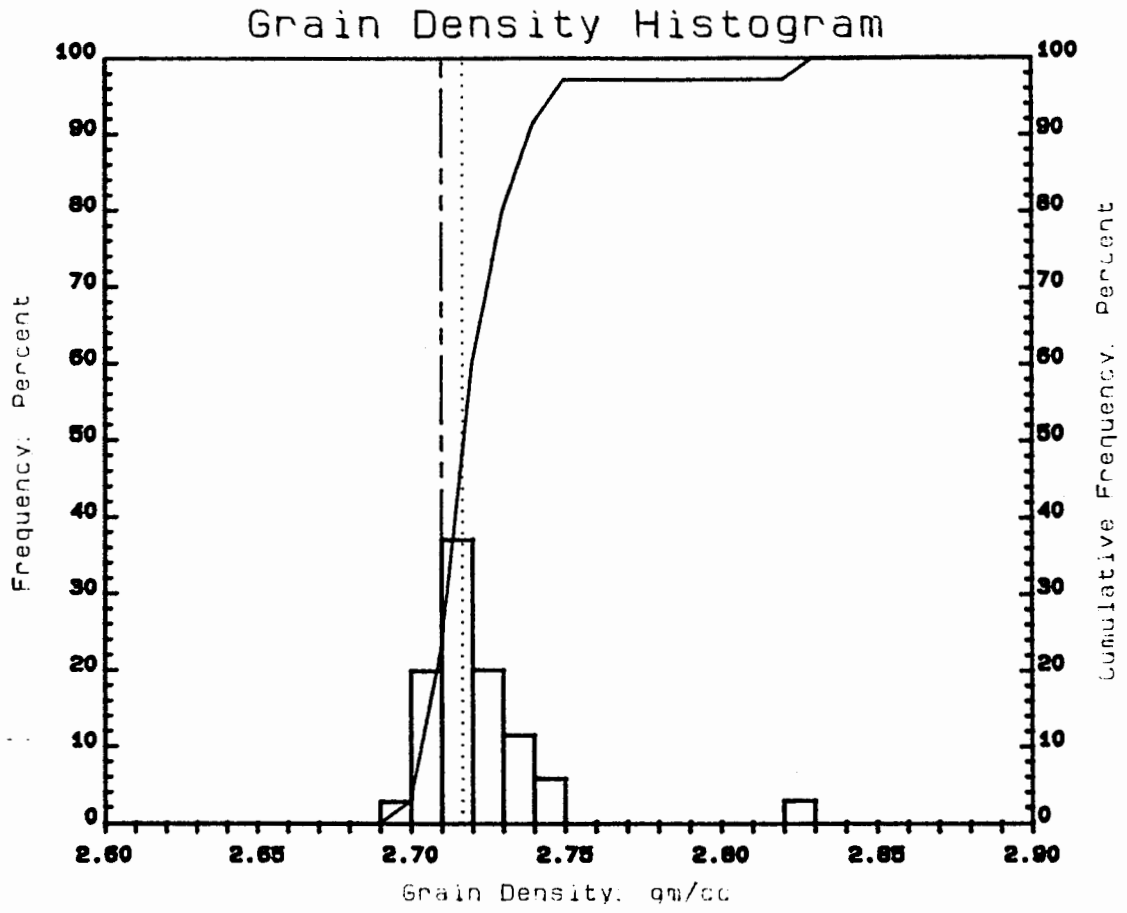
ZONE C (2816.4 - 2851.0 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (0.160)
..... Geom. Average (0.086)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

35 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

ZONE C (2816.4 - 2851.0 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (2.71)
..... Arith. Average (2.72)
——— Cumulative Frequency

35 Samples

CORE LABORATORIES

Company : ANADARKO PETROLEUM CORPORATION
Well : U.S.A. "AB" NO. 1 WELL
Field : GREENWOOD FIELD
Formation : TOPEKA
File No.: 57182-13522
Date : 2-AUG-1992

TABLE VI

SUMMARY OF CORE DATA

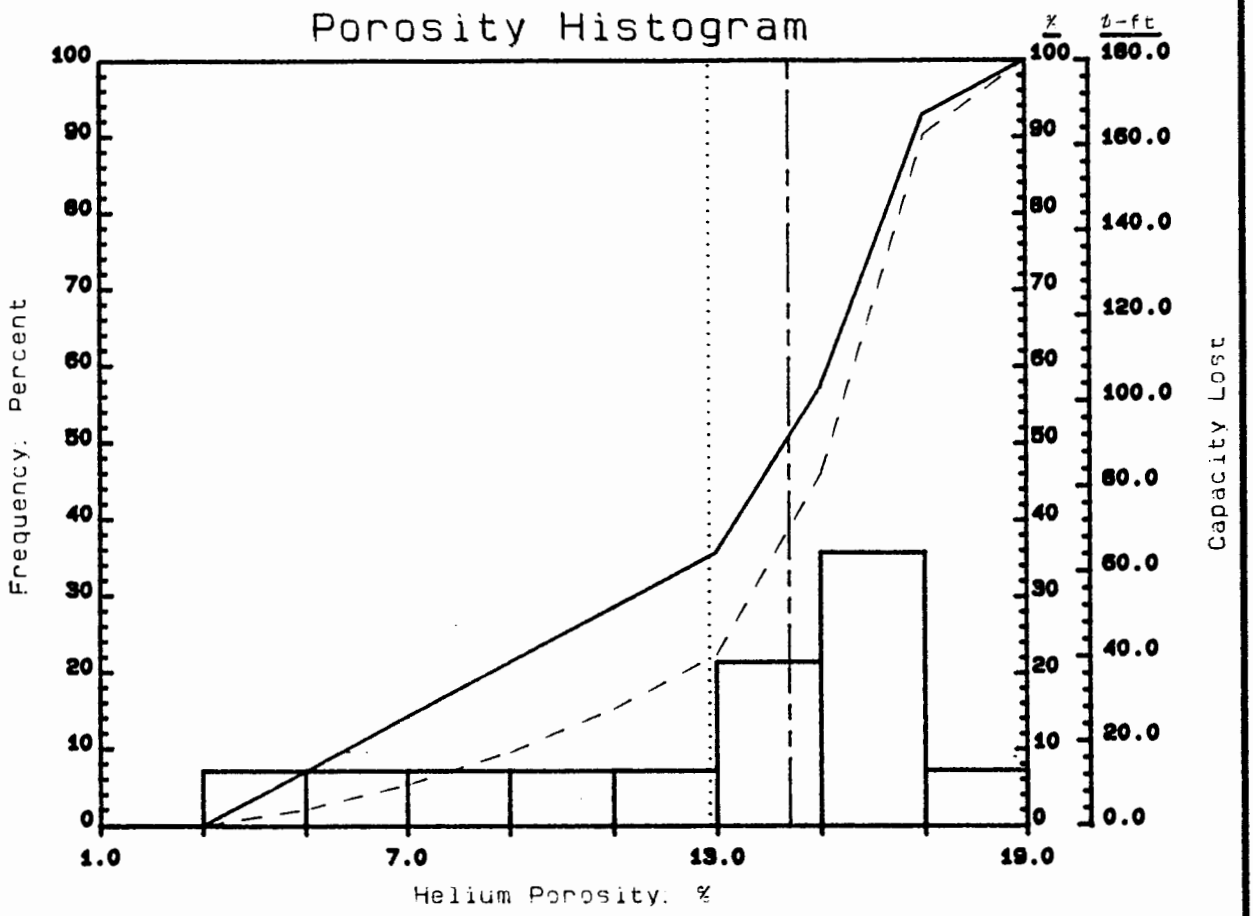
ZONE AND CUTOFF DATA

ZONE:	
Identification	ZONE CW
Top Depth	2851.0 ft
Bottom Depth	2865.0 ft
Number of Samples	14
DATA TYPE:	
Porosity	(BOYLES'LAW) (Helium)
Permeability	(90 DEG) Kair
CUTOFFS:	
Porosity (Minimum)	0.0 %
Porosity (Maximum)	100.0 %
Permeability (Minimum)	0.0000 md
Permeability (Maximum)	100000. md
Water Saturation (Maximum)	100.0 %
Oil Saturation (Minimum)	0.0 %
Grain Density (Minimum)	2.00 gm/cc
Grain Density (Maximum)	3.00 gm/cc
Lithology Excluded	NONE

CHARACTERISTICS REMAINING AFTER CUTOFFS

ZONE:	
Number of Samples	14
Thickness Represented	14.0 ft
POROSITY:	
Storage Capacity	180.0 ϕ-ft
Arithmetic Average	12.9 %
Minimum	3.8 %
Maximum	17.5 %
Median	14.4 %
Standard Deviation	±4.3 %
GRAIN DENSITY:	
Arithmetic Average	2.67 gm/cc
Minimum	2.65 gm/cc
Maximum	2.69 gm/cc
Median	2.67 gm/cc
Standard Deviation	±0.01 gm/cc

PERMEABILITY:	
Flow Capacity	14.6 md-ft
Arithmetic Average	1.04 md
Geometric Average	0.63 md
Harmonic Average	0.19 md
Minimum	0.02 md
Maximum	2.50 md
Median	0.83 md
Standard Dev. (Geom)	$K \cdot 10^{\pm 0.562}$ md
HETEROGENEITY (Permeability):	
Dykstra-Parsons Var.	0.688
Lorenz Coefficient	0.330
AVERAGE SATURATIONS (Pore Volume):	
Oil	0.0 %
Water	71.1 %



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

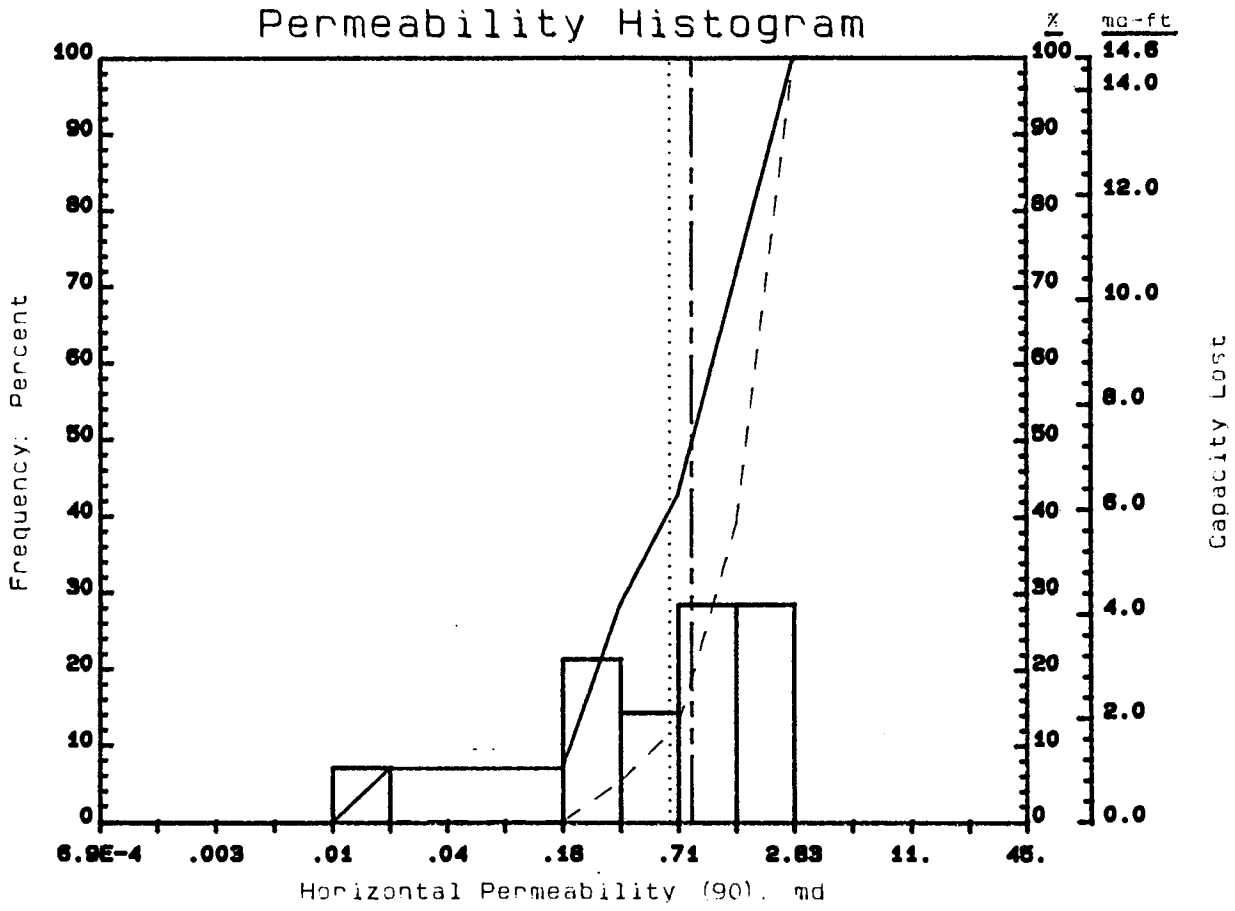
ZONE CW (2851 - 2865 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (14.4)
..... Arith. Average (12.9)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

14 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

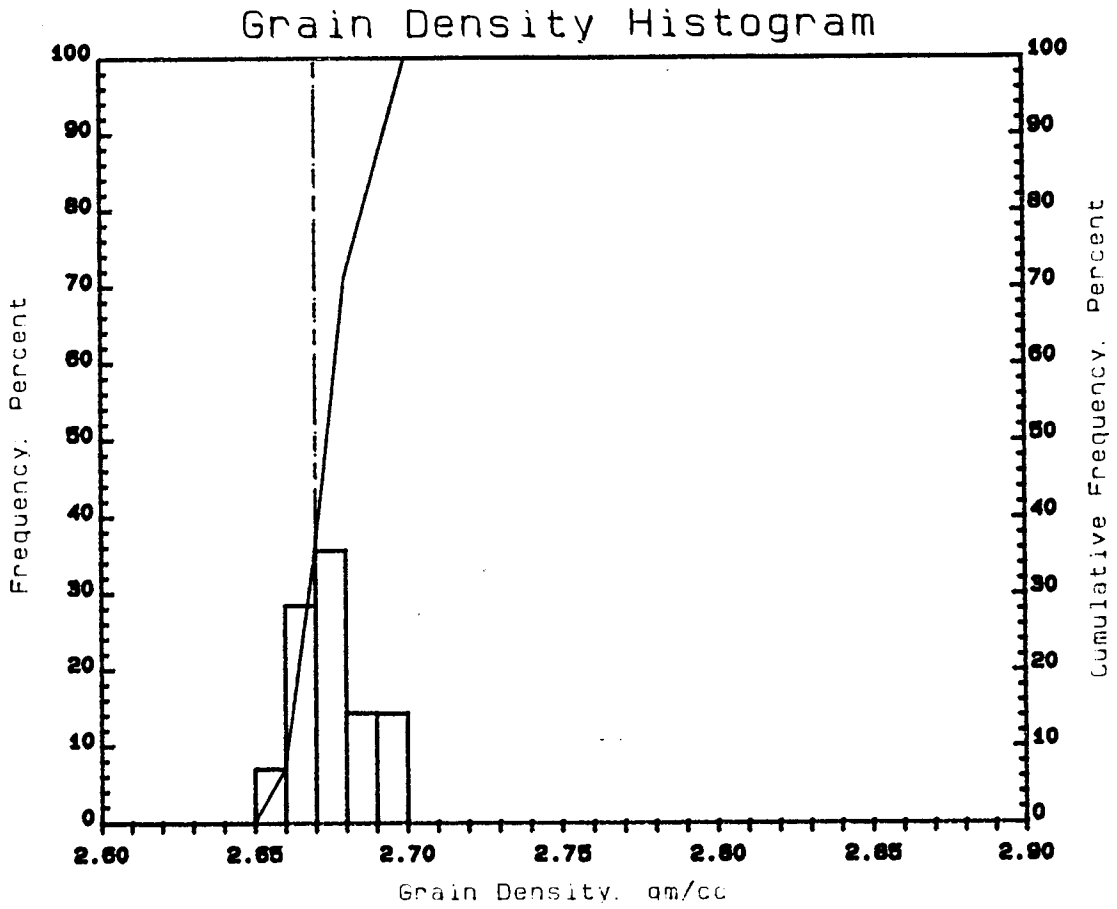
ZONE CW (2851 - 2865 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (0.630)
..... Geom. Average (0.634)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

14 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

ZONE CW (2851 - 2865 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (2.67)
..... Arith. Average (2.67)
——— Cumulative Frequency

14 Samples

CORE LABORATORIES

Company : ANADARKO PETROLEUM CORPORATION
Well : U.S.A. "AB" NO. 1 WELL
Field : GREENWOOD FIELD
Formation : TOPEKA
File No.: 57182-13522
Date : 2-AUG-1992

TABLE VII

SUMMARY OF CORE DATA

ZONE AND CUTOFF DATA

ZONE:

Identification	ZONE B
Top Depth	2892.0 ft
Bottom Depth	2912.0 ft
Number of Samples	18

DATA TYPE:

Porosity ------- (BOYLES'LAW) (Helium)
Permeability ---------- (90 DEG) Kair

CUTOFFS:

Porosity (Minimum)	0.0 %
Porosity (Maximum)	100.0 %
Permeability (Minimum)	0.0000 md
Permeability (Maximum)	100000. md
Water Saturation (Maximum)	100.0 %
Oil Saturation (Minimum)	0.0 %
Grain Density (Minimum)	2.00 gm/cc
Grain Density (Maximum)	3.00 gm/cc
Lithology Excluded	NONE

CHARACTERISTICS REMAINING AFTER CUTOFFS

ZONE:

Number of Samples	18
Thickness Represented	17.3 ft

POROSITY:

Storage Capacity	139.0 ϕ-ft
Arithmetic Average	8.0 %
Minimum	2.7 %
Maximum	12.2 %
Median	8.6 %
Standard Deviation	±2.8 %

GRAIN DENSITY:

Arithmetic Average	2.70 gm/cc
Minimum	2.69 gm/cc
Maximum	2.72 gm/cc
Median	2.70 gm/cc
Standard Deviation	±0.01 gm/cc

PERMEABILITY:

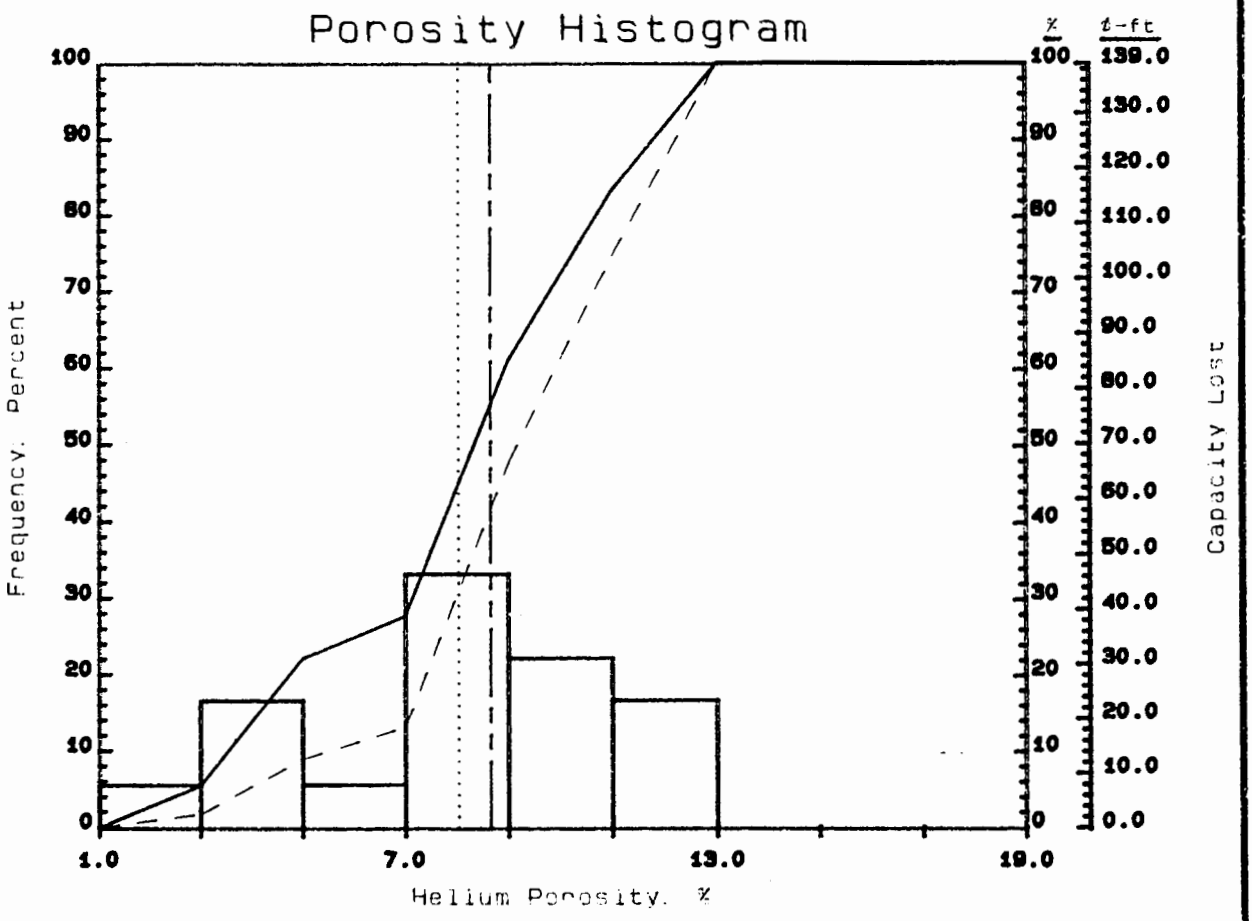
Flow Capacity	11.8 md-ft
Arithmetic Average	0.68 md
Geometric Average	0.18 md
Harmonic Average	0.01 md
Minimum	0.00 md
Maximum	3.90 md
Median	0.28 md
Standard Dev. (Geom)	$K \cdot 10^{\pm 1.114}$ md

HETEROGENEITY (Permeability):

Dykstra-Parsons Var.	0.771
Lorenz Coefficient	0.550

AVERAGE SATURATIONS (Pore Volume):

Oil	0.0 %
Water	62.9 %



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

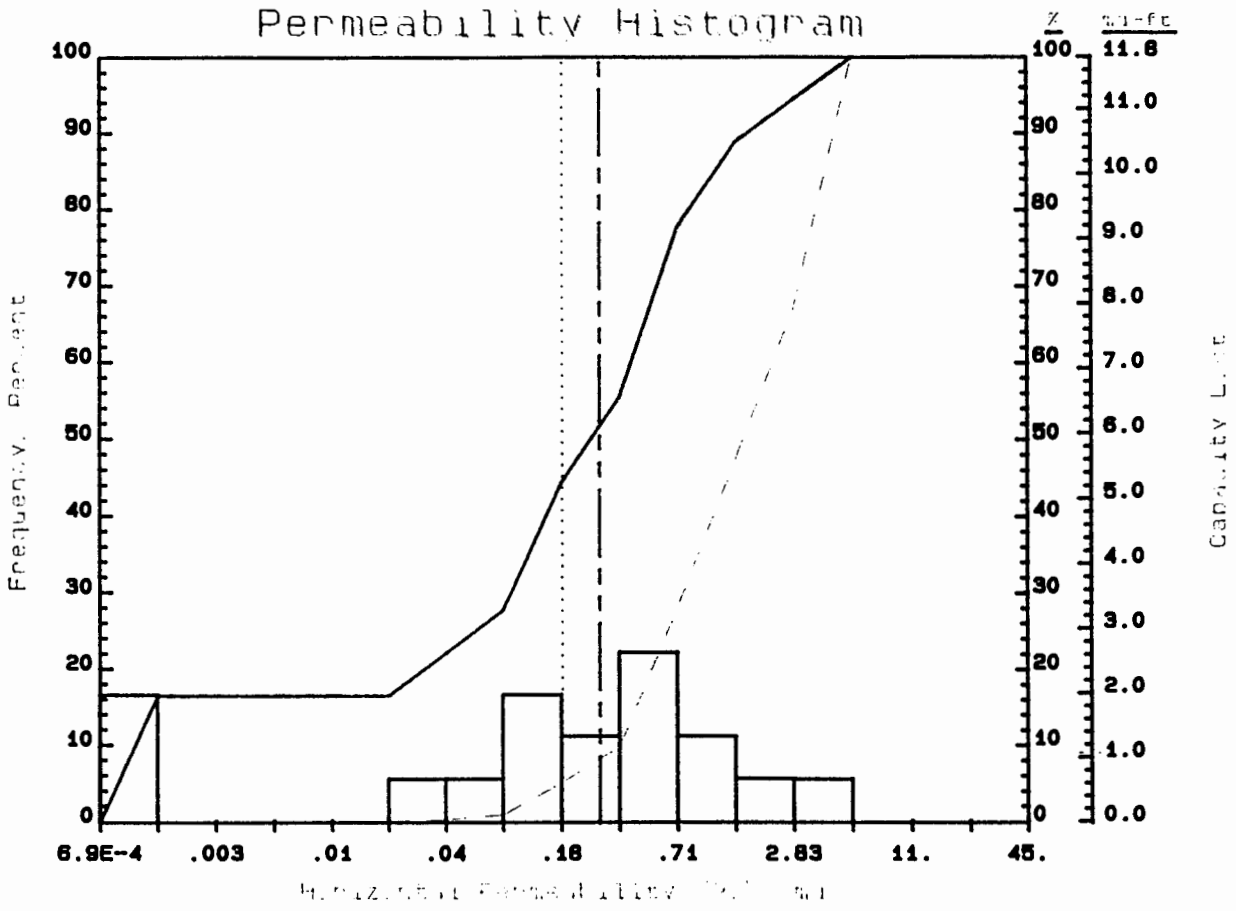
ZONE B (2892 - 2912 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (8.6)
..... Arith. Average (8.0)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

18 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

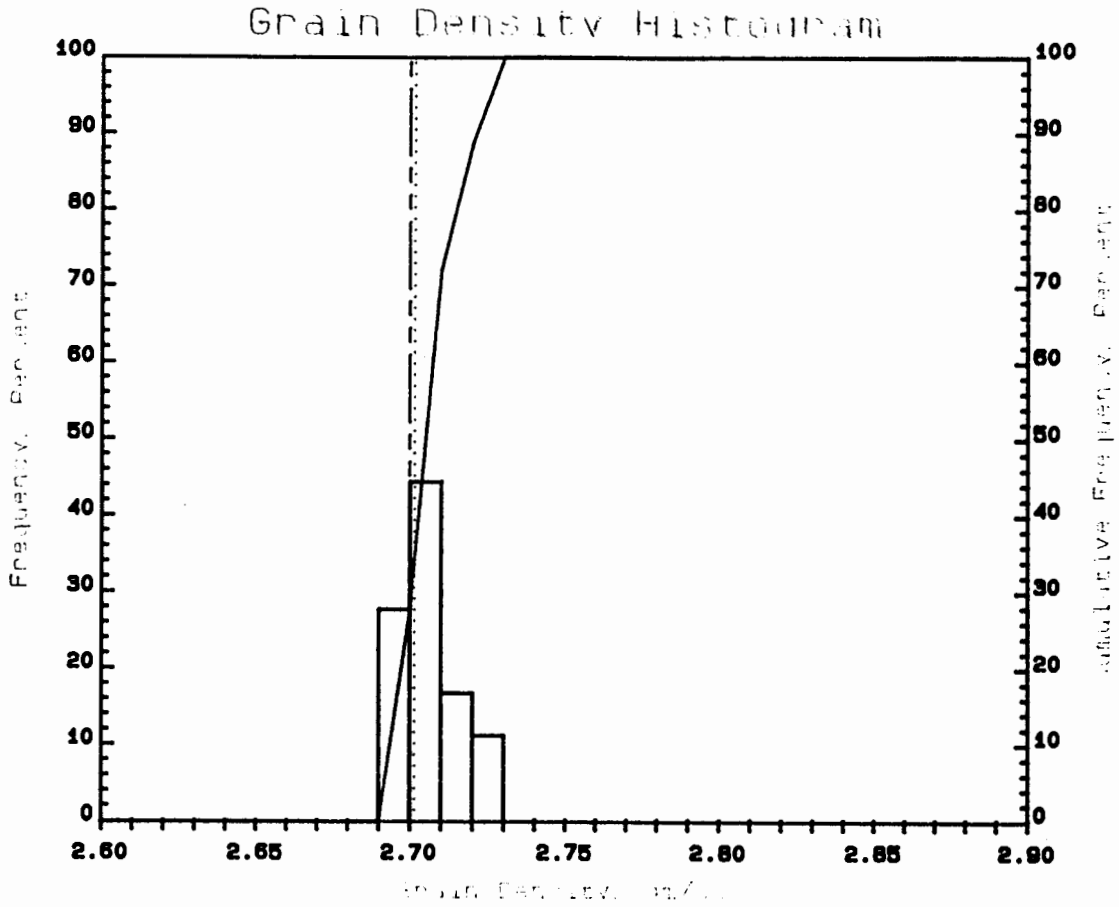
ZONE B (2892 - 2912 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (0.260)
..... Geom. Average (0.179)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

18 Samples



ANADARKO PETROLEUM CORPORATION
U.S.A. "AB" NO. 1 WELL
MORTON COUNTY, KANSAS

ZONE B (2892 - 2912 feet)

Core Laboratories August 18, 1992

- LEGEND -

——— - Median Value (2.70)
..... Arith. Average (2.70)
——— Cumulative Frequency

18 Samples

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

DISTRIBUTION OF FINAL REPORT

ANADARKO PETROLEUM CORPORATION
U.S.A."AB" No. 1 Well
Greenwood Field
Morton County, Kansas
CL File 57182-13522

5 cc: **ANADARKO PETROLEUM CORPORATION**
17001 Northchase Drive
Houston, Texas 77060

Attention: Mr. Nic Thams