WELL FILE

Western Atlas International
A Litton/Dresser Company

CORE LABORATORIES

September 24, 1990

BEREXCO, INC.
5101 North Classen Blvd. - Suite 205
Oklahoma City, Oklahoma 73118

Attn: Mr. Peter G. Wilson

Subject: Core Analysis Data
Irene No. 2-5 Well
Kearny County, Kansas
CL File 57182-13296

Dear Mr. Wilson:

Core taken in the subject well from the Upper Morrow formation was 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 may be found on pages one thru three of this report.

A cross-plot of permeability versus porosity and histograms of porosity and permeability are also included.

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

Very truly yours,

CORE LABORATORIES

Lynn Antwine

Lynn Antwine
Laboratory Supervisor

CORE LABORATORIES

Company : BEREXCO, INC.
Well : IRENE NO. 2-5 WELL T23S-R37W

Field :
Formation : UPPER MORROW

File No.: 57182-13296
Date : 4-SEPT-1990

ANALYTICAL PROCEDURES AND QUALITY ASSURANCE

HANDLING & CLEANING

Core Transportation	: Core Laboratories Vehicle
Solvent	: Toluene
Extraction Equipment	: Dean Stark Apparatus - Vapor Phase
Extraction Time	: 24 Hours
Drying Equipment	: Convection Oven
Drying Time	: 48 Hours
Drying Temperature	: 250 Deg. F.

ANALYSIS

Pore volume measured by Boyle's Law in a Hassler holder using He
Grain volume measured by Boyle's Law in a matrix cup using He
Bulk volume by Archimedes Principle
Water saturations by Dean Stark
Oil saturations by weight difference in Dean Stark
Core Gamma Composite
Dean Stark grain densities clean, dry solid mineral phase are measured

REMARKS

Air permeability measured in two horizontal directions and vertical--not Klinkenberg corrected
A Surface Core Gamma-Log was recorded for downhole electric log correlation
Cores were slabbed for future geological study
Slabs were photographed under natural light for future reference
Cores and slabs are temporarily stored in the Oklahoma City Laboratory for a period of thirty days without additional charge
Selected samples were preserved in Core Seal for future analysis
Note!! 3" Full Diameter samples were drilled from the undercut 4" core so Full Diameter analysis could be performed

CORE LABORATORIES

Company : BEREXCO, INC
Well : IRENE NO. 2-5 WELL
Location :
Co,State : KEARNY COUNTY, KANSAS

Field :
Formation : UPPER MORROW
Coring Fluid : WATER BASE MUD
Elevation :

File No.: 57182-13296
Date : 4-SEPT-1990
API No. :
Analysts: LA/SB/RG

CORE ANALYSIS RESULTS

	SAMPLE NUMBER	DEPTH ft	PERMEABILITY (MAXIMUM) Kair md	PERMEABILITY (90 DEG) Kair md	PERMEABILITY (VERTICAL) Kair md	POROSITY (HELIUM) %	SATURATION (PORE VOLUME) OIL %	SATURATION (PORE VOLUME) WATER %	GRAIN DENSITY gm/cc	DESCRIPTION
		4733.0-4741.5 - No Analysis - Sh								
	1	4741.5- 42.0	349.	339.	563.	19.9	12.7	49.1	2.64	Sst lt gry m gr
	2	4742.0- 43.0	19.0	18.0	234.	15.1	13.1	48.9	2.63	Sst lt gry f/m gr Sh lam slily carb
	3	4743.0- 44.0	129.	125.	0.03	20.6	12.5	39.8	2.77	Sst lt gry f/m gr Sh lam slily carb pyr
	4	4744.0- 45.0	402.	365.	82.0	22.7	13.1	60.8	2.66	Sst lt gry f/m gr Sh lam slily carb slily pyr
@	5	4745.0- 46.0			1636.	24.7	9.1	68.7	2.64	Sst lt gry crs gr Sh lam slily carb
	6	4746.0- 47.0	2975.	2926.	764.	21.2	9.7	69.0	2.67	Sst lt gry crs gr
	7	4747.0- 48.0	3705.	3440.	1595.	21.3	12.1	69.2	2.65	Sst lt gry crs gr
	8	4748.0- 49.0	2532.	2405.	1188.	21.1	12.5	67.1	2.65	Sst lt gry crs gr
@	9	4749.0- 50.0			2753.	23.5	11.5	66.3	2.65	Sst lt gry crs gr
	10	4750.0- 51.0	1088.	1063.	726.	22.2	11.9	70.9	2.67	Sst lt gry crs gr
	11	4751.0- 52.0	328.	273.	374.	19.9	14.0	59.1	2.71	Sst lt gry crs gr pyr
	12	4752.0- 53.0	497.	472.	267.	20.4	11.3	64.8	2.66	Sst lt gry crs gr Sh lam
	13	4753.0- 54.0	1343.	1105.	302.	23.0	12.2	61.6	2.78	Sst lt gry m/crs gr pyr
#	14	4754.0- 55.0	1.90	1.30	49.0	11.4	8.7	66.2	2.68	Sst lt gry m gr sh lam pyr
	15	4755.0- 56.0	178.	168.	1.80	16.2	12.6	62.1	2.65	Sst lt gry f/m gr sh lam pyr
	16	4756.0- 57.0	188.	184.	38.0	23.1	13.0	51.5	2.65	Sst lt gry f/m gr slily carb
	17	4757.0- 58.0	191.	175.	100.	24.4	16.0	50.1	2.66	Sst lt gry f/m gr slily carb
*	18	4758.0- 59.0		286.		23.5	14.9	61.1	2.66	Sst lt gry f/m gr
		4759.0-4760.0 - No Analysis - Sh								
	19	4760.0- 61.0	121.	112.	16.0	22.3	11.6	52.3	2.65	Sst lt gry f/m gr Sh lam
*	20	4761.0- 62.0		82.0		23.2	17.9	54.0	2.66	Sst lt gry f/m gr
	21	4762.0- 63.0	112.	91.0	101.	24.7	13.4	50.7	2.66	Sst lt gry f/m gr slily carb slily pyr
	22	4763.0- 64.0	201.	164.	29.0	21.9	11.8	50.4	2.71	Sst lt gry f/m gr slily carb pyr

CORE LABORATORIES

Company : BEREXCO, INC
Well : IRENE NO. 2-5 WELL
Field :
Formation : UPPER MORROW
File No.: 57182-13296
Date : 4-SEPT-1990

CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH ft	PERMEABILITY (MAXIMUM) Kair md	PERMEABILITY (90 DEG) Kair md	PERMEABILITY (VERTICAL) Kair md	POROSITY (HELIUM) %	SATURATION (PORE VOLUME) OIL %	SATURATION (PORE VOLUME) WATER %	GRAIN DENSITY gm/cc	DESCRIPTION
23	4764.0- 65.0	414.	397.	242.	23.5	12.6	55.3	2.67	Sst lt gry m/crs gr slily carb slily pyr
24	4765.0- 66.0	289.	245.	100.	20.4	10.0	50.3	2.66	Sst lt gry m/crs gr carb pyr
25	4766.0- 67.0	5.70	4.60	3.00	7.1	4.4	48.1	2.71	Sst lt gry crs gr slily dol Sid Nod slily pyr
26	4767.0- 68.0	537.	506.	134.	16.1	2.1	66.6	2.67	Sst lt gry crs gr
27	4768.0- 69.0	1091.	1062.	597.	17.2	9.7	71.1	2.65	Sst lt gry crs gr
	4769.0-4770.5 - No Analysis - Sh								
28	4770.5- 71.5	9.10	8.70	2.00	14.8	7.4	55.3	2.64	Sst lt gry f gr
	4771.5-4773.0 - No Analysis - Sh								
29	4773.0- 74.0	14.0	8.70	12.0	16.9	5.2	54.7	2.65	Sst lt gry f gr
30	4774.0- 75.0	4.10	3.60	4.40	15.3	6.3	55.0	2.67	Sst lt gry f gr Sh lam
31	4775.0- 76.0	119.	109.	78.0	20.3	13.4	42.7	2.66	Sst lt gry m gr
32	4776.0- 77.0	99.0	93.0	39.0	19.6	7.8	51.2	2.67	Sst lt gry m gr Sh lam
33	4777.0- 78.0	93.0	86.0	45.0	19.5	4.7	48.2	2.68	Sst lt gry m gr Sh lam
	4778.0-4781.0 - No Analysis - Sh								
34	4781.0- 82.0	3.90	3.90	4.20	14.8	0.0	67.6	2.68	Sst lt gry f/m gr Sh lam slily dol
35	4782.0- 83.0	28.0	25.0	1.80	15.4	0.0	51.8	2.67	Sst lt gry f/m gr Sh lam slily dol
	4783.0-4791.0 - No Analysis - Sst v sh lam								
	4791.0-4793.0 - No Analysis - Sh								

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File No.: 57182-13296
Date : 4-SEPT-1990

CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH ft	PERMEABILITY (MAXIMUM) Kair md	PERMEABILITY (90 DEG) Kair md	PERMEABILITY (VERTICAL) Kair md	POROSITY (HELIUM) %	SATURATION (PORE VOLUME) OIL %	SATURATION (PORE VOLUME) WATER %	GRAIN DENSITY gm/cc		DESCRIPTION
4793.0-4794.0 - No Analysis - Sst v sh lam										

@ - Denotes permeability exceeds limits of analytical equipment

- Denotes vertical permeability influenced by dehydration of Sh lamination

* - Denotes plug analysis

CORE LABORATORIES

Company : BEREXCO, INC
Well : IRENE NO. 2-5 WELL

Field :
Formation : UPPER MORROW

File No.: 57182-13296
Date : 4-SEPT-1990

TABLE I

SUMMARY OF CORE DATA

ZONE AND CUTOFF DATA

ZONE:

Identification	UPPER MORROW
Top Depth	4733.0 ft
Bottom Depth	4794.0 ft
Number of Samples	35

DATA TYPE:

Porosity	(HELIUM)
Permeability	(90 DEG) Kair

CUTOFFS:

Porosity (Minimum)	0.0 %
Porosity (Maximum)	100.0 %
Permeability (Minimum)	0.0100 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	34.5 ft

POROSITY:

Storage Capacity	677.2 ϕ-ft
Arithmetic Average	19.6 %
Minimum	7.1 %
Maximum	24.7 %
Median	20.4 %
Standard Deviation	±4.1 %

GRAIN DENSITY:

Arithmetic Average	2.67 gm/cc
Minimum	2.63 gm/cc
Maximum	2.78 gm/cc
Median	2.66 gm/cc
Standard Deviation	±0.03 gm/cc

PERMEABILITY:

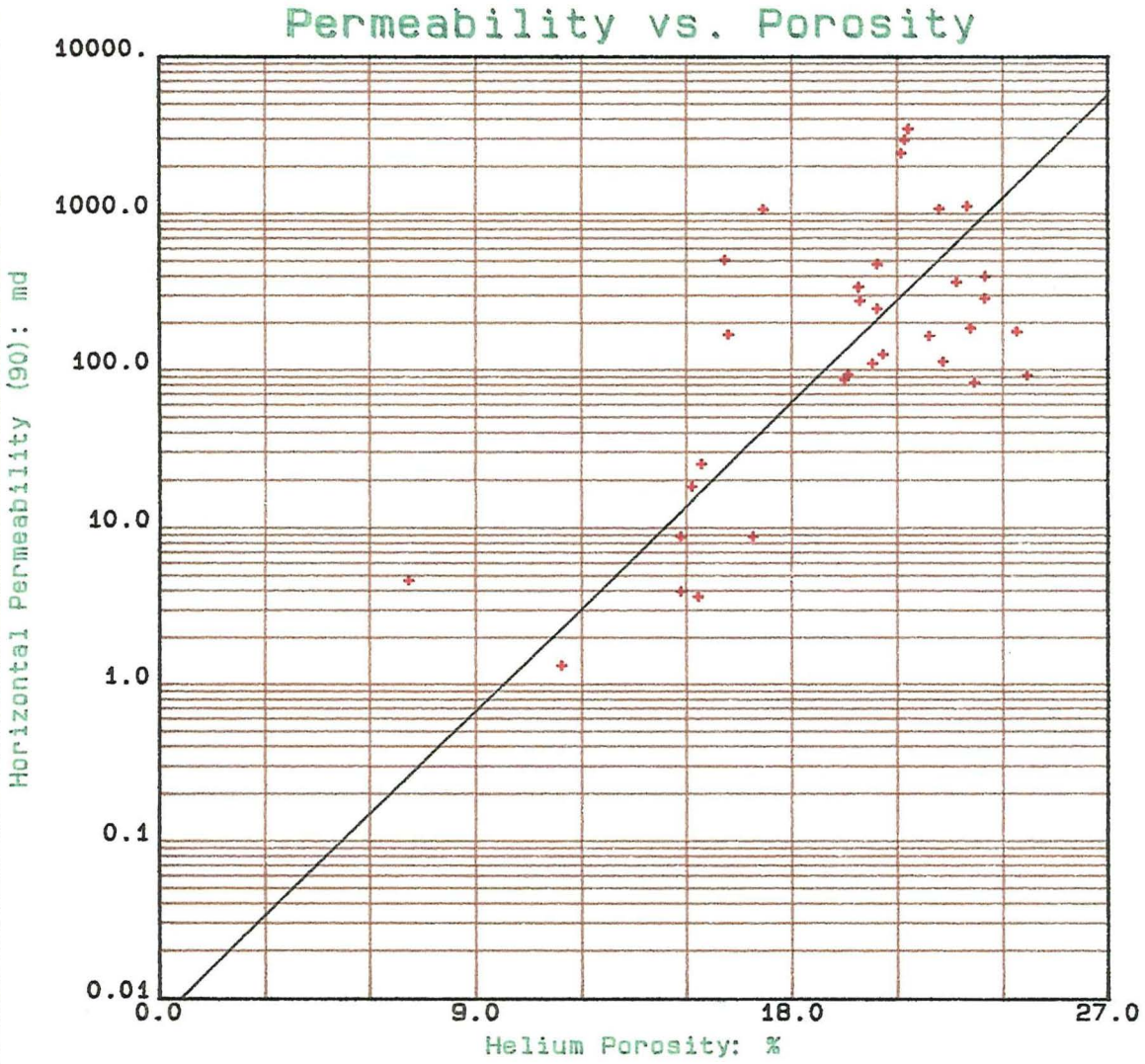
Flow Capacity	16177.3 md-ft
Arithmetic Average	498. md
Geometric Average	123. md
Harmonic Average	16.5 md
Minimum	1.30 md
Maximum	3440. md
Median	168. md
Standard Dev. (Geom)	$K \cdot 10^{\pm 0.877}$ md

HETEROGENEITY (Permeability):

Dykstra-Parsons Var.	0.734
Lorenz Coefficient	0.681

AVERAGE SATURATIONS (Pore Volume):

Oil	10.8 %
Water	57.7 %

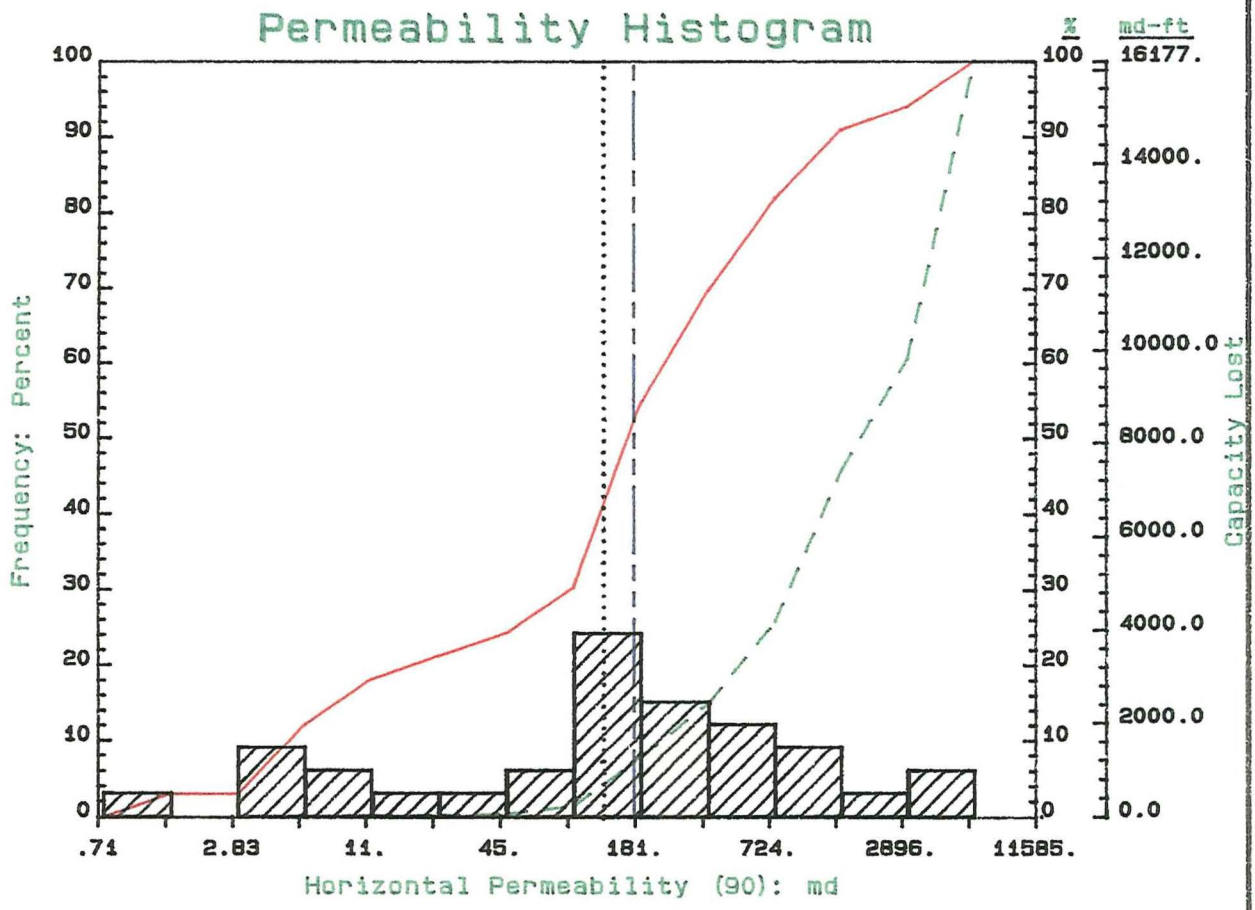


BEREXCO, INC
IRENE NO. 2-5 WELL
KEARNY COUNTY, KANSAS

UPPER MORROW (4733-4794 Feet)

Core Laboratories 4-Sep-1990

- LEGEND -
UPPER MORROW



BEREXCO, INC
IRENE NO. 2-5 WELL
KEARNY COUNTY, KANSAS

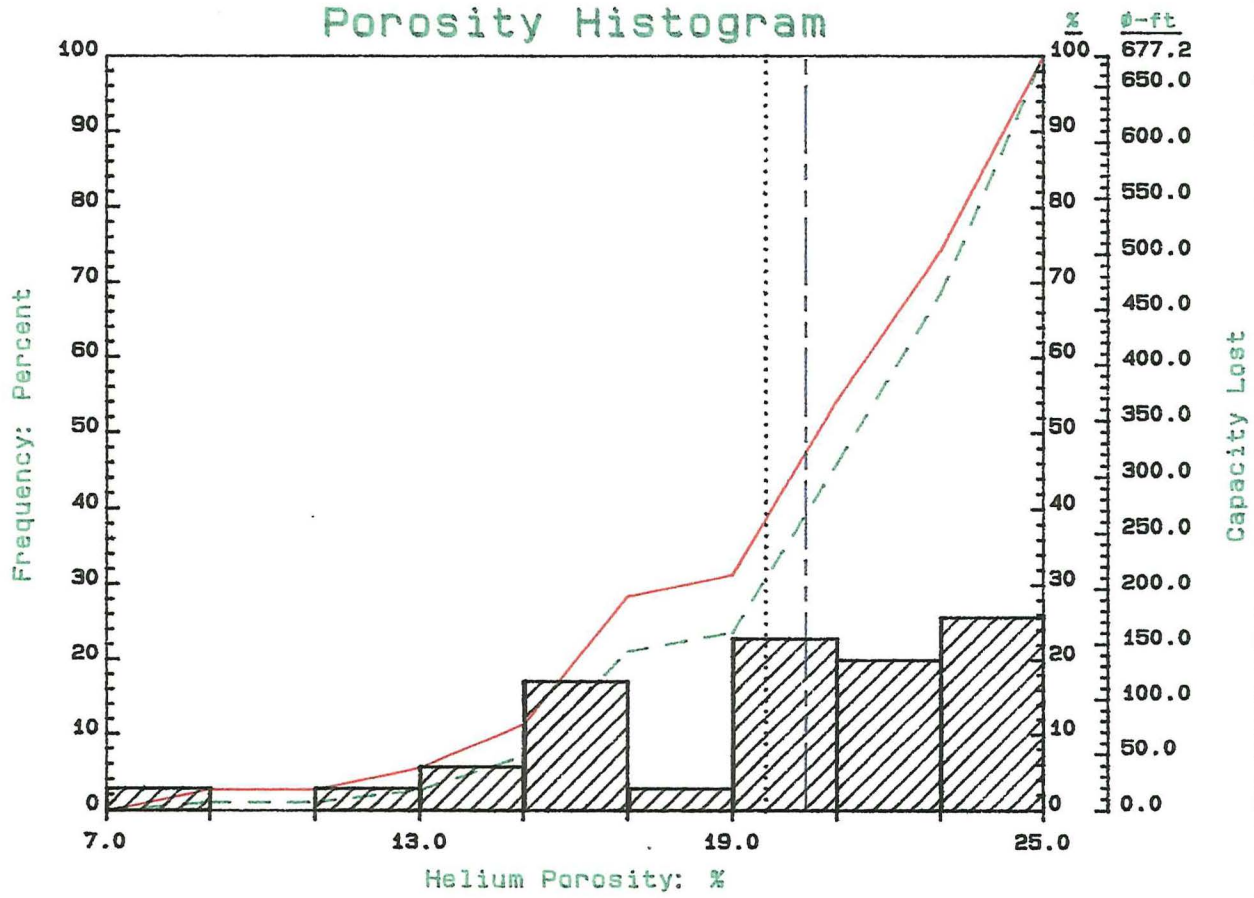
UPPER MORROW (4733-4794 Feet)

Core Laboratories 4-Sep-1990

- LEGEND -

——— - Median Value (168.)
..... Geom. Average (123.)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

33 Samples



BEREXCO, INC
IRENE NO. 2-5 WELL
KEARNY COUNTY, KANSAS

UPPER MORROW (4733-4794 Feet)

Core Laboratories 4-Sep-1990

- LEGEND -

——— - Median Value (20.4)
..... Arith. Average (19.6)
——— Cumulative Frequency
— — - Cumulative Capacity Lost

35 Samples

BEREXCO, INC

IRENE NO. 2-5 WELL

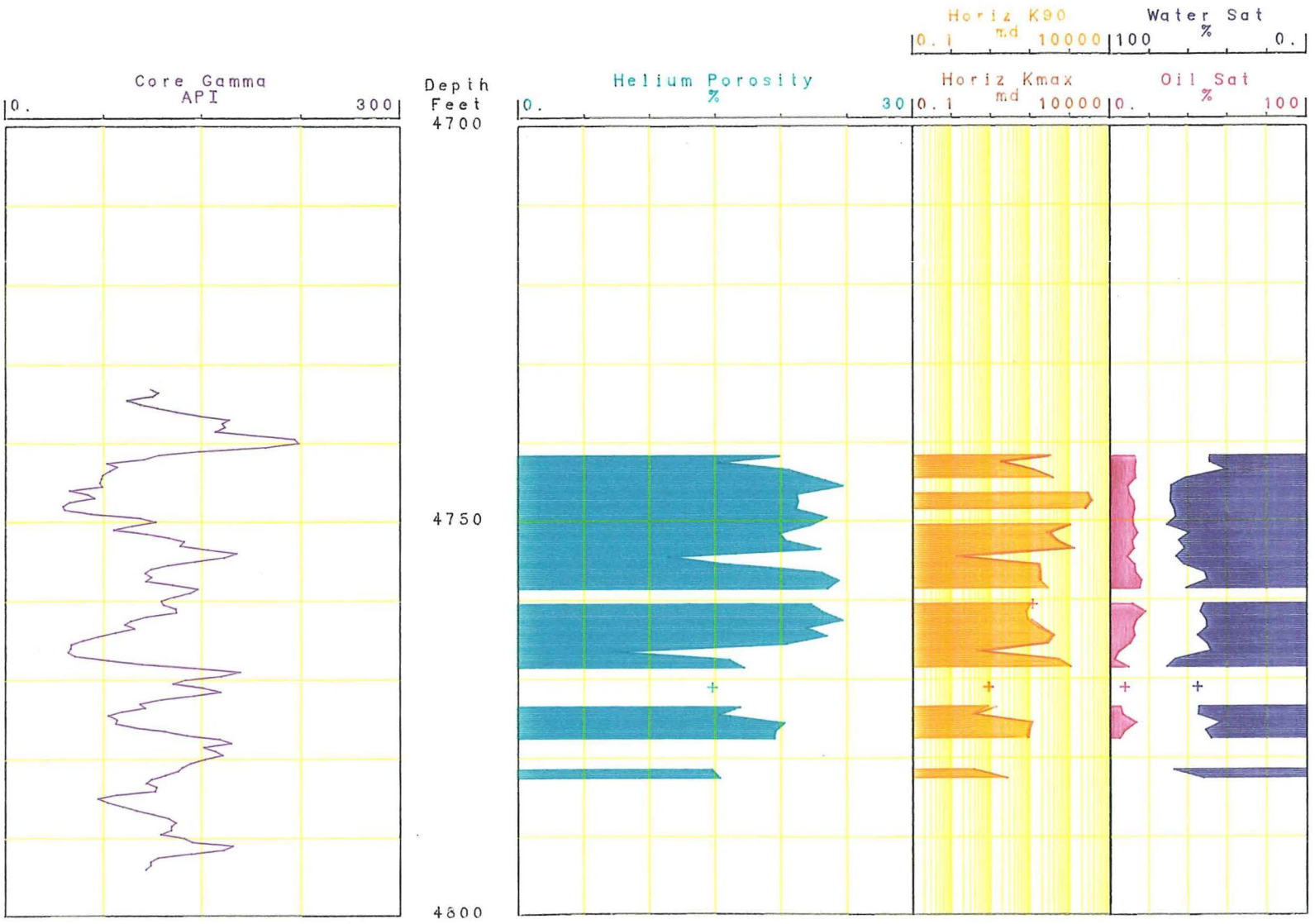
KEARNY COUNTY, KANSAS

UPPER MORROW (4733-4794 Feet)

Core Laboratories

4-Sep-1990

Vertical Scale
5.00 in = 100.0 ft

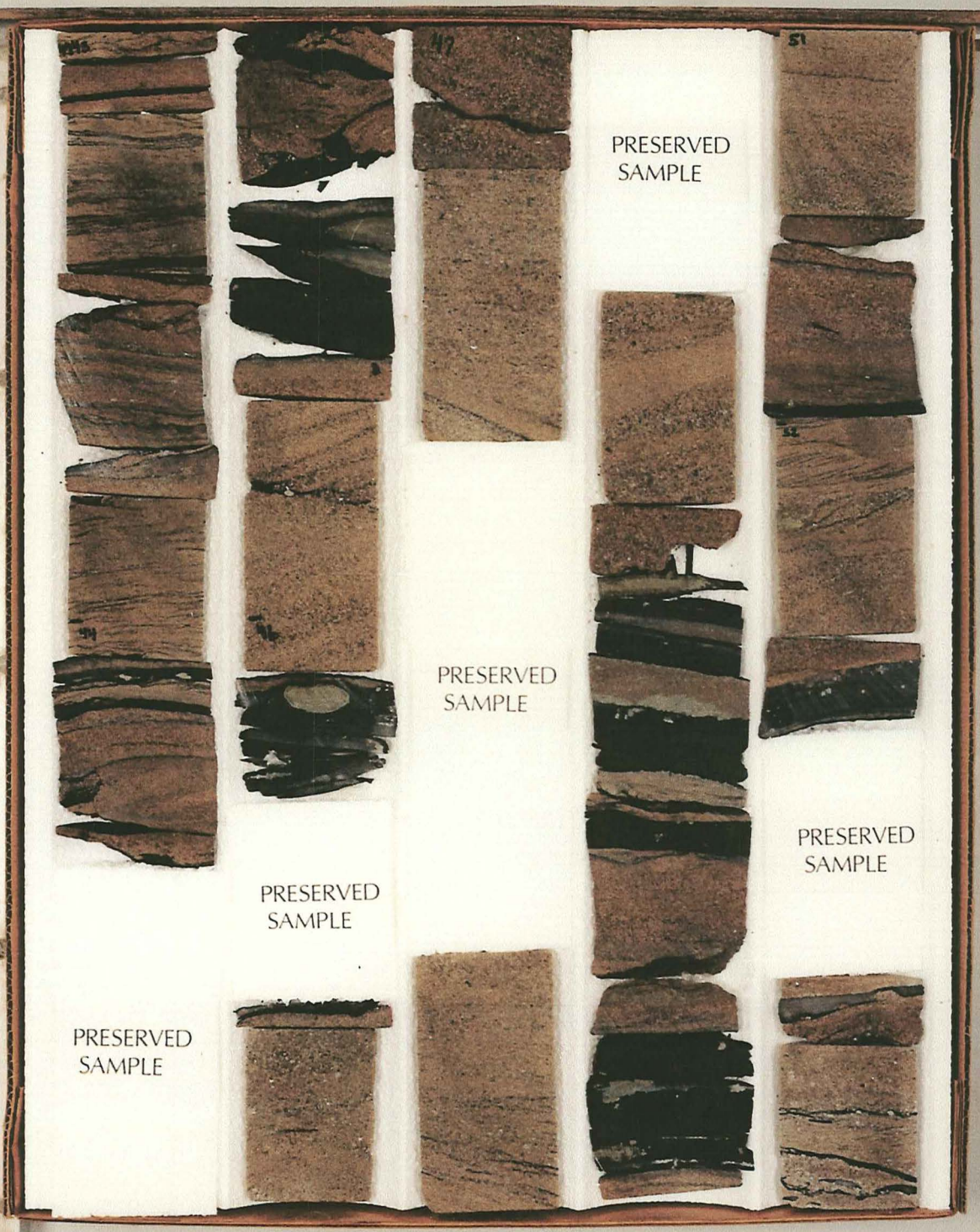


BEREXCO, INC.
IRENE NO. 2-5 WELL
KEARNY COUNTY, KANSAS

4733 - 4743 FEET

BEREXCO, INC.
IRENE NO. 2-5 WELL
KEARNY COUNTY, KANSAS

4743 - 4753 FEET



BEREXCO, INC.
IRENE NO. 2-5 WELL
KEARNY COUNTY, KANSAS

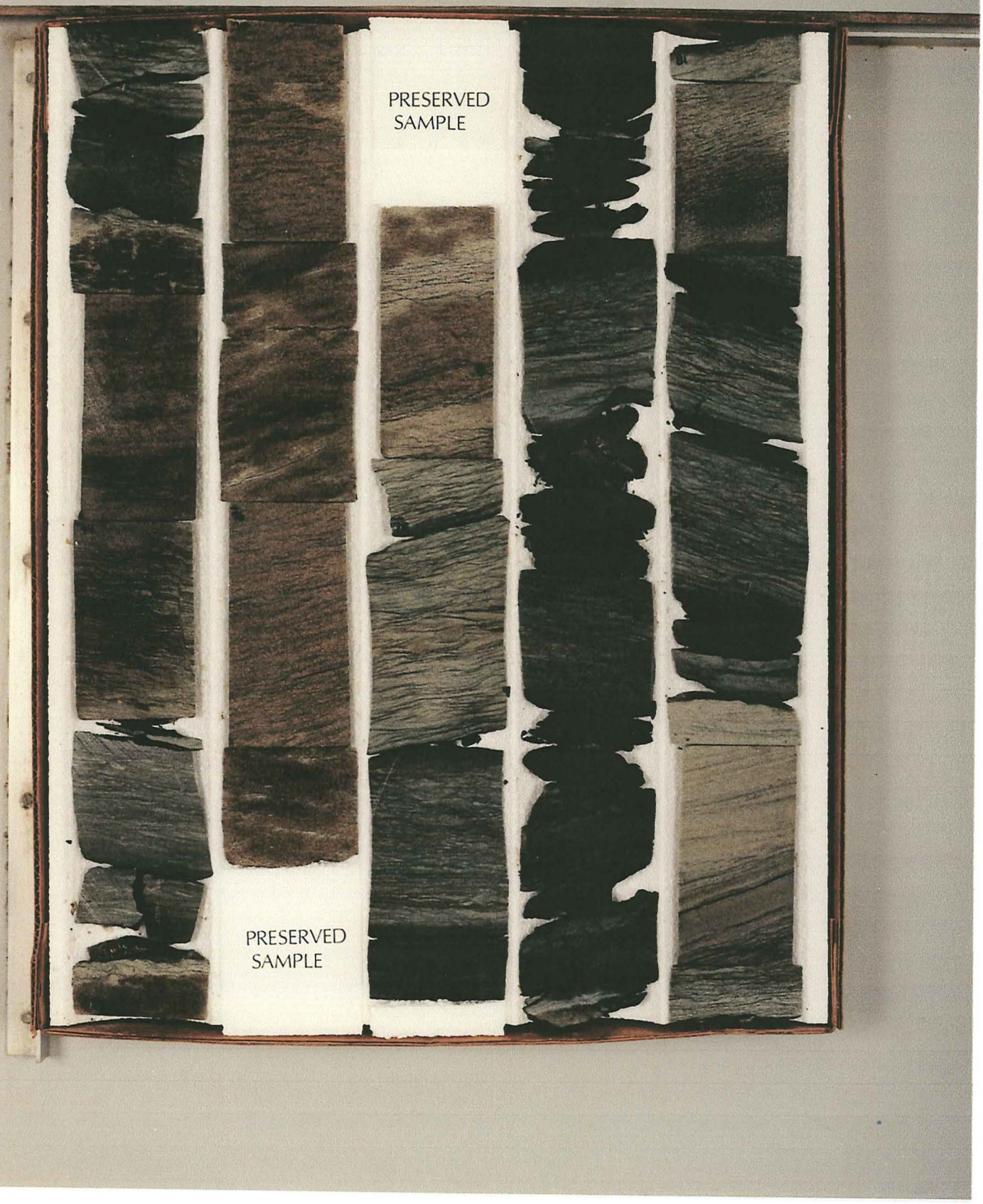
4753 - 4763 FEET

BEREXCO, INC.
IRENE NO. 2-5 WELL
KEARNY COUNTY, KANSAS

4763 - 4773 FEET

BEREXCO, INC.
IRENE NO. 2-5 WELL
KEARNY COUNTY, KANSAS

4773 – 4783 FEET



BEREXCO, INC.
IRENE NO. 2-5 WELL
KEARNY COUNTY, KANSAS

4783 - 4793 FEET

BEREXCO, INC.
IRENE NO. 2-5 WELL
KEARNY COUNTY, KANSAS

4793 - 4794 FEET